IWT SBO PROJECT 120003 "SEARCH"

Archaeological heritage in the North Sea

Development of an efficient assessment methodology and approach towards a sustainable management policy and legal framework in Belgium.

Archeologisch erfgoed in de Noordzee

Ontwikkeling van een efficiënte evaluatiemethodologie en voorstellen tot een duurzaam beheer in België.

REPORT ON INTEGRATION WITH LAND HERITAGE

WP 2.1.3

Responsible partners: RLICC, FHA, UG-MI

Authors: Sorna Khakzad, Koen Van Balen

March 2015

The material and results presented in this report is part of Sorna Khakzad doctoral dissertation, titled: "Integrated Approach in Management of Coastal Cultural Heritage", at University of Leuven, Belgium. The dissertation was defended and accepted on the 17th June 2015. Re-using this material subjects to respect copyright.

Table of contents

`

`

Abstract

Humans have had a long history of interconnectedness with the sea and ocean due to the use of natural resources available in the coastal areas. These interactions have influenced the natural landscape and play a crucial role in the formation of coastal cultural heritage. Coastal cultural heritage, a continuum of land and sea, is an important part of our cultural resources in the coastal areas. Presently, coastal cultural heritage has not been well integrated into coastal management plans as a cultural resource. The qualitative and comparative analysis of coastal management experiences show that, despite the fact that holistic coastal management plans (such as integrated coastal zone management (ICZM)) have theoretically addressed the importance of cultural ecosystems, cultural resources have mostly been overlooked in these plans. Regulatory regimes and management strategies for land and sea are separate even though the line between the sea and land is arbitrary. Separation of regulatory regimes and management strategies for land and sea has hindered the ability to achieve an integrated approach for cultural heritage management in the coastal areas. This fact negatively affects the protection of coastal cultural heritage as an entity.

To achieve an integrated management, the present research identifies two sub-problems. One problem is with justifying values within integrative dimensions and understanding the role of these dimensions as control groups. The second problem is ambiguity in defining the coastal cultural area. Acknowledging the similarities between natural resources and cultural resources, this study relied on learning from natural resource experiences and adapting social theories for re-evaluating and re-defining coastal cultural heritage. Combining the applications of integrated complexity theory, social-cultural memory and theory of middle-ground proved to offer a powerful system for evaluation and defining coastal cultural heritage.

This project offers two tools for the integrated management of coastal cultural heritage. One is an integrative evaluation system, and the other is a coastal cultural middle-ground model. The integrative evaluation tool provides a systematic method to address different concerns from natural, socio-economic, political and cultural dimensions. Nonetheless, designing and implementing such an integrated system for management of coastal cultural heritage may cause conflicts among different stakeholders. Therefore, in order to deal with these conflicts and promote a common understanding among different dimensions and disciplines, this research adapted the theory of middle-ground. The aim was not only to mediate encounters among different stakeholders, but also to define an area of maximum cultural values for adaption of an integrated coastal management strategy. Adapting the theory of middle ground and taking into consideration and recognition the links and connections among people, their heritage, and the environment ultimately results in the formation of a definitive area of cultural values—or as it is called in this research: coastal cultural middle ground. Delineating coastal cultural middle-ground highlights the importance of coastal cultural heritage as one entity in management schemes—not as separate entities on land and underwater.

In order to examine the proposed tools, the Belgian coast has been chosen as the case study. In line with the current project in Belgium—the SEARCH (Archaeological Heritage in the North Sea) project— which aims to develop an efficient evaluation method and proposals for sustainable management of coastal cultural heritage in the Belgian Part of the North Sea, the proposed methods will be tested for the Belgian coastal cultural heritage. The objective of this case study is to create a methodology that leads to a comprehensive understanding of many aspects and issues related to the management of coastal cultural heritage in Belgium.

`

List of abbreviations

ALSF: Aggregates Levy Sustainability Fund
ASA: Abandoned Shipwreck Act
BPN: Belgian Part of the North Sea
CRM: Cultural Resource Management
CZMA: Coastal Zone Management Act
EEZ: Exclusive Economic Zone
EH: English Heritage
EIA: Environmental Impact Assessment
EU: European Union
HAS: Historic Shipwreck Acts
HIA: Heritage Impact Assessment
HERs: Historic Environment Records
ICZM: Integrated Coastal Zone Management
IMO: International Maritime Organization
IUCN: International Union for Conservation of Nature
MACHU: Managing Cultural Heritage Underwater
MoSS: Monitoring, Safeguarding and visualizing Shipwrecks
MPA: Marine Protected Areas
MSP: Marine Spatial Planning
NMSA: National Marine Sanctuary Act
NOAA: National Oceanic and Atmospheric Administration
PSSA: Particularly Sensitive Sea Area
RCZAS: Rapid Coastal Zone Assessment Surveys
RMA: Resource Management Act
SMP: Shoreline Management Plan
UCH: Underwater Cultural Heritage
UNCED: United Nations Conference on Environment and Development
UNCLOS: United Nations Convention on the Law of the Sea

Chapter 1: A review of coastal management strategies and core elements for designing management plan in cultural coastlines

Introduction

The main objective of this research is to design an improved strategy for unified management of coastal cultural heritage, including land and sea. Therefore, following the definition of cultural heritage management which highlighted the role of identification and evaluation of heritage for the future use and benefit, the first section of this chapter will provide an overview of existing experiences of coastal cultural heritage management in exploring the vocabularies and sets of existing concepts that have been used globally in management of coastal cultural heritage. The second section will present the dimensions and factors that impact resources management and the third section will deal with defining coastal cultural resources and their boundaries. The aim of this chapter is to synthesize the existing literature and experiences in order to illustrate what the crucial concepts are presently.

These experiences include an introduction to the international and national legislations, project initiates among countries and some other examples of different approaches for management of coastal cultural heritage in countries that have been considered as the pioneers in these fields. Coastal cultural heritage includes part of terrestrial and underwater cultural heritage. Therefore, the overview will have a look at the relevant experiences and documents, moving between land and sea. Global concerns and solutions that have been suggested and applied will be presented. The main concern of these initiatives and experiences has been sustainable preservation of cultural heritage in the coastal areas; however it will be discussed that in some respect attentions have more been given to the natural resources and economic benefits, while cultural heritage has been overlooked.

Natural resources started getting more attention in management of coastal areas, and benefit from longer management experiences since 1970s (examples of initiatives and organizations that were shaped during 1970s are IMO (International Maritime Organization) as a UN body concerned with maritime legislation that address marine pollution, e.g., through the International Convention for the Prevention of Pollution from Ships, 1973; Ramsar Convention (1971) as a framework for national action and international cooperation on the conservation and wise use of wetlands; UNEP (United Nations Environmental Program Regional Seas Program which adopts a regional approach to control marine pollution and managing marine and coastal resources, and etc.) Considering that managing natural resources has begun since 1970s and the similarities between the natural and cultural resources—both are perishable and mostly irreplaceable— and in case of cultural resources, they are not reproducible, the present study attempts to learn from the previous approaches for management of natural resources and adapt a suitable approach for management of cultural resources in the coastal areas. Therefore, concepts that have been applied for natural resources management will be presented as well.

In addition to cultural heritage management experiences, Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) are widely acceptable approaches regarding coastal resources management in Europe. Considering that the present study aims at a unified management approach for coastal cultural heritage and ICZM has already adopted such approach for coastal resources, hens ICZM and MSP experiences will be introduced and the statues of cultural heritage in these plans will be discussed. This study also takes from natural and ecological approaches known as ecosystem based management approaches, which has become applicable in natural resources management, and have some common goals with ICZM.

1.1. An introduction to the relevant regulatory regimes and a review of management strategies in the world

In the following sections, first an overview of the international conventions that are relevant to the coastal state and coastal cultural heritage will be offered. Then, an overview of best practices in the field of coastal and underwater cultural heritage from pioneering countries in the field of coastal and underwater cultural heritage will be presented. In addition, an overview of the holistic management concepts that lead our decision making and define our strategies in addressing the coastal resources management issues will be presented. In the end of this section, different approaches will be analyzed.

Although the following is an overview of both legal frameworks and management strategies together, this study acknowledges the legal differences among them. Starting with conventions, international conventions are the most important formal source of international law. They are international agreement concluded among states in written form and governed by international law (Vienna Convention on the Law of Treaties, 1969: Art. 2 (a); Un.org, 2015). Conventions are legally binding hard law when ratified by the state parties. Declarations and recommendations adopted by international organizations such as UNESCO are considered soft law. Soft laws are international instruments or documents that are not legal transactions. They can have significant political meaning and sometimes play an important role in the development of international law (Shelton, 2000: 292). Soft law in the format of "codes of conduct", declarations, guidelines and recommendations are an important instrument to define a consensus without being legally binding (Mörth, 2004; Abbott & Snidal, 2000). Documents prepared by advisory organizations to UNESCO (e.g. IUCN, ICOMOS and ICOM) can be considered as guidelines or good practices, but have no legal binding (Von Truetzschler, 2005).

1.1.1. Relevant international regulatory regimes

At the international level, coastal state have ratified the United Nation Convention on the Law of the Sea (UNCLOS) which establishes "a legal order for the seas and oceans which facilitates international communication, and promotes the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment." This convention defines legal and administrative boundaries for different activities at sea and oceans. The UNCLOS 1982 contains two articles (149 and 303) that refer specifically to archaeological and historical objects found at sea, and a "General Provision" that explicitly gives a coastal State the task "to protect objects of an archaeological and historical nature found at sea". Article 149[1] relates to the "area", and the protection of underwater cultural heritage that is not in national and territorial waters. Article 303[2] refers to objects of an archaeological and historical nature found in the contiguous zone, namely within the territorial sea boundary and 24 nautical miles from the baselines (Migliorino, 1982; Brown, 1996).

In respect to cultural heritage, many countries comply with several international conventions for cultural heritage purposes. Conventions such as the 1972 World Heritage Convention deals with cultural-natural heritage site that are of outstanding values. Although this convention does not specifically cover coastal and underwater cultural heritage, but sites that are combination of land and sea sites can be listed under this convention (e.g. Red Bay Basque Wailing Station (Centre, 2013)). Considering the fact that a major number of underwater and coastal cultural heritage are shipwrecks, one of the debates about underwater cultural heritage to be listed as world heritage sites, is that the World Heritage Center consider shipwrecks as moveable objects, not sites. However, considering different factors in formation natural environment around

[1] All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin.

[2] Article 303: 1. States have the duty to protect objects of an archaeological and historical nature found at sea and shall cooperate for this purpose. 2. In order to control traffic in such objects, the coastal State may presume that their removal from the seabed in the zone referred to in that article without its approval would result in an infringement within its territory or territorial sea of the laws and regulations referred to in that article. 3. Nothing in this article affects the rights of identifiable owners, the law of salvage or other rules of admiralty, or laws and practices with respect to cultural exchanges. 4. This article is without prejudice to other international agreements and rules of international law regarding the protection of objects of an archaeological and historical nature.

the shipwrecks and the fact that many shipwrecks are not moveable, many debated have been raised among experts (Khakzad, 2014b; Guerin, 2013; Dromgoole, 2013, 2006).

Considering the threats endangering underwater archaeological sites, in 1978 the Council of Europe saw the necessity of protecting underwater cultural heritage and formulated a recommendation, specifically indicating Underwater Cultural Heritage and recognizing its historical and cultural significance (Assembly.coe.int, 2015). Following this recommendation, and recognizing the archaeological assets underwater as 'underwater archaeological heritage', a draft convention on the underwater heritage was drawn up by the Council of Europe in 1985 (Pickard, 2002), although it could not have been opened for signature, it paved the way for the UNESCO Convention on Protection of Underwater Cultural heritage (UNESCO, 2001). The 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage deals specifically with cultural heritage that have been partially or completely submerged for at least 100 years. This convention sets basic principles for the protection, treatment and research of underwater cultural heritage exclusively and promotes international cooperation for preservation and protection of this heritage (Manders, 2009; Luka, 2008). The convention highlights good points about site natural and cultural context, and the values of natural factors in formation the sites. However, in some respects a specific convention on underwater cultural heritage would increase the gaps among heritage on land and underwater, especially in places where the sites are extended from land to sea (Khakzad, 2014b). The 2001 convention also has no clear position bout the heritage sites in the coastal areas that might get submerged in near future due to the environmental changes (dam construction, sea-level rise, etc.). Nevertheless, the advantages of having a specific convention on underwater cultural heritage highlight the international professional attention to underwater cultural heritage. Later documents such as the annex of the convention as well as manual, which have been developed based on the convention for managing underwater cultural heritage sites, provide more practical guidelines for protection and conservation of underwater cultural heritage (Maarleveld et al, 2013).

In the European level, Valetta Convention is a multilateral treaty of the Council of Europe, which is an international legally binding treaty within Europe. The Valetta Convention aims to protect the European archaeological heritage "as a source of European collective memory and as an instrument for historical and scientific study" (Valetta, 1992). According to Valletta Treaty all remains and objects and any other traces of humankind from past times include structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water are considered elements of archaeological heritage (Valetta, 1992: Art. 1). The revised Valletta Convention provides some flexibility for nations to define their own heritage space and the extent of protection over archaeological elements.[3]

Within the mentioned conventions the definition of each topic, as well as criteria for defining and evaluation of the cultural heritage can be found. Although these conventions, to some extent, cover some aspects of coastal areas, when it comes to defining coastal cultural heritage, there are complications with drawing boundaries between land and sea. In general, Focusing on underwater and coastal cultural heritage, a series of problems arises from the lack of a common language and terminology in applying terms for nomination, evaluation, treatment and conservation of underwater and submerged sites in coastal areas (Staab & Studer, 2009; Guerin, NA).

In the following section, examples from some countries that have been pioneering in underwater archaeology and also coastal cultural heritage will be presented. These countries are known for their extensive work on underwater cultural heritage, often well preserved and presented underwater archaeological sites, which also encouraged the groundwork for the development of the 2001 Convention, and were the first contributors to legislation and conventions regarding underwater cultural heritage (Prott & Srong, 1999). Their national legislation in relation to coastal heritage and some of the projects will be highlighted. All the countries, presented in the following section, have ratified UNCLOS, however, among them, only Spain has ratified the 2001 Convention, and the European countries are member of the Valetta Treaty.

[3] Valletta Convention covers underwater cultural heritage, although different countries have had different approaches. For example, territorially the Area can be coextensive with the territorial sea, the contiguous zone, the continental shelf, the exclusive economic zone or a cultural protection zone. Among members of the Council of Europe some States restrict their jurisdiction over shipwrecks, to the territorial sea for example, while others extend to their continental shelf. The Malta Convention is an international legally binding treaty within Europe. See: European Convention on the Protection of the Archaeological Heritage (Revised). Explanatory Report". CoE 1992. Retrieved 7 July 2012

1.1.2. Coastal cultural heritage management background

Coastal resources management has been a main focus of the world recent management discussions and has been subjected to many theoretical and practical developments (ECo, 2012; UNCED, 1992). Nevertheless, there are several strategies and acceptable plans for managing underwater cultural heritage and terrestrial cultural heritage. However, no unified strategy exists for coastal cultural heritage management. In addition, plans for preserving, promotion and management of submerged cultural resources were introduced as early as the late 1970s (Council of Europe 1978:21-25). Since then, different approaches for management of underwater cultural heritage have been taken. The extent and quality of underwater heritage management strategies are very different. Some approaches look into the cultural heritage projects as secluded projects, dealing mostly with the aspects of culture and archaeological study from the pre-study (archival, literature, etc.) to excavation and conservation of the sites, and some take into account the future management of possible threats and opportunities for protection, conservation, and use considering the impact of external factors.

A. National initiatives

In this section an overview of world's pioneering countries in the field of underwater and coastal cultural heritage practices and their prominent national legislations and experiences are going to be discussed. Some are exclusively relate to underwater cultural heritage and some consider the links with land and address the issues of coastal heritage as well.

A.1. The UK

Starting with European countries, in the UK, for instance, with the passing of the 2002 National Heritage Act, English Heritage assumed responsibilities for archaeological remains below mean low water within territorial waters adjacent to England, allowing its management to become integrated with that of the terrestrial historic environment (HELM, 2013)[4]. Within different documents (e.g. Taking to the Water (Roberts & Trow, 2002)), English Heritage highlights the broad characteristics of maritime archaeological resources and discusses the legislative framework pertaining to maritime archaeology in English territorial waters. The wider policy background of English Heritage's approach is framed by the UK Government's adoption of the Annex to the UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001 as best practice for underwater archaeology, however the UK has not ratified the 2001 Convention.

In addition initiations and actions in relation to the coastal and underwater heritage such as Rapid Coastal Zone Assessment Surveys (RCZAS) enhance the National Monuments Record (DEFRA, 2006; English-heritage.org.uk, 2015); Historic Environment Records (HERs) (English-heritage.org.uk, 2015a) aids conservation of heritage assets and prioritize actions in coastal zones. Moreover, English Heritage provides Coastal Groups and consultants with information and guidance on the coastal Historic Environment, sources of advice and data, a legislative and planning background, and procedures for consultation during Shoreline Management Plan (SMP) review (English Heritage, 2006).

Through different projects such as the Aggregates Levy Sustainability Fund 2002 (ALSF), English Heritage promotes environmentally friendly marine actions and advocates initiatives, providing new insights into the mitigation, assessment, evaluation and potential of the marine historic environments in England's territorial waters (English Heritage, ALSF, 2002-2011[5]) (Cefas.defra.gov.uk, 2015). These types of projects have created collaboration among different stakeholders that will result in protection and study of the marine historic environment as well as continues of the (industrial and/or urban) developmental projects. The project results are important for where no baseline study existed before or information is sporadic and selective (Bicket & Gardiner, 2011). The development of integrated methodologies and identification of best practice is another outcome of ALSF (Cefas.defra.gov.uk, 2015).

[4] From 1st April 2015, English Heritage was transformed into two organizations with English Heritage (a new charity) dealing with the management of historic properties and sites in public care, and Historic England remaining as the statutory advisor to Government on the historic environment of England.

[5] The project ended in 2011 with closing its fund. The final reports (monograph series) of Marine ALSF projects provide quality primary datasets for Environmental Impact Assessment (EIA) and management decisions, and reinforce regional-scale characterization projects and research frameworks.

The example of English heritage shows a comprehensive approach towards underwater and coastal cultural heritage management. Although the documents have exclusively been geared towards protection, study and conservation of cultural heritage, they provide good information and guidelines for the public, stakeholders and decision makers to manage underwater and coastal cultural heritage. English Heritage has more detailed guidelines on historic vessels; marine control; assessing, evaluating, mitigating and monitoring archaeological sites under the impact of urban and industrial development; and coastal defense structures and historic environment protection (English Heritage, 2012; 2006; 2003; and UK National Historic Shipwrecks, 2015). Each document provides detailed guidelines with stress on preservation and management of the sites and objects of cultural values. Defining cultural assets is done after a thorough evaluation of the assets and their environment. The features of English Heritage's approach highlight the importance of a step-by-step process of recognizing, defining and evaluating the cultural assets and prioritizing the actions for future management.

A.2. The Netherlands

A major maritime country in Europe, for the Netherlands, maritime heritage is considered as part of the 'landscape and historic setting' and includes the entire heritage associated with water – all cultural remains, on and under the water and on land (NOaA, 2015). The Cultural Heritage Agency is at the core of heritage management in the Netherlands that is closely involved in listing, preserving, sustainably developing and providing access to the most valuable heritage in the country. It is the link between policymakers, academics and practitioners and provides advice, knowledge and information. According to the Netherlands Cultural Heritage Agency, not only sunken shipwrecks, but also harbors, quays, bridges, waterways and warehouses, as well as prehistoric sites and sunken villages are considered as maritime heritage. In fact, this shows the importance of acknowledging that coastal cultural heritage is a combination of many factors that can have links to each other and shape maritime cultural landscape. The Netherlands acknowledge the importance of its maritime history associated with trade, expansion, and warfare. With referring to 'archaeology' as 'archaeological heritage management' (Bazelmans, 2006; Maarleveld, 1998), Netherlands have incorporated archaeological heritage management into spatial planning.

Although legislation has been considered as fundamental tool for the deployment of a meaningful policy, the role of environmental conditions and the theoretical frameworks has been highlighted as important factors in management of underwater heritage (Maarleveld, 1998). The points that have been highlighted in National research Agenda (NOaA, 2015), nonetheless, help to reflect more on sustainable preservation of the heritage, the aspects of in situ conservation, if possible, and the public's role in preservation and management. In these respects, the Netherlands learns from its terrestrial heritage experiences and also acknowledge the links between heritage on land and under water ('*Monumentenwet* (1988/2011)' (Monuments and Historic Buildings (Act 1988/2011)). However, the Netherlands have not ratified the 2001 Convention to date.

One of the initiatives of the Netherlands was to join the MACHU project (MACHU will be discussed under section B3: Multilateral management experiences) (Machuproject.eu, 2015) to provide data and information to the public, decision makers, and stakeholders to guarantee better management in long term. In the Netherlands, the management and protection of underwater cultural resources, is brought into line with the management of terrestrial resources, through policy instruments such as the Dutch Archaeology Quality Standard (Willems & Brandt, 2004) which now have specific standards, applicable to underwater resources (Manders, 2009). This document comprises standards and guidelines for archaeological activities. Having set a common standard for management of terrestrial and underwater heritage fades the line that has been drawn between land and sea archaeological activities.

A.3. Spain

As a country with a long maritime history, Spain is one of the first countries to have ratified the 2001 Convention. Existing Spanish cultural heritage legislation reflects protective measures included in UNESCO 2001 Convention (Staniforth, 2009; Dromgoole, 2006; Alvarez, 1999). Additionally, in 2009 Spain produced the Green paper, a National plan for the protection of Underwater Cultural Heritage which expressed the will of all Spanish institutions to develop and build a common plan of action with a view to complying with the objectives of Spain's National Plan for the Protection of Underwater Cultural Heritage. Concerns about underwater cultural heritage in Spain resulted in formatting this green paper to address the following issues: lack of zoning laws to regulate the different uses and actions permitted; deficiencies in defining the objectives of underwater projects since current Spanish regulation does not note any difference between underwater

and terrestrial archaeological activities; and the difficulty of physically protecting archaeological remains due to their dynamic environment. Spain detected a series of general problems such as lack of a precise definition of Underwater Cultural Heritage in Spanish Law (Presently the definitions are based on the current Spanish Historical Heritage Act (Spanish acronym LPHE), Law 16/1985).Although the 2001 Convention provides a definition, in Spain's Green Paper it has been considered insufficient and not comprehensive enough.

In addition to a definition, the need to create specific means for the protection of underwater cultural heritage with respect to evaluation criteria and documentation guidelines has been seen crucial to create a proper management plan. One of the important actions mentioned in this green paper is that Underwater Cultural Heritage should not be vulnerable to sectorial regulations which might weaken the effective protection. Protection should be designed so that the government body responsible for cultural heritage can take part in the decisions on the use and exploitation of the marine environment (Spain Ministry of Culture, 2009). This acknowledges the importance of cultural heritage in a wider perspective of the marine environment with respect to development, environment, society and policy making. However, the holistic idea of incorporating heritage assets in marine planning has not yet been developed in this document.

A.4. Australia

Out of Europe, Australia and the US are well recognized for activities on underwater archaeological sites. In these two cases, underwater archaeological activities started with a focus on shipwreck excavation and shipwreck documentation and conservation studies.

During the 1960s and 70s, Australia became a pioneer in development and the introduction of legislation for the protection of historic shipwrecks. One of the earliest documents to protect underwater cultural heritage (mainly historic shipwrecks) was the Australian Historic Shipwreck Act of 1976 (HAS), with an important section regarding 'Protected Zones'. According to this section, an area (of maximum 100 hectares) consisting of sea or partly of sea and partly of land, within which a historic shipwreck is, or a historic relic(s) are, situated is considered to be a protected zone. This area includes the airspace above any waters, seabed, and subsoil (Australia Historic shipwreck Act 1976). However the principles to define such area, for Australian historic shipwrecks and relics, have not been mentioned.

The 1976 Historic Shipwreck Act (HAS) was only applicable to historic shipwrecks and historic relics and not to other kinds of underwater cultural heritage (Jeffery, 2006). Therefore, some state government legislation adopted other acts to cover more types of maritime and underwater cultural heritage sites (Staniforth, 2009). Following the HAS of 1976, the Guideline for the Management of Australia's Shipwrecks was developed (AIMA et al, 1994). This guideline followed the Burra Charter (first adopted in 1997), considered the best practice standard for cultural heritage management in Australia (The Burra Charter, 1999). The Burra Charter defines cultural significance, the characteristics of which have been adapted for evaluation of underwater cultural heritage sites. This is a strong point of this document and may be beneficial in evaluating the level of importance of a site in order to be protected, preserved and presented to the public. According to these guidelines, the shipwreck or the site needs to first be evaluated. This evaluation should yield criteria of 'Historic', 'technical', 'Social', 'Archaeological', 'Scientific', 'Interpretive', 'Rare' and 'Representative'. It is stated that "the resulting statement of significance should serve as a guide to the development of appropriate management strategies." (AIMA et al, 1994) The Guidelines have also been the basis for several later management strategies. The Guidelines for the Management of Australia's Shipwrecks and the Act 1976 provide specific processes for the governmental procedures, research, site and artifacts management, funding, training and volunteer programs and public presentation and access. All subsequent decisions are made based on the evaluation process that is a harmonized method and is applicable for all sites in Australia.

A.5. USA

In the USA, particular regulatory processes for different types of underwater cultural heritage have been applied. Types of heritage range from submerged prehistoric landscapes to vessels and wrecks from the modern era. The Abandoned Shipwreck Act (ASA) of 1987 was the first law to regulate underwater cultural heritage in the US. Since litigation over ownership and regulatory control of historic shipwrecks tended to be inconsistent, varying from court to court and state to state (Varmer & Blanco, 1999), the ASA was a good instrument of resolution, by giving title over three classes of abandoned shipwrecks to the US government: those embedded in state submerged lands; those embedded in coralline formations protected by a state on its

submerged lands; and the abandoned shipwreck sites located on state submerged lands and included—or determined eligible for inclusion—on National Register of Historic Places.

Following the National Marine Sanctuary Act (NMSA) 1972 which was enacted preliminary for the conservation of natural heritage by the federal agency National Oceanographic and Atmospheric Administration (NOAA), in 1992, the NMSA was amended to expressly include the protection and management of historic and cultural resources (Sanctuaries.noaa.gov, 2015; Varmer, 2014). The current NMSA recognizes that —certain areas of the marine environment possess conservation, recreational, ecological, historical, scientific, educational, cultural, archeological, or esthetic qualities which give them special national, and in some cases international significance (15 C.F.R. Ch. IX § 922.2). Hence the scope of underwater cultural heritage was extended beyond shipwreck sites. Marine Protection, Research, and Sanctuaries Act of 1972 authorizes the Secretary of Commerce to designate areas as marine sanctuaries for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values (Marine Protection, Research, and Sanctuaries Act of 1972, Section 302 (16 U.S.C. 1433)). The US protection of underwater cultural heritage is also sometimes combined with natural resources protection, where areas are designated as Marine Protected Areas (MPA)[6] and Particularly Sensitive Sea Area (PSSA) (Imo.org, 2015a). USA has also developed a series of recommendations for integrated management using a cultural landscape approach (Marine Protected Areas, 2011).

The previous examples showed various ways countries have developed national initiatives and management plans regarding underwater and coastal cultural heritage. Each country's approach has addressed different issues that are important in management of underwater cultural heritage. They mostly have recognized the importance of evaluation, defining and zoning; some acknowledge the importance of links between land and sea approaches. Some have seen management of underwater cultural heritage in relation to the coastal development and other resources management. Although there are similarities among these approaches, no globally acceptable approach has yet been presented.

B. Multilateral management experiences

In addition to national legislation and management plans, there are examples of bilateral or multilateral underwater archaeological projects and agreements, such as Cultural Heritage in the Baltic Sea States (Marius Mačiūnas, 2015) and MoSS project (Mossproject.com, 2015). Some examples are presented here to highlight different approaches in the management of underwater and coastal cultural heritage considering common goal among nations.

B.1. The Wadden Sea protection and management scheme'

'The Wadden Sea protection and management scheme' offers an integrated management strategy, taking into account the major dimensions of an integrated management plan that includes ecological and socio-economic aspects in addition to cultural aspects (Enemark, 2005; Reise et al, 2010). This project was initiated among Netherlands, Germany and Denmark which share the Wadden Sea. One of the achievements of the Wadden Sea Cooperation is a series of recommendations where the importance of the cultural landscapes (Enemark, 2005; Reineking et al, 2002) as complementary to the natural landscapes and it is important to improve the cooperation between the cultural and environmental heritage decision makers (Wolff et al, 2010). According to 'the Wadden Sea Quality Status Report - Synthesis Report 2010' one of the main recommendations from the 12th International Scientific Wadden Sea Symposium is to improve the cooperation between the cultural and environmental heritage decision makers (Wolff et al, 2010).

B.2. The Baltic Sea States

Baltic Sea States comprise of Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia and Sweden. According to the Monitoring Group on Cultural heritage in the Baltic Sea States, the Baltic Sea has always connected the people around it, thus coastal culture and maritime heritage reveal important information, essential to the understanding of a common identity and history. Threats to traditional coastal and maritime industries and the pressures of recreational activities and urban development have been

[6] In the US, Marine protected areas (MPAs) are areas of the oceans or Great Lakes that are protected for a conservation purpose. Managed by the federal government, the national system of MPAs brings work together at the regional and national levels to achieve common objectives for conserving the nation's important natural and cultural resources.

acknowledged as planning coastal and maritime heritage in crisis. Therefore, since 2000 working- group are trying to raise awareness of these issues and promote and initiate projects and actions for co-operation. The regional Working group on Underwater Cultural Heritage, composed of decision-makers, scientists and cultural managers, discusses current problems of protection, education, exploration and management of underwater heritage such as wrecks and sunken harbors and settlements from the Stone Age to modern times (Marius Mačiūnas, 2015a). The Monitoring Group consider cultural heritage as an active component in development, and promoting cultural heritage tourism, cultural education and cultural diversity is the mandate of this project. In addition, maritime and coastal heritage is considered a valorization of common connections, traditions and components of regional identity; therefore, the aim is to recognize and exploit this heritage in sustainable ways (Marius Mačiūnas, 2015b). The Monitoring Group is following these provisions by promoting cooperation among different states and through implementation of several projects. The Baltic Sea project clarifies how different types of heritage are considered in relation to each other, to other countries and to people. Also, this project acknowledges development and tries to integrate heritage with the aspect of development. These points, for coastal zones, are trying to be addressed by some strategies such as reuse of historic and abandoned harbors and buildings, developing ideas for the continuation or alternation of existing activities (The Baltic Sea, 2007), and highlighting the social values of maritime cultural heritage and linking people (The Baltic Sea, 2010).

B.3. Managing Cultural Heritage Underwater (MACHU)

Another project in Europe is Managing Cultural Heritage Underwater (MACHU). MACHU was a three-year project, started in 2006, aimed at supporting new and better ways for effective management of underwater cultural heritage and to make information about underwater cultural heritage from several European countries accessible to researchers, policymakers and the general public by creating an accessible data base of shipwrecks and submerged sites. MACHU can be considered a focused` heritage project. Through this project an extensive data-base of shipwrecks and several underwater archaeological sites from Portugal, UK, The Netherlands, Poland, Germany, Belgium and Poland, have been studied and the information was disseminated. The projects presented by MACHU provide data on shipwrecks and their natural environment, and other submerged archaeological sites. This data was presented in a Geographic Information System, which made it possible to manage, depict and combine relevant spatial information on the subject areas (MACHU, 2008). MACHU provides good methodology for collecting and managing data. However, the focus is mainly underwater heritage and seawards, and less coastal and landwards. Consulting this database could help developers, divers and other decision makers consider different aspects of underwater cultural heritage and their potentials, and minimize damage on the sites (MACHU, 2009). The MACHU project has explored and presented new methods of exploration and assessment, and different and new techniques, which contributors to MACHU applied during the years of the project (MACHU, 2010). However, the management protocols that this project introduces are mainly managing the collected data, recommending methods of investigation and promoting the concept of communication among different stakeholders for a better use and protection of UCH in the future. In this regard MACHU is a good example of an information processing and communication tool for wiser decision making.

C. Area designation approach

One approach to protection of natural and cultural resources underwater and in coastal areas is area designation. This management approach not only aims at protecting underwater and coastal cultural heritage but also attempts to promote public access. The similar terrestrial model of such initiatives had already been explored in archaeological parks, national preserves and national parks for natural and also cultural properties. The first introduction to the concept of Archaeological Parks for terrestrial sites in the literature can be traced back in

Fig. 1.1: Florida underwater archaeological trail.
©https://www.floridastateparks.org/photos/san-pedro

the 1990s literature (McManus, 1999; Ijzereef, 1999).[7] The concept of archaeological park provides potentials for the management of underwater properties in regard to the in-situ conservation option that has been recommended by UNESCO. This concept has been adopted in projects under different titles such as 'underwater trails' and 'underwater parks'.

C.1. Underwater Preserves and Parks

In 1987, Florida began to develop a statewide system of underwater parks featuring shipwrecks and other historic sites [Fig. 1.1]. These parks contain not only interesting archaeological features, but also an abundance of marine life that make the parks living museum. Each site is interpreted by an underwater plaque and a brochure and laminated underwater guides are available from local dive shops. Additionally, all of the Preserves are listed on the National Register of Historic Places and are included on Florida's Maritime Heritage Trail (Flheritage.com, 2015). Florida's Underwater Archaeological Preserves are the result of partnerships between government and the public, to manage and protect submerged cultural resources in a cooperative spirit. The process of designation after nomination of a site involves research and evaluation. The evaluation criteria are based on historical value, archaeological integrity, biological diversity, public accessibility, diving safety, and recreational potential. If the site meets these criteria, data from its evaluation are presented in a formal public proposal for the creation of a new Preserve. Public input generated by the proposal helps to determine appropriate methods of site enhancement, interpretation, and protection based on local needs and desires. Interested organizations and individuals then work together with state and local governments to prepare the site and to maintain it as an historical, educational, and recreational attraction (Scott-Ireton, 2006). The strategy of involving the public in decision making is a way to connect people with their heritage assets and creates more potential for site protection and preservation.

There are other underwater preserves and parks around the world such as Caesarea (Israel) and Baia (Italy). Although these are single projects focusing on one specific area or a type of site (e.g. shipwrecks in case of Florida), their approaches to preservation and public access have engaged several aspects of evaluation not only from the point of view of heritage preservation, but also social, economic and natural criteria to guarantee the site's sustainability in the long.

C.2. National Parks and Marine Protected Areas

Another example of managing a reserve of natural, semi-natural, or developed land is the national park. National parks started first with the actual practical project at Yellowstone in 1872 in the US which spread to other areas in the world. Later on, IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognized by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation. Within IUCN system, the categories provide international standards for defining protected areas, such as national parks[8], and encourage conservation planning according to their management aims. National parks are designated under the category II of International Union for Conservation of Nature (IUCN) Protected Areas (Iucn.org, 2015). Now, the Marine Protected Area (MPA) is also under this category. With an increase of attention toward underwater and coastal cultural heritage, in many preserves and national parks the element of heritage assets and cultural resources has been added (Nps.gov, 2015c). According to the US management Policy: "National historic sites, national historical parks, and other parks that are significant primarily for their cultural resources are entered automatically in the National Register upon establishment" (Nps.gov, 2015a). The National Park Service conducts surveys to identify and evaluate the cultural resources of each park, assessing resources within their larger cultural, chronological, and geographic contexts. Cultural resources are evaluated for significance, using

[7] Examples of the first archaeological parks in Europe can be seen in Archaeological Theme Park of ARCHEON in the Netherlands which is an example of reconstruction of a site based on archaeological data in combination with in-situ preservation of the archaeological evidences as open air-museum (Ijzereef, 1999). Another early example is Ename in Belgium, where the foundations of the abbey are part of an archaeological park. The park was designated as archaeological park in 1998 (Oudenaarde.be, 2015).

[8] Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

the National Register Criteria for Evaluation (GPO, 36 CFR 60.4)[9], and those, meeting the criteria, will be nominated for listing (NPS, 2006b). In the US, this system is the same for terrestrial and maritime heritage.

Another example is the National Parks of Canada (Nps.gov, 2015b). According to Parks Canada's Cultural Resource Management Policy, archaeological resources are cultural resources when they are determined to have historic value and are part of national heritage. The management of archaeological resources under Parks Canada stewardship is based on the Cultural Resource Management Policy principles of value, public benefit, understanding, respect and integrity as applied on a case-by-case basis (CRM Policy, 1994, 3.3.1). For effective management of cultural resources, these principles should be considered individually and together (Nps.gov, 2015b; Pc.gc.ca, 2012; Parks Canada, 2005). According to the Parks Canada policy, terrestrial and underwater cultural heritage get the same attention, each case treated individually based on its values and significances, and the heritage also seen as a whole. This approach, apart from defining the criteria for evaluation, has a holistic attitude towards all kinds of heritage in any location.

C.3. 'A Particularly Sensitive Sea Area' (PSSA)

Another example of designating areas to manage underwater, marine, and maritime heritage resources is 'A Particularly Sensitive Sea Area' (PSSA) (Imo.org, 2015a). PSSA has been defined by the International Maritime Organization (IMO) in Nov. 1991, originally in order to protect underwater nature and environments, and in its revised version there is some attention given to other features, such as cultural and social (IMO, 2005). "A Particularly Sensitive Area is an area that needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities. The criteria for the identification of particularly sensitive sea areas and the criteria for the designation of special areas are not mutually exclusive. In many cases a Particularly Sensitive Sea Area may be identified within a Special Area and vice versa" (Imo.org, 2015b). The Revised guidelines for the identification and designation of PSSAs allow areas to be designated if they fulfill a number of criteria, including: ecological criteria, such as unique or rare ecosystem, diversity of the ecosystem or vulnerability to degradation by natural events or human activities; and social, cultural and economic criteria, such as significance of the area for recreation or tourism; and scientific and educational criteria, such as biological research or historical value (Imo.org, 2015c). Although PSSA is a comprehensive management tool at the international level, there are lessons to be learned from these guidelines at national and local levels. These guidelines highlight the importance of a multidisciplinary approach for management through the consideration of different aspects in different zones. However, this method has been developed for sea and marine environment and has not addressed the extention of resources to shorelines and on land.

Designated areas, in general, are protected areas, which sometimes exclude all human activities; this can lead to the relocation of American aboriginals from their lands, also limitation of the touristy and scientific activities. It is debated how the customary rights, livelihood, resource use practices and social cohesion of local people are affected when protected area schemes are implemented, and how parks and reserves can benefit local communities, particularly those most directly affected by the establishment of strictly protected areas (Unrisd.org, 2015).

The studies above show that although the regulation can be effective for protection of cultural heritage, it might not all include the full management guidelines. Regulation can be the basis for defining and evaluating underwater cultural heritage and future planning. On the other hand, learning from projects and initiatives in different countries showed the premises for defining protected areas such as underwater preserve (park) and national park. These projects highlight criteria which can be considered the management of underwater sites in larger scales. Many of these initiatives have been considered as management strategies for underwater cultural heritage. Some focus only on the heritage itself, scientific, archaeological, and historical values, with the purpose of conservation and protection of cultural sites. Other initiatives have broader approaches; they

[9] National Register criteria for evaluation: The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history.

see the heritage in a wider perspective in regards to development and economic benefits, social links, and policy making.

1.1.3. Coastal Resources Management Background

Although there have been several initiatives in different countries to incorporate coastal cultural heritage into holistic management plans (UK, Ireland[10], Italy), there is still much work to be done in terms of defining and characterizing the coastal cultural heritage (JNAPC, 2006). Nevertheless, there are regulations at different local, national and international levels to protect and preserve coastal cultural heritage (Santoro et al, 2014). However, a relatively lower level of importance regarding benefits of coastal cultural heritage preservation has been noticed (EUROPA, 2015). In general, there is a grave risk that our natural and cultural coastal heritage will be irreparably damaged by lack of proper consideration in holistic management plans, and, as a result, will close several future development opportunities (LGA, 2002: 14).

Following the attempt to learn from natural resources management, it is noticed that in the past few decades, the concepts of "ecosystem services" and integrative approaches have shifted rapidly from an academic subject to the mainstream of conservation and environmental policy (Redford & Adams, 2009). Therefore this research explores these methodologies and the possibility of using them as model, in general terms, applicable for cultural heritage.

The following sections will briefly present some concepts of resources management in coastal areas started with Ecosystem Based Management concept and its foundation theory of integrative complexity. Since Integrated Coastal Zone Management and Marine Spatial Planning are the most acceptable coastal resources management strategies, the following will also introduce an overview on integrated coastal zone management. Following an introduction to ICZM and MSP, some examples of ICZM best practices will be presented

A. Ecosystem based management and integrative complexity concept

The concept of Ecosystem Based Management has been the original approach for managing the environment and its natural resources. Ecosystem-based management is an environmental management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation (Rosenberg & McLeod, 2005; Christensen et al, 1996). An Ecosystem Approach is "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way". In this framework, ecosystem services comprise provisioning services and facilities (e.g., food, fresh water), regulating services (e.g., flood protection), cultural services (e.g., tourism, cultural heritage), and supporting services (e.g., nutrient cycles). By linking ecosystem functions with a quality of human livelihood, the concept aims to justify nature conservation and environmentally sensitive management (Fisher et al, 2009; Ghazoul, 2007; Boyd & Banzhaf, 2006).

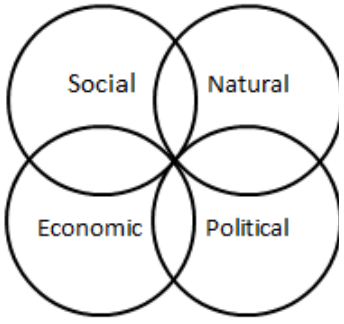


Fig. 1.2: Integrative Complexity model and the four dimension involved in coastal resources management.

The foundation theory for the ecosystem based management approach has been the integrative complexity theory. Integrative complexity concept is recognized as essential to tackle complex problems more effectively (Bammer et al, 2005). "Integrative complexity is a measure of the intellectual style used by individuals or groups in processing information problem solving, and decision making. Complexity looks at the structure of one's thoughts, while ignoring the contents. Complexity has two components, differentiation and

[10] The Marine Act (Northern Ireland) 2013 was given Royal Assent on 17th September 2013. It enables the Department to designate areas as Marine Conservation Zones (MCZs). These MCZs, which are a type of MPA, may be designated for various purposes including the conservation of marine species and habitats, while taking fully into account any economic, cultural or social consequences of doing so. MCZs will exist alongside European Marine Sites to form an ecologically coherent network of MPAs. Strangford Lough was automatically designated as Northern Ireland's first Marine Conservation Zones (MCZs) under the introduction of the Marine Act (Northern Ireland) 2013 (Doeni.gov.uk, 2015).

integration. Differentiation refers to the perception of different dimensions when considering an issue. Integration refers to the recognition of cognitive connections among differentiated dimensions or perspectives." (Www2.psych.ubc.ca, 2015; Hawkins, 2011; Driver & Streufert, 1969). Specifically, integrative complexity is concerned with a person's capacity and willingness to acknowledge the legitimacy of competing perspectives on the same issue (differentiation) and his ability to forge conceptual links among these perspectives (integration) (Suedfeld et al., 1992).

Based on this theory and the ecosystem based management approach, the first model of 'integrative complexity' has emerged. The integrative complexity model was introduced by Kennedy & Thomas in 1995 for managing natural resources considering social values [Fig. 1.2]. This model considers four overlapping dimensions of: natural, social, economic and political. The message was that the natural resources have to be evaluated through, and seen in relation to all of these dimensions (Kennedy & Thomas, 1995). These dimensions are the control groups that influence decision making at different levels. Considering the multi-faceted issues in coastal areas and their relations to each other, in order to address the complex situation of coastal cultural heritage, the present study adopted the concept of integrative complexity for evaluation of cultural resources. The four dimensions of natural, social, economic and political will be discussed in the following sections.

B. Introduction to Integrated Coastal Zone Management

The 1960s were a decade of increasing environmental consciousness. Protection and management of the coastal zone resources began receiving federal attention in the 1960s in the US. The initial federal activity was the Marine Resources and Engineering Development Act of 1966 that created the Stratton Commission (33 U.S.C. 1101-08 (1970) and U.S. Code Cong. & Ad. News 4776- 4781 (1972)) (US Commission, 1969; Nixon, 1994). The Coastal Zone Management Act of 1972 in the US was a congressional recognition that the nation's coastline is a valuable resource (16 U.S.C.A. § 1451-64 (Supp. 1974)) (Rona, 1988; Brewer, 1974). Coastal Zone Management Act (CZMA) introduces a systematic approach to land use control in the vital areas where land meets sea (Coquillette, 2013). In this Act, coastal zone has been defined as coastal waters, including submerged lands and islands, and adjacent shore-lands "strongly influenced by each other and in proximity to the shoreline…" (16 U.S.C.A. § 1453(a) (Supp. 1974), Group, N., 2015). It is implied the extent of this area depends on the natural features that are common to or link the two areas of water and land. This way of defining the coastal area, although seemingly arbitrary, provides opportunity to include the features and aspects of social-natural values in the management of coastal zones in regard to the natural resources (Knecht, 1979). This method inspired ideas for defining the coastal cultural middle ground that will be developed in Chapter 2 and 3.

Historic and cultural resources have been a part of the coastal zone management plan and it has been expected to have proper plans for their protection and use. However, presently (in the case of US) there has been a lot of damage to cultural and historic assets along coastlines. A major issue at the moment in the US is the loss of 'the traditional working waterfront' where human activities such as fishing and sailing have had a long historical background and the traditions and physical remains of these activities, which are considered cultural assets and cultural heritage (Reed et al, 2012), are in danger of vanishing (Jacobson, 2012; Wu & Petriello, 2011; Gordon, 1996). In the first five years of evaluation of the CZMA, it has been claimed that a potential exists to give the general public a sense of benefit from coastal management efforts (Knecht, 1979); however, the main focus was given to public access to beaches and the protection of historical and cultural values were less attended. There have been other initiatives along with the CZMA to protect and preserve cultural heritage in coastal areas under historic preservation laws (Wvculture.org, 2015), but until recently the integration of different initiatives and laws has not been seen as crucial.

Although, the idea of an integrated approach for coastal resources management started in 1970s, it was not until 1992 that the concept of Integrated Coastal Zone Management (ICZM) was born during the UN Earth Summit of Rio de Janeiro. The specifics regarding ICZM are set out in the proceedings of the summit within Agenda 21[11], Chapter 17. The European Commission defines ICZM as:

[11] Agenda 21 is a voluntary action plan developed by the United Nations and national governments at the "Earth Summit" in Rio de Janeiro, Brazil, in 1992. At the Summit, governmental leaders around the world agreed on the need to become more sustainable—to meet today's needs without sacrificing our future. Agenda 21 presents a vision for how all levels of

> "a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation… ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space" (Ec.europa.eu, 2015d).

In brief, integrated coastal management is a tool for the integrated management of all policy processes affecting the coastal zone, addressing land-sea interactions of coastal activities in a coordinated way with a view to ensuring the sustainable development of coastal and marine areas. It ensures that management or development decisions are made coherently across sectors.

In 1996, the Guidelines for integrated coastal zone management developed principles for ICZM. On several occasions in this document the importance of coastal traditions and culture, and cultural context was highlighted (Post & Lundin, 1996). However, ICZM focus more on the management of natural resources and environment, and not much on cultural features.

In 1999, the European Code of Conduct for Coastal Zones was established with the objective of "helping develop integrated management of coastal zones and providing States at pan-European level with practical instruments allowing decision-makers at international, national, regional and local level to respect conservation imperatives better, both in their daily work and in any plans to draft, amend or revise legislation or international instruments" (CoE, 1999). In 2002, the European Union Commission recommended to employ ICZM for management of the resources in the coastlines, and subsequently chose to adopt a European Strategy for ICZM ((COM/2000/547) (EC, 2000)). In March 2013 a proposal was launched to have a common framework for ICZM (or as it called more recently ICM) and MSP (COM(2013) 133 final), however in the final text (Eur-lex.europa.eu, 2015) there is no further follow up on ICM.

Overall, the main concerns of ICZM have been environmental biodiversity, and not cultural heritage. This trend can still been seen in most of the coastal management plans and even in new stablished holistic resources management policies, and also have been noticed in the Third ICZM Conference which was held in Antalya, Turkey, in October 2014.

C. Introduction of Marine Spatial Planning to ICZM

In brief, the UN Earth Summit of Rio de Janeiro in 1992 was a starting point for EU policy to focus on integrated coastal zone management. Since then the EU has adopted several resolutions, operated some programs and formulated recommendations on integrated coastal zone management. The European Union Recommendation on integrated coastal zone management (ICZM) (2002/413/EC) identifies Marine Spatial Planning (MSP) as a key ingredient in achieving integrated management of the coastal area and its resources (Shipman and Stojanovicb, 2007). Maritime Spatial Planning concerns planning when and where human activities take place at sea – to ensure these are as efficient and sustainable as possible (Ec.europa.eu, 2015a). MSP is commonly understood as a public process for analyzing and planning the spatial and temporal distribution of human activities in sea areas to achieve economic, environmental and social objectives. The ultimate aim of maritime spatial planning is to draw up plans to identify the utilization of maritime space for different sea uses (COM(2013)).

The conclusions of a review and evaluation of the integrated coastal zone management in Europe in 2007 recognized that the principles of ICZM need to be made more operational and better communicated (COM(2007)308). Following this need, MSP has been considered as a process that can bring the abstract and conceptual, principles into reality. MSP addresses the heterogeneity of marine ecosystem in a practical manner by taking into account that some things only occur in certain places (Douvere et al, 2010). It, also, focuses on influencing the behavior of humans and their activities over time, and highlights the conflicts and

---

government—especially in the developing world—can take voluntary action to combat poverty and pollution, conserve natural resources and develop in a sustainable manner.

compatibilities among human uses; therefore, MSP guides single-sector management toward integrative decision-making (Douvere, 2008). Spatial planning in the marine environment is a means to create and establish a more systematic organization of the use of marine space and interactions between its uses; to balance demands for development with the need to protect the environment; and to achieve social and economic objectives in an open and planned way (DEFRA, 2007). In a broader sense, MSP analyzes and allocates parts of three-dimensional marine space to specific uses, and to achieve ecological, economic, and social objectives that are usually specified through the policy making and political process (Ehler & Douvere, 2007).

In Europe, following the Water Framework Directive (2000) and Marine Strategy Framework Directive (2008), to further promote sustainable development of coastal zones, in March 2013, the European Commission proposed legislation to create a common framework for maritime spatial planning and integrated coastal management. MSP was developed to avoid potential conflict and create synergies among different activities since competition for maritime space – such as renewable energy equipment, aquaculture and other growth areas – has highlighted the need for efficient management (Ec.europa.eu, 2015a). European Commission adopted a draft proposal for a Directive on the 12th of March 2013, establishing a framework for maritime spatial planning and integrated coastal management (COM(2013) 133 final 2013/0074 (COD)). According to this directive, integrative applications of maritime spatial planning will improve the sea-land interface planning and management, such as connection of offshore wind energy installation to the electricity network on land or effects of infrastructure works to protect coastlines against erosion or flooding on activities in coastal waters such as aquaculture or protection of marine ecosystems (Ec.europa.eu, 2015b and c). In July 2014, the European Parliament and the Council adopted the final version of legislation to create a common framework for maritime spatial planning in Europe. According to this directive, while each EU country will be free to plan its own maritime activities, local, regional and national planning in shared seas would be made more compatible through a set of minimum common requirements (Ec.europa.eu, 2015d). MSP has the potential to include cultural heritage protection in its framework more strongly. Although, possible activities and uses and interests may include underwater cultural heritage, the potentials of benefiting from culture as a factor for sustainable development purposes have been barely noticed.

Parallel to EU initiatives on MSP, internationally, UNESCO recognized the market value and non-market value of marine resources as “common property resources” which needs some public process in order to decide what mix of outputs from the marine area will be produced over time and space. Calling this process marine spatial planning, the first UNESCO publication: “Visions for a Sea Change. Report of the First International Workshop on Marine Spatial Planning” (Ehler & Douvere, 2007) does not mention underwater cultural heritage either. However, the second UNESCO publication: “Marine Spatial Planning. A Step by Step Approach towards Ecosystem-based Management” recognizes cultural heritage as a renewable service in the context of ecosystem goods and services, the identification and protection of cultural heritage is seen as a social benefit derived from MSP (Ehler & Douvere, 2009). Ecosystem services look into social benefits of all resources: natural and cultural. Natural resources have social benefits from ecological points of view, so as heritage from cultural points of view.

Most policy documents and scientific literature have so far overlooked the significance of coastal cultural heritage as a valuable resource to be taken into account in MSP. Although, some have acknowledged the value of coastal cultural heritage, no practical framework has been developed explore the cultural values in the context of new planning and management. Contemplating the issue, one of the reasons for discounting heritage can be the lack of recognition of the values of heritage in relation to other dimensions of nature/environment, economics and society; therefore, no adequate policy has been adopted for cultural heritage in coastal areas and cultural heritage value is unexplored in marine spatial planning. Hence, the importance of an evaluation methodology that can establish the values of coastal cultural heritage not only for the sake of cultural heritage preservation, but also for inclusion in holistic management plans once again is highlighted. In addition, one requirement of MSP is zoning and defining the resources. In the light of ICZM framework to link land and sea, following the requirement of MSP, and addressing the issues of separation of land and sea management strategies, (an) area(s) that encompasses coastal cultural resources should be defined.

To acknowledge good examples and practices, some ecosystem services paid more attention to cultural heritage in their management plans. Moreover, considering the concepts of integrative complexity, ecosystem

services and ecological approaches, during the last decade there has been more attention given to the value of cultural assets and regulating cultural heritage along coastlines. Some examples will be discussed in the following sections.

D. Best practices of integrated approaches

The need to deal with the consequences of urban development, human interference, and climate change, together with the need to optimize economic development, have given strong impetus to develop coastal management programs in many countries (Cicin-Sain et al, 2002; Sorensen, 1993). Some good examples of integrated approach of ICZM can be seen in several countries such as the United Kingdom, New Zealand and Australia.

D.1. Integrated approach in UK

In the framework of the EU and its recommendation for ICZM, the UK adopted the Ecosystem Approach. The Convention on Biological Diversity (CBD) describes an Ecosystem Approach as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way". The Approach adopted by the CBD looks beyond 'natural' ecosystems to include social, cultural and economic factors which are wholly interdependent with biodiversity and ecosystem goods and services. This approach is embedded firmly in UK marine policy: the Marine Strategy Regulations (2010) state that the Strategy "must apply an ecosystem-based approach to the management of human activities within the marine strategy area" which it proceeds to define as one "which ensures that the collective pressure of human activities is kept within the levels compatible with the achievement of good environmental status and does not compromise the capacity of marine ecosystems to respond to human-induced changes" (Cscope.eu, 2015a). Landscapes within the Marine Plan area are a result of interactions between the local topography and geology, farming and forestry practices, plant and animal life, building styles and settlement form, historical and cultural associations. However, until 2004 planning in UK was mostly land-based and lacked integration of the marine environment. However, later UK recognized the importance of marine environment, and now ICZM programs are implemented by coastal partnerships at the sub national level in an ad hoc manner, despite the lack of national coastal policy. Some projects, such as Dorset, have managed to plan a good management strategy, including many aspects of coastal resources and issues (Cummins et al, 2004a & b). Although, the United Kingdom was one of the first countries to propose spatial planning in the marine environment in 2002, it has only begun to implement it in 2014 (Unesco-ioc-marinesp.be, 2015b). Marine plans guide those who use and regulate the marine area to encourage sustainable development while considering the environment, economy and society (Gov.uk, 2014).

D.2. Integrated approach in Australia

Australia benefits from the National Oceans Policy (National Ocean Policy of Australia, 1998) which sets in place the framework for integrated and ecosystem based planning for all Australia's marine jurisdictions. Many important initiatives have developed in Australia in the last decade to address integrated management of marine and coastal resources and to ensure the protection and sustainability of the environment. The establishment of Marine Protected Areas to conserve marine biodiversity has been an important measure towards sustainable management. Australians have been proactive in the adoption of an ecosystem approach to management, including consideration of a broad range of economic, social and cultural aspirations (Cummins et al, 2010; Commonwealth of Australia, 2006). The Great Barrier Reef World Heritage Area is one of the best and most well-known examples of the successful implementation of ICZM anywhere in the world. The combination of imposing ICZM and World Heritage regulation has enhanced the management of this site.

D.3. Integrated approach in New Zealand

In New Zealand the coastal marine area is defined as having a landward boundary to Mean High Water Spring tide and a seaward boundary to the outer limits of the territorial sea. Management of this area is guided by the regulations laid down in the Resource Management Act (RMA), 1991. The Act promotes the sustainable management of natural and physical resources and replaces a variety of previous acts and regulations (Cummins et al, 2010). It provides a clear and specific framework for the use, development, and protection of natural and physical resources, and promotes an ecosystem approach to coastal management.

As a result of analyzing above examples, both Australia and New Zealand have instigated policies and legislation to deal with ICZM, as well as adopted formal management structures to facilitate its

implementation. The UK coastline benefits from the implementation of ICZM on a voluntary, local program basis. The UK has also made it clear that, instead of committing to reshaping existing structure or implementing specific legislation for ICZM, it will develop its vision in line with key recommendations from Europe, which is a strategy in its own right. Australia, New Zealand and the UK have officially recognized the need to adopt a holistic approach to ICZM by following an eco-system based approach.

In all cases, a combination of national policy and legislation, in addition to adapting an ecosystem approach, with applying plans and tools such as Marine Protected Areas and Marine Spatial Planning, has shown to be effective in Integrated Coastal Zone Management. Although, it was highlighted that the ecosystem approach does encompass all resources including the social, cultural and economic factors, there have been less focus on cultural resources in ICZM. In the following section, examples of cultural heritage as an integrative factor in ICZM will be discussed.

E. Examples of applying ICZM and integrative concept in coastal cultural heritage management

As previously mentioned, some projects have tried to take a wider approach, utilizing a larger perspective to integrate cultural heritage into their holistic management plans. They also realized that it is necessary to include more dimensions for consideration and factors for evaluation. In general, two parallel processes have marked coastal realities in many parts of the world. The first consists of the design and the dissemination of integrated coastal management programs and actions consistent with prescriptions from international and national guidelines such as Agenda 21 (UNEP, 1995). The other consists of increasing the importance that coastal cultural heritage has acquired either in the social perception of coastal reality, and in the prospects of driving coastal systems towards sustainable development (Callegari & Vallega, 2002). It is crucial to note that failure to treat cultural heritage as a potential resource risks neglecting sustainable development opportunities based on the identification of values; thus has resulted in abandoned projects in the past (Pinder, 2003; Pinder & Vallega, 2003).

In Europe, some countries have shown greater concern for cultural heritage along coastlines and have tried to integrate cultural heritage in coastal management plans through developing guidelines and codes of conduct for coastal cultural heritage (e.g. in Italy) (Vallega, 2003; EU Committee, 1999). Some of these countries' processes and systems will be discussed here. The point of discussion is not only that attention has been given to cultural heritage along coastline in terms of its protection and conservation, but also how it can be integrate into holistic planning.

E.1. Portugal

Portugal has acknowledged the pressure induced by urban development and economic activities on coastal areas and their negative impact on not only the natural environment, but also cultural heritage sites, and urban seafronts. In order to improve policies and coastal planning and management, Portugal has developed a set of coastal zone management plans. The analysis of Portuguese coastal zone management plans is preceded by a brief description of the Portuguese planning system and main policy instruments at different levels, as well as of the current state of implementation of the 'Natura 2000' network in Portugal.[12] However 'Natura 2000' focuses on habitat and biodiversity (Ec.europa.eu, 2015d). In addition to Regional Plans and Municipal Plans, Portugal developed its Coastal Zone Management Plans including regulatory planning tools, plans for uses and specific activities to be developed along the coast; classification plans for beaches; coordination of coastal development and resource conservation, ensuring public access to the coast; regulation for nature conservation and shore protection (Taveira-Pinto, 2004). The plans, which have been developed for nine areas covering the coastal strip, in general provide a comprehensive analysis of the current and future trends of coastal erosion and flooding, including the identification of buffer zones and areas at risk (UNESCO, 2006/2007), as well as guidelines and priorities to beach management and use, and transformation of soil in the coastal zone. The Strategic Basis for the spatial planning and integrated management of the Portuguese coastal zones, continent and islands, in both terrestrial and marine components, is founded on eight 'Principal Objectives', one of which has focus on cultural heritage: 'Conservation of Resources, Natural and Landscape Heritage' underlines the integration of cultural heritage in the Portugal National Network for

[12] Natura 2000 is the centerpiece of EU nature & biodiversity policy. It is an EU-wide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats.

Conservation of Nature, retaining the specific characteristics of the interface of both the marine and terrestrial components (Veloso-Gomes et al, 2008; Veloso-Gomes & Taveira-Pinto, 2003). However, in general, less attention has been given to the cultural heritage management in these nine areas, until about 2004, that the value of heritage was more recognized for tourism promotion through not only sports-tourism and eco-tourism, but also cultural-tourism.

E.2. Italy

In Italy, the importance of multidisciplinary approach as a foundation for Integrated Coastal Zone Management has been acknowledged and cultural heritage has been suggested to be considered as another resource in the coastlines. It has been acknowledged that a multidisciplinary evaluation approach of this resource is more necessary than ever for the development of the tentative Code of Conduct for Coastal Cultural Heritage in Italy (Vallega, 2003). The Italian document demonstrates the concern for cultural heritage along coastlines, and gives the same value to cultural assets as natural and environmental assets. An example of initiatives in Italy is guidelines for management of coastal cultural heritage. These guidelines deal with conceptual and methodological frameworks, and provide operational approaches for decision makers on local level for the coastal resources (Callegari & Vallega, 2002). The goal of this management plan is to offer a methodology to evaluate coastal cultural heritage in the framework of an integrated management policy, considering the global change, economic systems and geopolitical changes. The idea was applied to coastal areas in Italy and several islands. This strategy helps focus shifts to the cultural heritage in the coastal areas—on-land and underwater—by including the historical assets in development plans (Vallega, 2001). Adalberto Vallega analyzes the state of management of cultural heritage in the coastline. The first step for Vallega is to delineate the area of concern. He distinguishes several criteria that have been used in management plans for delineation of the coastal areas and their associated values. He enumerates the criteria that have been applied: Physical criteria have been inclined to design the geographical coverage as extending (i) landwards up to the watershed, so making it possible to integrate management of river basin and coastal environments, and (ii) seawards up to the outer edge of the continental shelf, or even up to the outer edge of the continental margin. This criterion is easily determinable according to the geomorphogical features. There are also arbitrary criteria that determine the distance lines from coastlines or baselines. Administrative and jurisdictional criteria have been a very different trend factor for planners to delineate the boundaries. The boundaries of municipalities, or other jurisdictional areas, have been used to define the landward limits of geographical coverage while, seawards, the outer boundaries have been set by reference to internationally recognized jurisdictional zones (such as UNCLOS). These are fixed measurements from base-points. They are considered adequate for the design and operation of management programs and plans. However the use of such criteria has decreased recently in favor of others, since these measurements are not flexible and they might cause the exclusion of some assets, which are out of the perimeters of the arranged lines. Considering existing coastal resource uses and the location of structures and facilities, economic criteria can lead to a definition of geographical coverage as embracing, seawards, any offshore activity linked with the local economic systems, and landwards, all coastal settlements, industry and agriculture related to the coastal activities. The application of this criterion is, however, rather discretional and difficult to operationalize, particularly compared with the above-mentioned administrative and jurisdictional criteria. Therefore, a different approach based on ecological criteria was developed. Ecological criteria are sensitive to the preservation of the ecological conditions and the effectiveness of coastal management strategies (Vallega, 2003). Delineation the area of management is the first step, and determines subsequent steps and outcomes. In this very first step, decision makers select which features and/or the extents of the area under management. A clear evaluation of the assets and their linkage with each other are crucial points for determining the area and preparation of a good management plan (Pinder & Vallega, 2003). Vallega's explanation of the criteria is a basis to develop criteria for delineation an area of cultural value in coastal zones. This concept has provided some ideas for development of coastal cultural middle ground in the present research.

Following defining the area, defining the role of assets is important. During past decades, there has been discussion on including coastal cultural heritage as resources in coastal management plans. However, the conflict among different disciplines for managing different natural resources, tourism, development and cultural remains has not yet been resolved. According to Pinder & Vallega: "If an important goal of the new coastal planning paradigm is to develop coastal communities that are both economically and ecologically sustainable, for the benefit of themselves and their descendants, the legacy of the past should be viewed as a resource" (Pinder & Vallega, 2003). Although cultural heritage has not been absent from the management discussion, especially in the last quarter of the 20th century, the utilization of cultural heritage as a resource

has been not well planned. This has led to the loss of many potential heritage resources, where economic opportunities have been abolished and local culture and identity impoverished (Pinder & Vallega, 2003). Studies in other parts of the world (e.g. North Carolina, USA) showed that neglecting in considering factors related to cultural heritage, either tangible, or intangible, results in loss of place attachment and sense of identity in the communities, and therefore, the individuals in a community would leave or change professions which result in alternation of social setting and often gentrification (Jacobson, 2012; Khakzad, 2012; Bone, 1997). With these changes in the social setting, not only the intangible aspects of heritage such as local traditions are fading away, but also in passing time the physical assets of the historic building, activities and cultural landscapes will vanish.

Several examples in the world provide a good concept of integrated management and emphasizes on the importance of cultural heritage. Based on the integrative complexity theory, in the following the building stones for an integrative approach will be discussed.

1.2. Coastal Cultural heritage management in the light of multiple dimensions

In view of multi-faceted circumstance of coastal areas, a strategy that considers different aspects of resources management, in relation to people and nature preservation, is needed to be applied. One of the globally accepted approaches to address multi-faceted circumstances is through integrative complexity theory which has been applied to address the issues of resources management in instances that multiple aspects and control groups are engaged. Integrative Complexity theory relies on evaluating the number of aspects to a problem that people recognize and consider as control groups. This theory has been applied in various disciplines (Teltock, 1989).

According to the Integrative Complexity model these dimensions, or control groups, are described as, (1) the *natural/environmental dimension* of biosphere elements, such as human and wildlife populations, natural resources, or ecosystems; (2) the *social dimension* of human attitudes, va lues, behavior, institutions, and technology; (3) the *economic dimension* that focuses on human attitudes, institutions, and behavior related to the allocation of land, labor, and capital, and benefit; and (4) the *political dimension* of policy, laws, regulations, courts, and public agencies. In this model the four systems' interrelationship and interdependency is crucial. These dimensions stem from several disciplines, and sometime are intertwined and overlapped with each other. Addressing them properly for management needs to engage relevant specialists of each field[13]. Through this research, integrative complexity model has been adopted for coastal cultural heritage [Fig. 1.3] and the aim is to highlight their role in assessment of cultural heritage for management of coastal areas. Based on the aforementioned analysis, if an integrative evaluation of the state of cultural heritage within these dimensions in comparison with other resources is not done, in competition between heritage preservation and development, cultural heritage will not get proper attention in holistic coastal management plans. This will result in loss of cultural assets. In the following, these dimensions in respect to costal cultural heritage will be discussed. The purpose should be to identify the factors that need to come into account while managing coastal cultural heritage in respect to each of these dimensions.

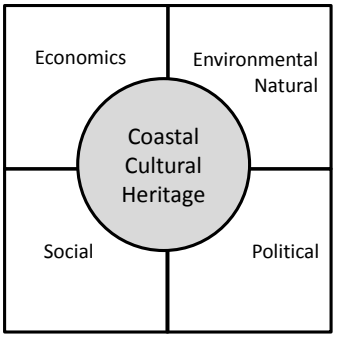


Fig. 1.3: Integrative complexity model adopted, according to Kennedy and Thomas in 1995, here adjusted for coastal cultural heritage.

1.2.1. Natural dimension

Within natural dimension, geomorphological and natural processes that had/have an impact on archaeological and cultural heritage remains can be understood. These factors impact present coastal cultural heritage and archaeological sites directly. It is important to identify the criteria that should be considered to evaluate the state and significance of the cultural sites regarding the natural factors. In addition, due to the

[13] What this part of study offers, by no means, is a pure study on each of these dimensions and fields of expertise, since the author is not a scientist in those fields; it is a view point from a cultural heritage specialist towards these aspects and issues concerning cultural heritage.

dynamic nature of the coastlines, studying natural dimension—coastal processes, geomorphology and coastal ecology—assists in understanding of many aspects of heritage in past, present and future which is essential in coastal cultural heritage management. Not all natural factors can be addressed thoroughly through the present research, but global experiences and studies in the world have been reviewed to highlight the complications that cultural heritage experts are facing in treating these sites. In the following sub-sections, first, natural factors impacting coastal cultural heritage will be reviewed, and second, an overview of worldwide approaches and recommendations will be presented.

The aim of this study is not only to investigate the impact of natural factors on preservation of the sites, but also with respect to the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO, 1972) and World Heritage Marine Program, to highlight the necessity to develop criteria to include natural factors in evaluating coastal cultural areas where the dynamic of the environment has a great effect on the cultural and archaeological remains. The subject of nature and natural context also will add to the discussion of the linkage among cultural items, while defining the coastal cultural heritage area.

Fig. 1.4: The hulk of the sailing barge Tuesday of Rochester on the Alde Estuary, Suffolk, one of very many in English estuaries. Image © Peter Murphy

A. Natural factors impacting coastal cultural heritage

Nature, as a control dimension, impacts the built environment. Within the natural dimension as a control group of ICZM, there are indicators for assessing natural factors and balancing among natural and cultural resources. The followings are the most recognized natural factors impacting coastal cultural heritage.

A.1. Impact of geomorphology and coastal processes

Archaeological sites, whether on the surface, in the tidal zones, buried, or underwater, are located within a complex matrix of sediments, soils, and landforms. Over time, this matrix is not static. As a result, various processes not only alter the preservation of the archaeological record, but also have environmental influences that can cause changes in human behavior. Geological and geographical classification of sites, their locations and environment can help to understand their physiographic context and surrounding assemblage of natural landform elements (Bailey and Flemming, 2008). This allows an assessment of past natural processes and their effect upon the landscape, as well as the potential for contemporary and future processes that will result in geomorphological change (Howard, 2012). Understanding these processes assist to prepare mitigation plans, not only for the preservation of cultural heritage, but also for assessing the wider impact of changes in the present coastal settlements.

Fig. 1.5: Kekova a partially submerged historic city in Turkey. ©http://www.markamiz.com/ucagiz-kekova-da-satilik-arsa/

Fig. 1.6: Venice in flood season ©http://www.nature.com/scitable/knowledge/library/model ing-sea-level-rise-25857988

Figures 1.4 and 1.5 are examples of cultural heritage of the coastline under the impact of natural and geological processes. In coastal areas there are different types of cultural heritage sites threatened by geological and natural processes. One group is the sites that have been already submerged. These sites are under the impact of waves, sediment transport, tectonic activities, currents and so forth. The other group is the sites that are close to the shorelines and in addition to the abovementioned factors, are also severely influenced by climate change and sea-level rise; they are situated in a dynamic environment that is not naturally stable. Some of these sites are partially submerged, and in flood seasons or during the tides they can be under or above water [Fig. 1.6]. This area is called the transitional area by some experts where marine and terrestrial archaeological remains provide a seamless physical and intellectual continuum (Roberts & Trow, 2002).

A.2. Climate change and sea-level rise: General problem worldwide

Today, there is a growing recognition that coastal peoples, fishing economies, and seafaring have much deeper histories and that older coastal archaeological records are deeply flawed due to the effects of global climate change and rapid sea level rise since the end of the Last Glacial Maximum (LGM) about 20,000 years ago (Cronin et al , 2003; 2000). Figures 1.7 and 1.8 show prediction maps, resulting from sea-level rise, for Europe and the North Sea. Climate change impacts on the coastal and maritime historic environments have been studied through several researches such as the ones completed by World Heritage Center (Murphy et al, 2009; UNESCO, 2008; Pearson, 2007).

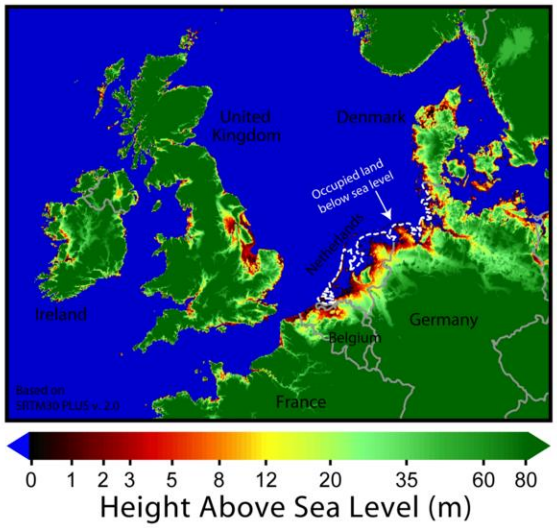


Fig. 1.7: Sea Level Risk-North Sea
©http://www.globalwarmingart.com/wiki/File:North_Sea_Sea_Level_Risks_png

During the last decade multidisciplinary surveys in several coastal archaeological sites have allowed the estimation of the timing and trends in the vertical movements of the Earth's crust and relative sea level changes since the late Holocene (Wanner et al, 2008). Archaeological data as indicators of relative sea level change have been used since the 1970s (Flemming & Webb, 1986) to study many historic coastal civilizations that built villas, harbors, piers and fish tanks. Recently, the integration of altimetric observations obtained in these classes of archaeological sites, with geological data and geophysical modeling has allowed for the temporal and spatial reconstruction of the size and trends of movements (Lambeck et al, 2004). Sea level change along the coasts depends on the sum of eustatic, glacio-hydro- isostatis and tectonics (Lambeck & Purcell, 2005). Eustacy is mainly driven by climate changes and is time-dependent, while the latter two can also change in space and may vary by location. The glacio-hydro-isostatic component has been recently predicted and compared with direct observational data in deforming zones after the Last Glacial Maximum (LGM) (Anzidei et al, 2011). There are good examples of such studies in the Mediterranean coasts (Bailey et al, 2012).

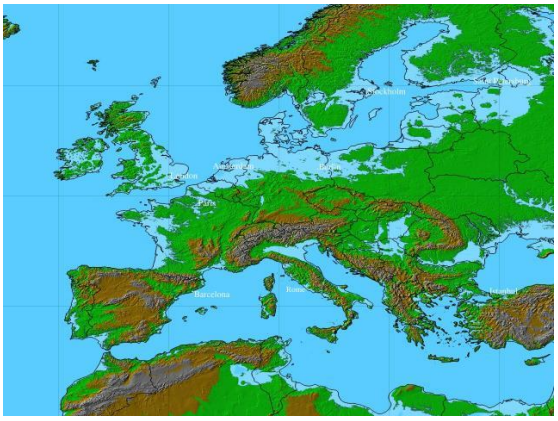


Fig. 1.8: 100-meter-rise Maps for "An End to Global Warming",
©http://resumbrae.com/archive/warming/100meter.html

The general principles outlined in the studies by experts (Srivastava et al. 2005; Bruun, 1983; 1962) suggest that, in decades to come, many shorelines will suffer from more erosion due to climate change. Other risks include destruction of cultural resources in coastal zones through accelerated sea level rise, intensified storm cycles, substantial and prolonged saltwater infiltration, changes to soil chemistry in archaeological deposits, cyclone and storm surges. If left unchecked, the consequences of climate change will destroy many of the world's most important coastal archaeological sites (McVey & Erlandson, 2012). There are models that have been developed by experts for prediction of the changes in the coastal terrain (Aiello et al, 2013; Mitasova et al, 2009; Li et al, 2001). These are relevantly good tools to estimate of the state of the coastal archaeological sites in coming years. These models can help prioritize actions for studying, protecting, and future management of the sites.

A.3. Biological factors

In addition to the geomorphological factors, the biological environment has also a great impact on cultural heritage and archaeological remains (Oxley, 1998). The effects of flora and fauna on materials in the underwater environment and coastal areas have been studied. However, due to the continuous alterations of

coastal areas, the different amount of nutrients, and the reaction of materials to the combination of the factors, it is not easy to conclude a certain effect on materials and sites (Ferrari & Adams, 1990). Each site needs particular attention considering many factors (Palma, 2005). Changes in the water qualities affect the types of species in water that can have different impact on archaeological remains (Manders, 2011; Murphy et al, 2009).

Furthermore, the natural factors have another dimension regarding underwater archaeological properties. Sometimes biofouling and sea animals are harmful to the materials under water, and sometimes fouling plays a protective role. This point comes more to the light when in situ preservation and presentation become the destiny of these relics.

In addition fouling can play a role in context formation. Muckelroy suggested an ordinal measurement of the level of natural integrity of underwater sites (Muckelroy, 1979). He suggests that at least, the amount of coverage should be observed. However, for ruins and landscapes the sites have another kind of linkage with the actual seabed— previously being out of water land. These types of sites are not only evaluated in terms of the internal integrity of their objects, but also in terms of their integration with their original land. To preserve the integrity of the sites and their environment it is important to find the relation of sites and objects within a bigger setting of their cultural-natural landscape. Many underwater sites are a combination of cultural and natural elements that together have shaped site with considerable valuable aesthetic and research values, and ecological significance for the habitat. Similar examples exist from approaches such as MPA (Marine protected Areas). Therefore, natural-environmental studies result in developing indicators for re-evaluation of coastal cultural entities in order to define the extent of the sites and evaluate their environmental, aesthetic, and integrative values in their context.

B. Worldwide approaches

The threats from natural and environmental factors have been acknowledge by many researches. For example, the threats faced by World Heritage Sites as a consequence of climate change has been recognized (Perry, 2011; Colette, 2007), and in a policy document published in 2008, UNESCO identified three research strands critical to moving climate science of the historic environment forward in a World Heritage Site context: (1) research that responds to increased natural risk factors to support disaster management planning for properties; (2) socio-economic research such as cost-benefit analysis, valuing the economic losses due to climate change and contingent valuation, as well as research into the impacts of climate change on societies; and (3) research into the nature and sources of other stress factors (e.g. pollution) impacting on cultural properties, which can greatly reduce their resilience to the impacts of climate change (UNESCO Policy Doc., 2008). An equally important fourth question, which was considered in the report but not selected as one of the key questions, is the need to understand the legal framework of Heritage Management in the light of climate change. Considering the crucial topic of climate change and its immediate impact on the coastal areas, as one of the most dynamic and vulnerable areas, there has not yet been a direct focus on 'cultural heritage-at-risk' in the coastal areas.

Given the abundance of heritage assets that are protected by a variety of legislative measure, and the likelihood that climatic impacts will be felt globally, national governments must develop frameworks that consider how best to conserve and protect their heritage assets. This task should be done by heritage managers, planners and policy-makers, and will inevitably require strategies underpinned by the prioritization of sites. In practice, this will require ranking the potential impact of climate change on individual heritage assets and determining their vulnerability, sensitivity and resilience to future change (Howard, 2012). Researches and statements from different sources highlight the importance of a multidisciplinary approach to address the issues related to natural and environmental impacts on cultural heritage in general, but also coastal cultural heritage in particular (geologists and biologists). The very dynamic situation of coastal areas requires a more coordinated approach among different disciplines to study, to plan and to develop management strategies in regards to cultural resources, and nature and environment.

1.2.2. Social dimension

Considering that coastal cultural heritage as a type of landscape, where there are evidences of interaction of human in his environment, two different discourses for management of landscapes have been recognized

(Cosgrove, 2003). First, the ecological approach focuses upon the interactive processes between nature and human activity. And, the second discourse focuses on the cultural meanings, context, and processes in the shaping of the landscape, which involves not only natural phenomenon, but also social attributes. The Council of Europe's Faro Convention on the Value of Cultural Heritage for Society (FARO Convention, 2005) [14] encourages reflection on the role of citizens in the processes of defining, treating and managing the cultural environment in which communities function and evolve. It also stresses that the common heritage of Europe, which underpins the identity on which today's Europe is being built, is a resource to be harnessed for and by citizens as part of the public action to improve the quality of life of all Europeans (FARO Convention, 2005). By cultural identity, the Millennium Ecosystem Assessment (MA) refers to the current cultural linkage between humans and the environment (Millennium Ecosystem Assessment, 2005). Cultural diversity is dependent on a diversity of contemporary landscapes, generating place specific languages and traditional knowledge systems. Within contemporary psychology, cultural identity refers to the individual's sense of self as related to the arrangement of social and interpersonal links and roles. Culture is to society what memory is to individuals (Triandis, 1994).

Social research on cultural heritage values can also reveal perceptions of people and land and sea users towards each other and towards different places (Plieninger et al, 2004). Linking cultural values to certain group of people or communities is a way forward in encouraging preservation of certain kinds of heritage. For instance, fishing in North Carolina has been recognized as a 'dirty and smelly' profession. This caused the decrease of social statues of fishermen among the residents, which, to some extent, resulted in a decrease in traditional fishing and abandonment of the traditional places associated with traditional fishing. However, new initiatives highlight the importance of fishing communities and their traditions as a part of the social values, and helping these places gain more attention as cultural heritage assets (Griffith & Mirabilio, 2012; Khakzad, 2012).

The aim of this part of the study is to demonstrate the importance of coastal cultural heritage from the social standpoint and to understand that coastal cultural heritage cannot be respected as it should be, if the human dimension aspects are overlooked, and the links to the human memory, identity, and place attachment is ignored.

Connection between the land and the sea in relation to people

Settlement along coastlines has a continuous tradition from prehistory until now. We can see the archaeological remains of pre-historic settlements in all coastlines of five continents to the present time. About half of the world's population lives within 60 km of the sea, and three quarters of all large cities are located on the coast (Unep.org, 2015). This connection with the sea and ocean also has social aspects in relation to cultural exchange, social/cultural memory formation (Nora, 1996; 1989; Connerton, 1989), and the link among different people in different parts of the world. Some even claim that maritime heritage is a kind of global history (Finamore, 2004; Armstrong, 2004). Maritime history's academic legitimacy lies in its breath and range of interconnections that ask important questions about the relationship of humanity to large bodies of water, as well as the relationship of sea to land (Hattendorf, 1994). On a social level, coastal cultural heritage can cover from local history to international history. In other words, maritime and submerged heritage can be localized; like fishing communities or island traders, or it can be international and comparative; like the cultural and goods exchange between the Persian Gulf, East Africa and the Far East (Sheriff, 1996). All these aspects, of either local or international history, highlight the importance of the connection between people, and sea and land that have resulted in the creation of maritime and cultural landscapes in coastal areas.

In many parts of the world, the coastal areas have played a leading role in shaping the cultural features of countries and regions, and have been considered as cultural identity of certain communities (Krakow Charter, 2000; Cristinelli, 2002). Therefore, including human dimension in heritage value assessment merits special attention (Vallega, 2003). Underwater and coastal heritage as a part of common cultural heritage has social dimensions and societal values either it is a shipwreck or submerged site and ruin (Pinder & Vallega, 2003). Studying shipwrecks contribute to our understanding of history and maritime culture by providing a glimpse

[14] The Council of Europe's Faro Convention on the Value of Cultural Heritage for Society's principles tie in with the European Commission's goals to offer ways to help national, regional or local authorities, civil society in general, and ordinary citizens to engage in the societal challenges which they face individually and collectively.

into different epochs and societies and their settings in terms of ownership and management issues, and the links that people had with their environment (Oceanexplorer.noaa.gov, 2015; Nps.gov, 2015b; Ford, 2011a). Apart from shipwrecks, submerged landscapes and sites that strongly link the present with the past, and are mostly located in the coastal areas receive less attention. In addition to the scientific value in understanding historic societies, the scientific community and the public at large have demonstrated an interest in the preservation of cultural heritage as a value adding element for the local communities. There are some overlaps for value-analyses between social and economic dimensions. It is where the double-sided issue of economic benefit and social values are in conflict. In order to define and justify the social values of cultural heritage, an understanding of the role that this asset plays in people well-being, sense of place attachment, memory (Nora, 1996; 1989; Connerton, 1989) and identity is necessary (Farnum et al., 2005; Holloway & Hubbard, 2001; Kaltenborn, 1998). These elements have barely been considered in evaluation process while discussing coastal resources management in holistic way. Cultural heritage is an important asset in coastal areas which creates social links between people and the sea (Ransley, 2011). The features of these links are reflected in tangible and intangible heritage. These links are pivotal in defining the extent of cultural heritage area along coastlines, and in creating the link and connection among different cultural heritage components and human in the landscape.

1.2.3. Economic dimension

Economics, and the notion of benefit, have always been a central topic of discussion and debate for cultural heritage preservation. The clash between economists and cultural heritage specialists on the values of cultural heritage has a long history. There are general questions on cultural heritage values and benefits that are a challenge to respond to considering that the value of cultural heritage is not always monetary and assessable through classical economic methods. However, still one major factor for decision-making and changes in coastal areas is economic development. Traditional activities such as coal mining, sea transport, commercial fishing and so on, are not as economically efficient as in the past. Therefore, there is regeneration in coastal areas according to what can bring the most benefit (Pinder, 2003). This causes not only changes to activities, but also changes in communities' behavior, degeneration and gentrification of these communities, and abandonment of buildings and landscapes that were associated with previous activities that shape part of our cultural heritage.

In recent years, considering the increased rate of urban and industrial development resulting in negative impact on several cultural heritage sites, there have been several initiatives to establish a series of common indicators for assessing the economic values of heritage. It has been tried to create a balance between these two sectors; economics and cultural heritage (ODPM, 2004; Throsby, 2000). As an example of international approaches, UNESCO developed a series of indicators for culture and development in order to achieve a sustainable management of cultural heritage for development (UNESCO, N.D).

The focus of this part of study is to highlight that tangible and intangible cultural heritage can be considered as resources for the benefit of communities and people. There have been many studies on the economic role of cultural heritage in planning, and there are many lessons to be learned and adopted from previous experiences, mainly from terrestrial heritage. Recently, attention has also been given to coastlines. Through exploring previous studies, the present research examines that by justification of the value and use of cultural heritage along coastlines and applying heritage economics and the theory of cultural capital, these cultural heritage assets not only can bring benefit to communities and people, but also they can provide a sustainable environment for further development. This fact will also help in the debate with stakeholders who see cultural heritage as development obstruction.

Overlaps of economic dimension to evaluate non-market values

As it was mentioned in natural dimension and social dimension, there are overlaps among different dimensions, especially in regards to economic dimension. These overlaps can be used for better assessment of non-market values of cultural resources.

One of the non-market values of heritage is social values. For example, port activity has frequently dominated local economies for many decades or even centuries, creating acute awareness of the economic importance of port activity among urban communities. Socially, this has commonly inspired a strong sense of

place-identity among indigenous communities. According to the activities conducted in a port, such as fishing, mining, naval facilities, etc., community growth has been dependent on the need for civilian employment to conduct these jobs. In these localities a strong sense of place-attachment amongst local populations has not been based on only the economic importance of naval port development, but also the civic pride linked with local communities and their heritage (Pinder, 2003). However, changes in technology, demand and social patterns have caused changes in the urban setting. Space redundancy has overtaken the inner-urban waterfront, while large-scale employment decline has rapidly weakened the close link between the port and the community (Jones, 1998; Gordon, 1996). Although historically port development –both commercial and naval— has been fundamental to the enrichment of coastal cultural heritage, recent decades have witnessed that many new developments are threats to coastal patrimony. Abandoned waterfronts throughout the developed world have been redeveloped using a mixed-use model typically dependent on leisure activities, exclusive housing, office development and retailing, a trend that is now extending in developing countries as well (Breen & Rigby, 1994). The above mentioned points highlight the essential role that the existence of communities can play in protection of coastal cultural heritage through social and economic values. This, however, depends largely on the level of sustainability of the activities in these areas, which is subject to management and development plans. In many cases the conflict between the benefit gained from cultural heritage preservation and new development can be addressed through a proper evaluation, if the criteria for evaluation is well-defined.

Different approaches towards cultural heritage of coastlines highlight the importance of the valuation of cultural heritage in terms of use-values and non-use-values, how these values are entangled with other political and social dimensions, and how these values as assets can be integrated into management plans (Urquhart & Acott, 2012; Reed et al, 2012; Renting et al, 2003; Riley, 1999).

1.2.4. Political dimension

Considering the importance of the political agenda, commitments in the form of policies, are critical in guaranteeing and achieving goals. The priorities, objectives and strategies set by policies are often translated into tools for implementation such as laws, administrative orders or guidelines, economic instruments, or voluntary instruments. As these policies are set and developed by different government bodies (Harrison, 2010; Willems, 2009), an overarching policy for the coastal zone would be useful to lead to an interdisciplinary approach in managing coastal zones. Such policies then can be tailored to best meet the demands of existing policies, integrate them, and minimize conflict among stakeholders, while responding to people's needs.

Given the international dimension of most of the disputes, underwater cultural heritage has become the latest frontier of international legal debate (Frost, 2004). However, the importance of including Culture as a pillar for sustainable development has been highlighted more recently through the Hangzhou Declaration (The Hangzhou Declaration, 2013[15]). The Hangzhou Declaration urges political powers and authorities to place culture at the heart of future policies for sustainable development. Therefore, this part of the study will draw attention to the importance of legal tools regulating the cultural coastlines, where the cultural heritage on land and underwater intertwines and/or they are the continuity of each other. This section will highlight that the separation of these two areas—on land and under water— in conventions and regulations complicates the protection and use of coastal cultural landscape as a resource in holistic coastal management plans.

Terrestrial cultural heritage and underwater cultural heritage (both with a wide range of archaeological and historical objects and sites) are two sub-groups of cultural heritage which have already been recognized internationally (UNESCO, 2001; UNESCO/WH, 1972). To some extent, they benefit from different conventions and regulations on national and international levels, regarding their protection and management. However, separation of conventions has also brought some implications in understanding and treating the heritage which is located in coastal areas, namely in tidal zones and shallow waters—in brief, in the transitional zone

[15] According to the Hangzhou Declaration, culture has been recognized as a factor to foster and enable truly sustainable development when a people-centered and place-based approach is integrated into development program initiatives. This declaration highlights the importance of education, economic valuation and social assessment in order to recognize the position of culture in management plans. The key message is that understanding the past and preserving its residue for the present and future will help societies to promote a more sustainable strategy for use of natural and cultural resources.

between the sea and land. In coastal and maritime cultural areas there is often an extension of cultural remains from land to sea and underwater. What is required here is to examine if the present regulatory regimes and policies for cultural heritage provide sufficient guidelines for protection and management of coastal cultural heritage. To resolve the implication of the in-between space, as an imaginary empty space, line or boundary between the sea and the land, in chapter 2 and 3 a methodology to delineate the coastal cultural area will be proposed and its characteristics will be explained. It will be explained how this area is essential for establishing the policy of integrating cultural resources within ICZM.

The United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, was a major conference held by United Nation that resulted in developing a few documents including Agenda 21, which suggests an integrated management plan.[16] All the participating nations in the Earth Summit realized the necessity of a policy that addresses the environment, development and social issues confronting humankind. Chapter 17 of this agenda specifically highlights the management of oceans and coasts (Cicin-Sain, 1993). Following this Agenda, Integrated coastal zone management has been defined as "a continuous and dynamic process by which decisions are made for sustainable use, development and protection of coastal and marine areas and resources." In this process the unique value of the coastal area and its resources for the benefit of current and future generation has been underlined (Cicin-Sain & Knecht, 1998; Sorensen & McCreary, 1990). However, as to cultural assets, this document is inadequate. In its four main sections, Agenda 21 address several dimensions including social, economic, natural, environmental, but cultural.

As mentioned, there is a very real danger in trying to plan and manage the land, the coast and the sea as separate entities rather than as a continuum (Holdaway, 2010). This issue was one of the starting points for natural resources managers to move towards more integrative and unifying management strategies. Although concerning internal water and land each state county is subject to national law, in regions such as the Mediterranean, the North Sea and the Baltic Sea, with a similar cultural heritage and quite homogeneous ecological and social conditions, there is a need for more harmonized legal approaches (Brückner, 1998). On the other hand, in the realm of underwater cultural heritage in the sea, individual coastal states may or may not exercise the protection and management of this patrimony according to international conventions. In addition, some countries have ratified one convention but not another. For regulating cultural heritage in sea and open waters, there are two conventions: UNCLOS and the 2001 UNESCO Convention. UNCLOS has only two articles 33 and 303 relating to archaeological remains in territorial water (12 nm from the baseline of a coastal state (UNCLOS, 1982) (The area beyond territorial water is out of the scope of this research.)), which are not adequate for protection of coastal and underwater cultural heritage.

Following from UNCLOS and the problem of protection of underwater cultural heritage in waters where protection is assumed to be available, (including enclosed and semi-enclosed seas), the Convention on the Protection of Underwater Cultural Heritage approved in November 2001, relates exclusively to underwater cultural heritage (Nafiziger, 2006). It defines underwater cultural heritage as the entities 'partially or totally, periodically or continuously under water' (UNESCO, 2001, Art. 1). This point can extend the protection umbrella to the shorelines as well; however, this convention does not address the link between the heritage on land and underwater. When it comes to coastal cultural landscapes that consist of land, brackish water and marine landscapes, the effectiveness of each convention and guidelines for the whole area is dubious and the question is whether a series of different conventions and guidelines can provide effective and harmonious guidelines for management of the area. Strategies, tools and techniques need to be selected according to local characteristics, the nature of the planning problem, the characteristic of the heritage resources, the stakeholders' expectations, and international views and the feasibility of such instruments (Hall, 2000). As a result of this study, one of the solutions to the problem of coastal cultural heritage management is to develop a policy that would look into the maritime and coastal cultural landscape as whole entity, and not as two separate bodies of terrestrial and underwater heritage. However, such policy should be developed exclusively for each location, based on its specific environments. In this way, a harmonized approach to management of coastal cultural resources will be achieved.

[16] UNCED, Agenda 21, Paragraphs 17.123–17.124: Agenda 21 is not a treaty and is not legally binding. Rather, Agenda 21 sets out a general blueprint, or, in the words of Tariq Banuri, Director of the UN's Division for Sustainable Development, "a common vision" for environmentally-sustainable growth. At the end of the day, implementation of any part of Agenda 21 is the prerogative of individual governments, not the UN itself. This is reflected in the document's own preamble, which states that Agenda 21 "reflects a global consensus and political commitment at the highest level on development and environment cooperation. Its successful implementation is first and foremost the responsibility of governments."

Nonetheless, policies and regulations are shaped according to the political agenda, in addition to the inputs from the scientists as well as considering people's needs. Although scientists do not have direct power to change the regulation, the outcomes of their research have great influence on policymakers' decision making[17]. In addition, the power of the communities and public should not be overlooked. As Maarleveld (2012: 420) states: "the more seriously archaeology and heritage issues are taken—by archaeologists and the larger public alike—the more elaborate justification will be" for the decisions made on heritage protection issues. The aim of this study is to suggest a comprehensive concept of management for cultural coastlines, and to highlight the priorities in order to offer new windows for policy makers to look at the coastal cultural heritage as a resource to be integrated into ICZM. Integrated Coastal Zone Management (ICZM) necessitates not only an understanding of the coastal environments to be managed but also an understanding of the nature of the governance systems in place (O'Hagan & Ballinger, 2009).

Section 1.2 highlighted the importance and role that each integrative dimension would play in evaluating and planning for coastal cultural heritage. It is essential to understand not only the impact of each dimension as a control group in management of coastal cultural heritage, but also the impact of cultural heritage related actions (preservation, restoration, and long-term management) on other environment such as nature/environment, society and economy, as well as policy making. With creating a common ground to understand these influences and impacts, cultural heritage can be evaluated in a balanced way with respect to other resources, considering development and use.

1.3. Existing concepts and approaches in delineating coastal cultural heritage and its boundaries

This section addresses the concerns in relation to defining boundaries of coastal cultural heritage, and reviews theories, concepts and experiences in defining and delineating coastal cultural heritage.

There are definitions for underwater cultural heritage that separate it from terrestrial heritage. These definitions have been provided by conventions and theoretical documents. Analyzing those definitions can help to identify the key points that are important to define coastal cultural heritage. In addition, there are several definitions of maritime cultural landscape, underwater cultural heritage and archaeology that can help to formulate a common way to define coastal cultural heritage, considering the cultural elements under water and on land.

According to the UNESCO 2001 Convention there are three categories of underwater cultural heritage (UNESCO, 2001):

> "(i) sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context;
> (ii) vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context;
> (iii) objects of prehistoric character."

In all these categories the archaeological and natural context are important in understanding the sites (ICOMOS, 1996). Regardless of being literally moveable objects or immoveable sites, the natural and cultural environment that connected all these elements to each other and to their surrounding is significant. The linkages could be through natural environment, social context and even linkage with other sites of heritage values (Khakzad, 2014a).

In studying the natural context, K. Muckelroy (1978) used a systematic evaluation tool for shipwrecks. Although some units of measurement that he suggests are quantitative and relative they can be adopted to evaluate the level of integrity of sites and objects within their natural environment for underwater and coastal

[17] This study underlines that the political dimension is, to some extent, based not only on scientific recommendation, but also other motives (an example of this case can be seen in a bill that was approved by The North Carolina Senate in the US in 2012. This legislation prohibits the state from considering projected sea level rise in its coastal management strategy.) Therefore, the present study by no means can impose any new regulation, but hopes to be a new window for policy makers to look at cultural heritage assets of cultural coastlines.

historical/cultural remains. Muckelroy states that the feature of "location and settling" for shipwrecks depends on different factors such as:

- Structural remains: could be extensive; elements; fragments. Depending on the amount of elements and fragments, the strategies vary.
- Objects found within the shipwreck site: could be many; some; and few, and in each state they could be scattered or united.
- Distribution of the site: could be coherent; scattered in order or disordered.
- Geologically the site could be sandy and substrate; rocky, intermediate (rocky and sandy); slop.
- Organic growth on the site could be many; some; few and they could be covered completely, partially or there could be no cohesion.

However, the principles used to express the quality of the factors above are debatable and to some extent, relative. How to measure these factors also needs to be explained. These variables are ordinal and to some extent, scientifically acceptable, nevertheless, for a better comparison tool, more sites should be assessed in this way, and ratio variables should be established. The assessment in this way should be done based on a comparative analysis, rather than a standard base point.

In addition, considering the points that were highlighted about ecological and ecosystem services approach regarding not only natural resources, but also cultural resources, the defining method for the extent of resources cannot be an administrative method (Vallega, 2003) and should be based on each case's condition (Forrest, 2010). It means that the area will not have specific measurements; instead, its boundaries are based on the qualitative measures which need to be defined through evaluation of values in context and links. There are theories and concepts that have been used to determine boundaries and extent of areas. Considering the fact that coastal area is a combination of land, sea and transitional area or the area in-between sea and land—in between space—, several relevant theories inspired this research in order to define a methodology for delineating coastal cultural zone. This process is in line with the purpose of integrating land and sea approaches in ICZM and to promote coastal cultural resources in MSP and ICZM schemes.

The usage of term 'in-between space', which was introduced in the author's master thesis (Khakzad, 2008) in addressing the issue of area between the sea and land in the shorelines, helps highlight the problems facing in order to treat the cultural heritage in the coastal areas. In-between (coastal) space, in this research, is referred to the terrain in the coastal areas which is considered as the tidal area (including upper lands and underwater areas where applicable), or in some text mentioned as transitional area between the sea and the land which connects these two realms. So in general still it is a vague terrain that its elements and characteristics should be defined. On the other hand in-between space is referred to the gap which the separation between the heritage on land and underwater has caused and consequently the regulatory regimes for these two areas differ, and left the in-between space an area of special concern to be defined physically and regulated. A possible integrated measure would be a helpful way in defining the coastal cultural area to include both land and sea assets, in a flexible way considering variables involved in definition of the zone (Ankera et al, 2004). Some countries tried to address the issue and complications that separation of sea and land regulations has caused.

One example is in the US. In the US legal system with the application of Public Trust Doctrine which is partly dealing with regulating the tidal area and submerged lands, and defines the public access to shoreline the importance of this area has been acknowledge. According to the Public Trust Doctrine state's title to its tide and submerged lands is a title held in trust for the people of the state so that those citizens may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing free from obstruction or interference from private parties. The application of this doctrine in addition to the economic perception of cultural heritage as a public good, show the complications that arises in the coastal areas with the heritage extended from land to underwater. Public Trust Doctrine is one of the few tools that regulate the in-between space (however regardless of cultural heritage), although the cases which are presented at the courts are very divers, and usually each situation is attended individually, case by case based. The public trust doctrine dates from ancient times and protects the public interest in navigation, commerce, and fisheries (Johnson, 1990), and today has a wider application for the use of resources in the coastal areas (Ausness, 1986; Lazarus, 1985; Wilkinson, 1980).

The term “in-betweeness” has a background in social science (Green & Perlman, 1985; Forbes, 1968). This background can help defining the parameters of ‘in-between space’ of the coastlines in different ways. In-between space plays the role of a frontier between the sea and land. Borderland or frontier is an ambiguous landscape. It has many dimensions; geographically frontiers and borderlands imply the existence of limits defining the territorial scope of one’s territory, settlement or known world. However, scholars see difference between borders and frontiers. According to Naum (2010: 102) a frontier has seen as “a limit of possession or settlement means that these areas also politically, socially, ideologically and culturally charged places.” Frontiers, with their multifaceted nature, can expand to become a separate (political) entity. When frontier is narrowed to become thin to establish a division between two territories in order to delineate and control, it becomes border which might be clearly visible in the landscape (Naum, 2010). This definition is not applicable to the area between the sea and land, since this area is a wider entity and comprises many elements connecting the land and the sea together. But from a legal and regulatory point of view, an imaginary borderline separates the activities in the sea and on land. As mentioned before, this has been one of the threats to management of the cultural assets of the in-between space.

While, a “border” is often defined as a legally recognized line, fixed in particular space, meant to mark off one political or administrative unit from another , there is no specific border between the sea and land. As mentioned before, there is an area which is known as transitional area and is very dynamic in its nature, not only in the present time, but also over time, it has been changed many times. In comparison with border, a frontier is a vaguely defined boundaries—a region rather than a line. Most of frontiers are zones of transition between two core areas. Frontier is “borderless” (Adelman & Aron, 1999). The Richard White’s concept of the “middle ground” suggests that a frontier gives rise to hybrid forms of culture and ambiguous identities composed of selected elements from each previously distinct cultural repertoire (White, 1991). Furthermore, the physical geography and the natural aspects of the frontier such as topography, climate, vegetation, and the availability of water and other strategic resources, as well as the social parameter of the frontiers (Lightfoot & Martinez, 1995), and its importance of the interaction among people, in different places and over times have been noted and considered critical in shaping the frontiers through different factors (Parker, 2006). These factors play a role in conditioning the various social or cultural boundaries that overlap and intersect in frontier zones. These aspects can be recognized in the coastal areas; the dynamicity of the natural environment, the interaction between the settlers and sailors, the economic trade between the hinterland, the shoreline and the lands beyond the seas, the regulation that differ from the sea to land, and so on (e.g. Maritime landscape in Lake Ontario, (Ford, 2011b)).

Through systematic comparisons of frontiers situations at various times and locations can we hope to understand the processes that take place in these areas in present. The in-between space is not a clear line or limit; therefore, it is more in the category of frontier. Considering the shoreline as a frontier between sea and land, between people on land and visitor and newcomers from other lands, and between the different times, it is important to consider all the factors that are involved in the formation of a coastal cultural area and to assess its need and priorities for preservation.

In similar approaches for archaeological study, a concept that can encompass the coastal area of the in-between is maritime landscape. Several maritime archaeologists have tried to define these concepts. Muckelroy has defined 'maritime' to a broad context of seafaring and the extent of maritime archaeology, to ‘the scientific study of the material remains of man and his activities on the sea’ (Muckleroy, 1978). He states that maritime archaeology is concerned with all aspects of maritime culture; not just technical matters, but also social, economic, political, religious, and so forth. However, Muckelroy has a focus on studying ships and boats and the maritime remains from seafaring. So, the extent of his practice would stop geographically where people get off their ships - quays, wharves, the shore, etc. George Bass, as the father of underwater archaeology has a different approach. His main focus of career has been on archaeology under water and to establish and develop proper techniques of archaeology underwater, compatible with the one for classical archaeology on land. His focus has been mainly on the ships and not on broader maritime landscape. However, he sees the importance of studying shipwreck in expanding knowledge about other aspects of the past (Personal communication with Dr. George Bass, via e-mail, July 2013). Discovering some areas and islands of our planet, seas and oceans wouldn’t have been possible without the old watercrafts which have been sailed to discover, explore, and helped people to settle in, exploit, supply, and defend those lands (Bass, 2011). However, his region of study is mainly the extent of the site on the seafloor. Westerdhal, introduce the concept of maritime cultural landscape, and mentions that this term was applied when the need arose for a

scientific term for the unity of remnants of maritime culture on land as well as underwater (Westerdahl, 1992). This concept has been developed more by Westerdahl (2001; 2006; 2003; 1992) and several scholars who looked at different aspects of maritime cultural landscape addressing subjects such as the meaning of different features in the landscape (O'Sullivan & Breen, 2007), the meaning of seascape and landscape (Breen & Lane, 2004; Aberg & Lewis, 2000; Lewis, 1994) the importance of maritime culture in shaping people's identity and sense of place (Gibbs, 2006), and also application of maritime cultural landscape in management of maritime archaeological sites (Flatman, 2009; 2003)

Obviously, many scholars have addressed and discussed the archaeological and ethnographical methods of defining and studying maritime issues and maritime cultural landscape. However, there are still discrepancies not only in defining the maritime landscape and the maritime aspects among the maritime archaeologists, but also there are different approaches in regulating the physical entity of maritime cultural landscape. According to James Delgado (1997: 259): "the study of human interaction with the sea, lakes and rivers through the archaeological study of manifestation of marine culture, including, but not limited to, vessels, shore-side facilities, cargoes, and even human remains is broader framework for maritime archaeology." Maritime cultural landscape concept highlights the parameters that are important for defining the area between the sea and land where connection key is cultural elements. And it raises new questions and concerns for management of this heritage. The process of embracing this wider conception has progressively blurred the land-sea divide that allowed maritime archaeology to define itself in terms of marine methodologies or narrow legislative responsibilities, and consequently extended its interest towards a greater range of sites, questions and approaches (Gibbs, 2006). Although, maritime concept provides a good base for studying the cultural coastlines, the methods, scope, and contributions of this field are yet to be fully determined (Stewart, 2011). Many elements of coastal cultural heritage, including tangible remains as well as intangible aspects, and temporal connections that people had and have with remains need to be studied and thoroughly understood (Bayman, 2010), in order to include all the important aspects as cultural resources in holistic management plans.

Conclusions

The review of literature and of international experiences related to this research was completed around mid- 2013. The author acknowledges that there have been several projects developed since then and that more scientific research and literature has been published since on management of coastal resources in general and on coastal cultural heritage in particular. Debated about how to justify culture as a pillar in sustainable development (The Hangzhou Declaration, 2013), and how to gain more attention to include cultural resources more holistically in the management of coastal areas still proves the case that a more integrated approach is needed and has to be addressed more in detail. The lack of highlighting cultural heritage as a topic in the Third ICZM Conference which was held in Antalya, Turkey, in October 2014 is one example. From the other hand, the latest Directive of European Union the importance of addressing cultural heritage and specifically underwater cultural heritage has been highlighted (DIRECTIVE 2014/89/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL).

The multi-faceted problems of coastal areas and their resources management with focus on cultural heritage has been extensively discussed in the literature. The concept of integrated coastal management, which seems to have potential, is nothing new. However, applying this concept to cultural heritage of the coastlines is a theory that has been discussed only over the last decade. The scholarly literature on integrated coastal management has tended to focus mostly on the land-sea interface and on approaches, options and methods for controlling the use of coastal land. As it can be learned from the experiences of natural resources management, sometimes there is a need to go further out of the existing tools and try to define the whole entity which is supposed to be protected. In these circumstances, there is a need to design a more flexible but inclusive method of defining, interpreting and evaluating resources. In addition, there should be a policy to support such decisions. In the literature we notice the growing interest in integrating cultural heritage of coastlines into holistic coastal management schemes and policies. However, the ways that we define cultural heritage assets and evaluate them as a resource in these schemes are not clear yet.

In Europe integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) are the most accepted holistic approaches for management of the coastal areas. ICZM and MSP have tried to address cultural resources to some extent. However, harmonized guidelines for inclusion of coastal cultural heritage as

a resource in these management plans require an interdisciplinary and integrated approach. Through an interdisciplinary and integrated approach, multifaceted values of cultural heritage in coastal areas should be well comprehended not only for sustainable preservation of coastal cultural heritage, but also for the benefit of people.

It has become evident that protecting natural resources and integrating cultural heritage preservation into coastal management plans is one way to resolve the competition among different resources. It was indicated that although there have been initiatives to include coastal cultural heritage into ICZM and MSP, a proper methodology that facilitates this evaluation does not exist. The Integrated Coastal Zone Management concept and the Integrative Complexity Model offer some solution to this problem.

The integrative dimensions listed as: social, natural, economic and political dimensions. These dimensions are exterior to the cultural heritage itself. However, as control groups, they influence heritage management.

The discussion on the natural dimension highlighted the impacts of global climate change, historical climate change, its impact on cultural coastlines, and the continuous impact of nature and humans on the coastlines and in-between space. It is obvious that some changes are out of people's hand; however, knowing the nature of change and risk, mitigation strategies can be applied.

In studying the Social dimension, the importance of the links between the past and future was highlighted. To explain this issue, the element of memory and its role in sense of place's identity and sense of place attachment was discussed. The study emphasized on the role of the sea, present and past connection and exchange with other lands. It was concluded that the social dimension has strong potential for a promoting proactive, protective behaviors through local people for the protection of their cultural heritage along coastlines.

With the Economic dimension, the issue of valuation from two points of view was analyzed. It is concluded that for a practical evaluation of cultural heritage along coastlines, with an eye on studies of terrestrial heritage, as well as the economic theories of cultural capital and the Ecological Economics, there are potentials to improve the state of cultural heritage in holistic management plans by promoting it to the level of a resource.

The political dimension followed the discussion from the resources management experiences, which offered an overview of the present legal, institutional constraint and several regulatory concepts. The existing tools and potential to justify and create coastal-cultural-heritage protective policies were investigated and it is concluded that one main issue with regulating the cultural coastlines is the separation of legislations and legal approaches for regulating and managing resources on land and in sea.

Considering the specific situation, as it is emerged in the coastal areas between the sea and the land, several relevant social theories such as frontier, borderland and the theory of middle-ground, in addition to the concept of maritime landscape were reviewed. Based on these theories and concepts, the possibilities through which the coastal cultural area can be defined and delineated for a better management will be explored in future chapters.

Based on the reviews in this chapter, the problems with management of coastal cultural heritage and hypothesis regarding a proper management plan for coastal cultural heritage will be discussed, and the objectives of this research along with methodology of research will be formulated.

Chapter 2: Coastal cultural heritage in the light of Integrated Coastal Zone Management

Introduction

The first section of this chapter will offer an analysis of different management approaches for coastal cultural heritage. Based on this analysis, an approach will be justified and selected for the purpose of suggesting a best strategy for management of coastal cultural heritage, and principles of this strategy regarding coastal cultural heritage will be adapted.

The second section will deal with integrative approaches and problems with multiple dimensions. The aim is to perceive the resources in a more holistic perspective and to study the dimensions and control groups that influence decision making. Based on integrative complexity model, there are factors derived from natural/environmental, social, economic and political dimensions that have direct and indirect effect on coastal cultural heritage. In this section, inclined by the knowledge gained from natural resources, integrative approaches for better management of coastal cultural heritage will be applied. However, for improving the management approaches, not only a full evaluation of cultural heritage assets is necessary, but also the influence of different dimensions (control groups) on cultural resources should be assessed. Therefore, it will be suggested that cultural dimension should be added to the list of integrative dimensions for better evaluation and integration of coastal cultural resources in MSP and ICZM.

Since managing underwater and coastal cultural heritage entities, to a great extent, depends on how and what we define those entities (Khakzad, 2014a), the third section of this chapter contributes to defining a methodology to outline the area and eliminating the boundaries between the coastal cultural heritage on land and underwater. This section is in response to the third problem: defining the boundaries of coastal cultural heritage. Although, there are administrative methods to define an area, this research recognized that there is a need for flexible methodology to define the area of coastal cultural heritage more comprehensively in regards to all cultural values. The aim is to offer a conceptual framework to define the coastal cultural area, and an evaluation system that not only includes heritage values, but also address the balance that cultural resources need to gain while assessing all resources. For this purpose, in line with applying Marine Spatial Planning (MSP) as a tool, coastal cultural middle ground will be designated to be managed in an integrative way within the framework of ICZM.

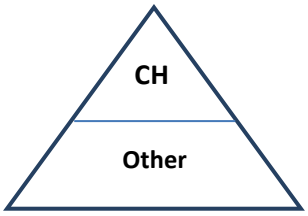
In brief, this study draws attention to the results of studies on terrestrial landscape, underwater archaeology, and resources management in Ecological and Ecosystem services, and examines the adaptability of their methodologies for cultural heritage of coastlines. The principals of ICZM in regards to coastal cultural heritage will be outlined and an integrative process to evaluate coastal cultural heritage as a resources in ICZM will be suggested. The shortcoming of ICZM at the moment regarding coastal cultural heritage will be highlighted as well. This chapter is the core chapter and the contribution of this research to the science world and heritage knowledge. Several models will be developed to resolve the problems and achieve the objectives that were highlighted through this research.

2.1. Choices of management approaches

Analyzing general trends of resources management, two main approaches regarding cultural heritage management can be identified [Fig. 2.1]. One is the cultural heritage approach. This means that the methods consider cultural heritage as the main resource to be managed as compared to other resources. In the hierarchy of resources, cultural heritage is considered on the top of the pyramid. The second approach, following ecological and integrative approaches, regards all resources as equal where their importance depends on their multifaceted values that they incorporate into a wider planning scheme for management.

Several approaches and concerns through different experts and projects' results were highlighted. In this section, the advantages and disadvantages of the two main approaches are pointed out through examining the potentials and obstacles that each approach might bring for the preservation and sustainable use of resources. The analyses presented here are based on the overviews that were presented in the previous sections.

The analyses performed here are qualitative in nature and applied to identify advantages and disadvantages of each management strategy regarding cultural heritage. The criteria for analyses are based on heritage values and multiple dimensions of integrative complexity.



1: Cultural heritage approach, where cultural heritage is considered the main resource and is on the top of the

2: Ecosystem approach, where all resources receive equal attention in management, based on their multifaceted values in holistic

Fig. 2.1: Shows the two different general approaches for management of coastal cultural heritage

The analysis of the existing cases recognized the need to adapt an integrated approach in addressing coastal cultural heritage in order to include it as a resource in Integrated Coastal Zone Management. Although, it was highlighted that the ecosystem approach does encompass all resources including the social, cultural and economic factors, and in some cases efforts have been made to include cultural heritage in ICZM, there has been less focus on cultural resources. While, cultural heritage specialists have tried to point out the importance of cultural heritage in general and coastal and underwater cultural heritage in particular, the significance of coastal cultural heritage is not well recognized as a resource in management plans. For example documents such as the Hangzhou Declaration (2013) has stated that culture should be added as a pillar to sustainable development (The Hangzhou Declaration , 2013), or Heritage Impact Assessment (HIA) which recommend evaluating the impact of any proposed development or site alteration on the cultural heritage resource(s) (Hall, 2000). Such documents and declarations see cultural resources as the main resources in the management of resources.

Although in cultural heritage approach, existence of a well-defined theoretical legal structure for protection of the heritage within national and international legal frameworks is necessary, preservation and maintenance sometimes seems to follow no clear purpose rather than just protection of the heritage for people who are not expert in cultural resources. In addition, sustainable preservation and long term monitoring system is often weak by lack of enough funding. If the funding or the motivation is gone, the protection/conservation would be compromised. Political and sociological studies as the ones by Becker (1964), Bourdieu (1984) and Graham et al. (2000), and economic studies such as the ones by Throsby (1999; 2001; 2005) on cultural capital illuminated that cultural heritage preservation needs a broader justification.

Regardless of whether integrated approaches for coastal resources management (ICZM) have included cultural heritage in their scheme or not, their strategies of resources management has been analyzed here. However, it is important to mention that these approaches, initially, included culture and heritage but the latter got disregarded as an integral resource in the coastal management schemes. Considering integrated approaches, there are many links of heritage values with the four dimensions of integrative complexity which offer potential for better conservation of coastal cultural heritage. In terms of social dimension, the connection between people and their heritage can be used for the better protection of their heritage. Studies of social and cultural memories, identity and sense of place are proves of this fact. The new development in the ecological economics can be incorporated into heritage value assessment. The notions of market values and non-market

values and use values and non-use values will better be assessed and understood through ecological economics. The cooperation between heritage specialists and natural scientists will help lead to new discoveries. e.g., in many places in the world, considerable amount of knowledge about climate change and sea-level rise has been gained from archaeological data (Maarleveld, 2009). These kinds of studies and perceptions result in more multi-disciplinary projects, such as SPLASHCOST (Submerged Prehistoric Landscape of the Continental Shelf, 2009-2013) (Splashcos.org, 2015) and SEARCH (Archaeological Research of the Belgium Part of the North Sea, 2013-1016) (Sea-arch.be, 2015) which benefit multiple groups of experts and people. In general, integrated approach brings different disciplines together, promotes research and enhances resources management practices.

Since integrated approaches have to integrate different aspects, they have potentials for more inter-sectorial discussions. Under the integrated methodology, tools can be developed for heritage protection, the same way that tools were and are developed for natural resources protection and their sustainable use. Experiences from natural resources can be adapted and improved for cultural resources in order to improve our methodologies for evaluating, defining boundaries and developing tools for managing coastal cultural resources. It is foreseen that through adapting the same strategies and adjusting them for cultural heritage, cultural resources can attain the same attention as other resources and will be integrated into the holistic management plans, if assessed in interdisciplinary manner.

The separation of regulatory regimes for on-land and underwater heritage has caused inconsistency in management of coastal cultural heritage. Since, integrated approaches of ICZM and MSP have looked into linking sea and land approaches, and have already been considered as an accepted methodology, it is plausible to explore management possibilities of coastal cultural heritage within their frameworks in order to harmonize management approaches for land based and underwater cultural heritage.

Considering both management approaches, on one hand, if heritage is considered as a resource, it will be evaluated as a resource on the same level as others and then the priorities might be different from the priorities of heritage specialists. Heritage values need to be justified. Since these values sometimes clashes with use-values and market-values, the new function or proposals from other sectors might not be in favor of heritage preservation. On the other hand, in order to enhance preservation of coastal cultural heritage in a wider perspective of sustainable development and holistic management plans, there is a need to remove the resources constrains (Peacock, 1978), and to look at different resources in a balanced interdisciplinary way without prejudice. Otherwise, cultural heritage does not find its level of importance in the holistic management plans and will be considered as an obstacle in the way of development.

The Analysis show that there is a need to move away from the sectorial approach to management and preservation of coastal cultural heritage and link the management and conservation of cultural heritage to conservation of landscapes and ecosystems in general. The necessity of a new holistic approach has been highlighted as a result of the analysis and evaluation of the past works. Therefor this study was directed towards a new approach for managing coastal cultural heritage based on the experiences in the field of coastal resources management.

Following the analyses, and as a result of the advantages that ICZM and MSP bring to coastal resources management, such as acting as a system to address the issues of sea-land interface, its flexibility in adopting different tools, and the added values that it can bring to the resources in terms of socio-economic visibility, and respecting the fact that the European Union places great weight on ICZM and MSP, this research seeks to develop tools to add cultural heritage of the coastlines to these two schemes. Therefore, first, the state of coastal cultural heritage within ICZM principles will be developed.

Integrated Coastal Zone Management and its principles in regard to cultural heritage

Coasts are not uniform by nature. They are shaped by differing physical, social, economic, biological, and cultural factors. As the 'European Union Demonstration Programme' (EU ICZM Demonstration Programme and EU ELOISE Program, 1999) highlighted, there is no one standard way for implementing an ICZM solution. In addition, differences within and between countries makes it difficult to indicate which approach to ICZM might work best in any given area. In general though, a number of stages for the implementation of an ICZM policy have been identified (Europe, COM/2007/0308 final, 2007; Olsen et al, 1998). The European Union adopted these eight principles of 'Best Practice from the EU Demonstration Programme' on ICZM in 2002 (Suscod.eu,

2015). These principles have been taken on by the present research and the statues of cultural heritage in regard to these principles have been pointed out as follows:

1. Adopt a broad holistic perspective: Due to the complexity of the physical, biological, cultural, socio-economic and political factors in coastal areas, a holistic approach needs to be employed where every element will receive proper attention (McKenna et al, 2009). This also means that the delineation of the coast according to administrative or jurisdictional boundaries does not facilitate an effective ICZM, since many factors and elements would be ignored (Northern Ireland Department of Environment, 2006). Therefore, it is important to take a wide-ranging perspective, which traces coastal influences to the extent of their natural, cultural and/or social boundaries. Considering cultural heritage and the extension of the maritime cultural landscape, this principle provides the opportunity to adopt a strategy which includes many aspects of heritage in regards to establishing connections to people and the environment, and also its flexibility to extend the protective boundaries according to assessment of values and priorities, rather than administrative agreements.

2. Local focus: In addition to taking a wide-ranging perspective, it is necessary to compliment the approach with a thorough understanding of specific issues in the coastal area of interest. The collection and analysis of data and information concerning local conditions and local resources help to address particular issues of one certain area (European Commission, 1999). Maritime cultural heritage has been considered as international heritage, linking cultures and places together, as well as a local asset for the communities. The way local people, local authorities, and society at large see that cultural heritage in a certain area has a unique and localized view. Local focus can highlight the values of heritage among the communities and benefit from their attention and collaboration. Also, not all the coastal cultural areas face the same issues. Therefore, local focus will help to address specific issues and problem of a certain area, which might not be the same in other coastal areas. For example, in some areas the industrial development in the sea caused damaged to the underwater heritage, while in other areas terrestrial urban development impact the traditional activities and cause them abolish which results in changes in social settings and abandonment of related historical and traditional facilities. The consequence is losing part or all of maritime and coastal cultural landscape.

3. Employing an adaptive management strategy: Using adaptive management means having the ability to respond to new information and conditions during a gradual process of developing and implementing ICZM programs (Northern Ireland Department of Environment, 2006). This point is very important while including cultural heritage in the management plans, dealing with known and unknown cultural resources, especially in the coastal areas where changes in nature and/or urban settings occur quickly. Due to the dynamicity of the coastal areas, and also changes of values and perceptions in the course of the time, a management strategy that can be flexible and adapted to different situation can greatly benefit to preserve the significance of cultural heritage.

4. Adaptive measures towards natural processes: In the recent years it has been proved that hard engineering (such as sea walls) to decrease coastal erosion is not effective and is more harmful to the beaches. Therefore, the use of soft engineering and/or 'setback and retreat' options has been recommended. Considering the fact that hard engineering would also destruct the beaches, and results in cut- offs in the long-existing condition of the shoreline, for the sake of landscape continuity, especially in coastal cultural landscape, any interventions for stabilizing the coastal area should consider the possibility of existence of cultural heritage and proper measures should be applied for documentation, safeguard and possible protection of the endangered cultural resources.

5. Taking a long-term view: This means to consider all factors and ensure that current management plans will have long-term benefits for the coast, and preserve resources in the best possible way for the use of present and future generations (NOAA, 2009). Justification for the benefit of protecting heritage needs to be done through an integrative method where the focus of non-market values of heritage can be in balance with the market-values of other resources. For this purpose economic studies are required and analysis should be directed based on ecological economics. In addition, the impact of social factors such as the alternations in social contexts due to change of land/sea-use should be considered. The short-term and long-term impact of natural and environmental changes need to be consider while considering the long term use of the coastal areas. In addition, the long term impact of policies and regulations on social, environmental and economic condition should be well assessed before making any new policy or imposing regulations. Having a well-thought long term view will assist in designing management plans in line with sustainable development goals.

Being flexible and understanding that other factors such as culture and technology, and etc. can influence our future decision making is crucial for a long term view as well.

6. Stakeholders participation in planning: This point highlights the importance of the involvement of all stakeholders in the formulation and implementation of ICZM plans. This inclusive process has many direct benefits and is essential if consensus is to be achieved. This not only will help in identifying the values, but also connect people to the existing values and benefit from people's support for these values. In addition, the stakeholders participatory planning will help to raise the discussion on different resources' values and their importance, and will assist to facilitate understanding of different values among diverse groups (Cummins et al, 2004a & B). This is important for cultural heritage professionals to justify the values of heritage in the coastal areas in comparison with other resources and to highlight this value for the benefit of people and local communities. This is where cultural heritage specialists should communicate with different stakeholders and be able to justify the market and non-market values of cultural resources.

7. Ensure the support and involvement of all relevant bodies: While participatory planning ensures the involvement of all stakeholders in the development and implementation of ICZM, there is also a need to ensure equality of input to the process by responsible administrations. ICZM can only be effective if it is supported by all of the relevant administrative bodies (e.g. between government departments), and across all levels of government (e.g. between local and central government). And for achieving the outmost result, all the relevant bodies should be recognized, and the path to identify these bodies should remain open. One of the shortcomings of including cultural heritage in ICZM has been the lack of involvement of the heritage authorities during the planning process. With justification of the values of cultural heritage as resource, the presence of heritage authorities for coastal planning proves to be crucial.

8. Adopting a combination of instruments and tools: Effective implementation of ICZM involves the utilization of multiple instruments including a mixture of legislative measures, policy programs, economic incentives, technology solutions, research, voluntary agreements and education. Obviously, different conditions such as geographical location, local and national legislative measures influence the implementation of ICZM (EC, 2010; 2005; 1998). Therefore, for each factor, there should be sufficient amount of information, justification, planning, and legislative measures in order to create a balance in the plan implementation. For many coastal areas, there is some information available about land-based heritage and underwater heritage, and usually there are some protective measures in place. However, first of all, these details have been overlooked in ICZM. Secondly, the lack of an overarching policy to link the information between the two sides—sea and land—together, has caused heterogeneous approaches for cultural heritage management in the coastal areas.

Following these principles, and including cultural heritage as a resource to ICZM, to have a successful ICZM, key areas of research to be pursued involve an evaluation system to quantify the tradeoffs between natural/environmental, social, economic, and cultural resources in the coastal frontier. Improvements in the availability of such information will assist the ICZM policy formulation process. And in the next level, "the effective implementation of policy will depend on improved governance structures which need to be reviewed on the basis of developing a crosscutting approach to resource management" (Cummins et al, 2010: 7).

As mentioned before, to have an integrated management program there is a need for an integrative method of identification and evaluation of any resources. The internal and external factors both play an important role to integrate the cultural heritage of the coastlines into ICZM. Studies show that physical places and landscapes comprise not only physical and spatial parameters (as internal factors), but also disclose psychological, social, historical, and religious connotations (external factors) (Graumann, 2002). The central idea of an ecosystem approach is for assessments and evaluation to be inter- and trans-disciplinary, where no individual component, either cultural or natural, should be looked at in isolation. This is the core message of integrated and ecological approaches that need to be translated for coastal cultural heritage as well.

To address the objectives of this research, in the following section, a methodology for evaluation of coastal cultural heritage in regards to internal factors as well as multiple dimensions of integrative complexity concept for submerged and coastal cultural heritage will be presented.

2.2. Developing an integrative evaluation system for coastal cultural heritage

Having justified that the ecosystem and integrative approaches are the most suited concept for management of coastal cultural heritage, an integrative evaluation system is suggested. Within this system, first, coastal cultural heritage will be assessed based on internal heritage values, and in the second section, the integrative dimensions will be adopted for the evaluation.

2.2.1. Assessing coastal cultural heritage based on heritage values

A common series of criteria that have generally been developed for cultural heritage in, and sometimes more specifically for underwater cultural heritage, are 'historic', 'technical', 'social', archaeological', 'scientific', 'interpretive', 'aesthetic ', 'rarity' and 'representativeness' (Maarleveld et al, 2013; Staniforth & Nash,2008; Khakzad, 2008). One option for assessing value is through these criteria. In this system, the value of heritage attributes is assessed in relation to other heritage assets and is prioritized for conservation and protection based on heritage's intrinsic values.

The heritage values and the impact of other activities (i.e. development) benefiting and using other resources have been explained in length in many documents such as Heritage Impact Assessment (ICOMOS, 2011). The aim is not to rewrite those criteria, but to apply them for assessment and evaluation of the coastal cultural heritage in order to justify it as resource. These criteria can be applied to evaluate the core zones of the coastal cultural heritage, defining the peripheral zones, assisting in determination of the extent of heritage on land and underwater, and interpreting the whole entity of the coastal cultural landscape. Several tools can be used to develop a suitable evaluation and interpretation system. The present study relies on the tools developed by Nara Document, UNESCO evaluation criteria and guidelines, and previous studies such as the author's master thesis.

Building on existing work, one of the examples for cultural heritage evaluation is introduced through the Nara Document on Authenticity (Nara document on Authenticity, 1994). This document explores the meaning of authenticity of cultural heritage, and emphasizes it as the essential qualifying factor concerning values. The understanding of authenticity plays a fundamental role in all scientific studies and interpretation of cultural heritage, not only in conservation and restoration planning, but also in the inscription procedures for the World Heritage List and in future management of sites. The subject of authenticity should also be explored for under water cultural heritage as a heritage in general. The highlights of the Nara Document, such as the importance of truthful knowledge, cultural context, and factors for evaluation of heritage, are elaborated in points 9[18], 11[19] and 13[20] of the Nara Document.

Following the Nara Document on Authenticity, the Raymond Lemaire International Center for Conservation at KU Leuven developed a working methodology in the form of a matrix called a 'Grid', for identifying, cross-points between "aspects and dimensions" as used in Nara Document. This grid allows for summarization of information, including missing values, and the identification of heritage values (Patricio et al, 2006). The Nara Document and later the Nara Grid have been applied for on land heritage and works properly. Nara Grid has been considered as a tool to indicate multidisciplinary values (Jaenen, 2008). As an experimental method for evaluating underwater cultural heritage, the workability of this system for underwater cultural heritage was tested (Khakzad, 2008); later it was applied in evaluating a project conducted in a submerged city along the shoreline of the Persian Gulf (Iran) and also for assessing the maritime cultural landscape of fishermen in North Carolina (USA). The "Nara Grid" offers an understanding of the balance between, and

[18] "Conservation of cultural heritage in all its forms and historical periods is rooted in the values attributed to the heritage. Our ability to understand these values depends, in part, on the degree to which information sources about these values may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, is a requisite basis for assessing all aspects of authenticity."

[19] "All judgments about values attributed to cultural properties as well as the credibility of related information sources may differ from culture to culture, and even within the same culture. It is thus not possible to base judgments of values and authenticity within fixed criteria. On the contrary, the respect due to all cultures requires that heritage properties must be considered and be judged within the cultural contexts to which they belong."

[20] "Depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgments may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined."

mutual relations among the assigned value, which will help identify the strengths and weaknesses of the heritage site, as well as problems and opportunities for the future conservation of the site (Khakzad, 2008; Patricio et al, 2006). This grid could help to develop a common ground and series of criteria to respond to the question of ranking coastal cultural heritage in order to prioritize the actions and distinguish sites worth presenting to the public, and those more useful for study, and those postponed for future studies and investments. It also offers the possibility to evaluate and monitor different values and assess the interconnection of these values which are helpful in understanding the underwater and coastal archaeological sites and objects as part of larger setting of heritage; it is a way to connect the sea and land too.

The Nara Grid has been shaped according to the factors and values which have been mentioned in the Nara Document; form and design, material and substance, use and function, tradition and techniques, location and settling, and spirit and feeling will be evaluated through the artistic, historic, social and scientific factors of heritage. These factors and values can be adapted in order to evaluate Underwater Cultural Heritage in general; however, the only aspects that should be considered as one of the main factors is the extraordinary location of coastal and underwater heritage and its links with an environment they are (mostly) not supposed to be a part of. According to the two factors of location and setting, some aspects of underwater heritage involve the natural values of an underwater and coastal site, and deals with integration aspects of natural-cultural heritage.

Based on the discussion above, a series of evaluation tables have developed (Khakzad, 2008). This methodology can be expanded and improved for cultural coastlines according to their different state of conservation. The actual tasks of evaluation need to be undertaken by experts in the field of underwater and terrestrial cultural heritage and archaeology base on case by case studies. The results should come together in a list of cultural heritage components along with their evaluations to provide an overview of the whole cultural coastline.

The description of heritage significance is a way to highlight the significance of a place from different aspects, and in order to highlight the importance of cultural coastlines in addition to heritage value assessment, professional judgment is needed to determine the importance of coastal cultural heritage as a resource. For this purpose the integrative dimensions that act as control groups related to ICZM and management of cultural resources are going to be presented further in the following section.

2.2.2. Assessing coastal cultural heritage within integrative dimensions

Cultural resources and heritage management need to be better incorporated within holistic planning processes, rather than operating on their own as isolated entities (Tengberg et al, 2012). This implies close cooperation with relevant sectors, such as social, ecological and physical planning (Engelbrektsson, 2008) and political authorities (Hopkins et al, 2012). As mentioned earlier, considering the separation between cultural heritage activities and regulations directed at sea (underwater) and on land, considering the influence of integrative dimensions, as control groups, on assessing coastal cultural heritage proved to be essential. The examples from natural resources showed that a systematic evaluation through the mentioned dimensions can improve the management schemes (Hopkins & Bailley, 2013; Hopkins et al, 2012). Similar system, with some adjustment, can be used to enhance our understanding of the impacts of sectorial or integrated coastal policies (Scottish Executive Central Research Unit, 2001) for managing coastal cultural heritage. Therefore, there is a need to develop a series of indicators in order to assess cultural resources within and under the influence of different dimensions.

In the following sections, based on the integrative dimensions and control groups, a systematic evaluation methodology will be suggested in order to facilitate inclusion of coastal cultural heritage as a resource in ICZM. However, it should be pointed out that the study of these dimensions (data collection, developing models, and so forth) should be performed by relevant specialists in those fields. Here, the main point is to highlight the influence of each dimension while evaluating coastal cultural heritage to be integrated into ICZM and MSP.

A. Natural and environmental dimension

As shown in chapter 1, the natural-environmental dimension, as a control group, not only has influence on the state of heritage, but also nature, as a resource, may sometimes compete for cultural heritage assets. The distinction between cultural and natural values is often separated for management purposes, but in reality has proven inseparable. Thus, considering nature and culture, both as elements that provide resources and are part of ecosystem services, as well as the concept of cultural landscape which is the combination of nature and human intervention, a unified strategy that creates a balance between evaluation of natural and cultural resources will benefit management of resources. Two factors are crucial in assessing the impact of nature on cultural heritage sites: 1) The location and character of the site within the natural (geological and ecological) landscape; and 2) The sensitivity and vulnerability of that natural landscape to process-driven geomorphologic change (Howard, 2012).

One of the processes for management of coastal cultural heritage considering natural and geological impact, is to follow and improve the schematic process that has been recommended in figure 3.2 and adjust it to the models from different locations with different natural and environmental variables, such as climate change, current, waves and wind impact, sediment deposition and movement, shoreline erosion and so forth. For this purpose, adequate documentation of the coastal cultural heritage is necessary including sites, their locations, materials, good knowledge of the geomorphology of their location and also an understanding of different types of damage that may be caused by the mentioned variables. Superimposing all the data will provide a risk map for different locations and following these maps, proper action for the management of cultural heritage can be adopted.

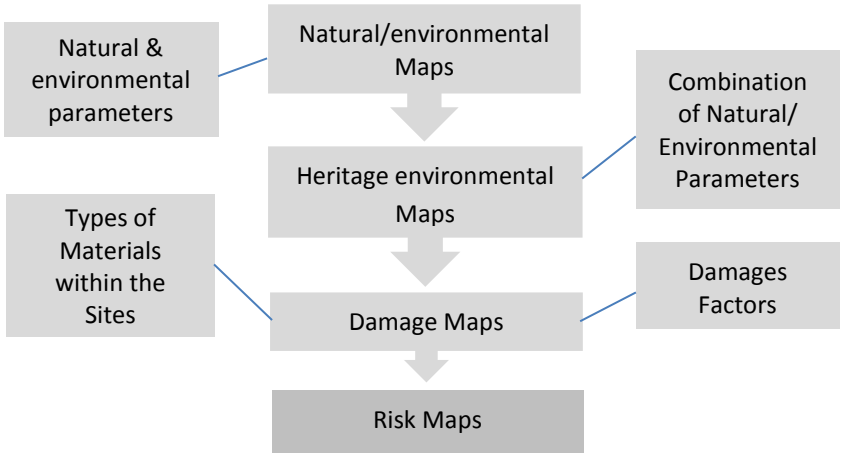


Fig. 2.2: Scheme of the hierarchical maps produced for illustrating climate change, future threats to the build heritage. For the management purpose, the natural and environmental parameters can help to produce different maps. Through superimposing these maps with cultural heritage map, considering the damage factors, risk maps can be produced for cultural resources.

On the other hand, natural factors should be considered as one of the aesthetic, contextual, scientific and historical values of coastal and underwater cultural heritage (shipwrecks, submerged ports, cities, and landscapes). The natural factors play a significant role in shaping sites, and are important for future decision making for presentation and conservation of coastal cultural heritage, as well as providing knowledge about past climate changes and settlements.

Although, studying nature as a control dimension here was directed towards the role of nature in coastal cultural heritage preservation, the study can also be used in a direction for nature preservation, and maintaining a balance between use and preservation of both, natural and cultural, resources. So many sites and shipwrecks underwater are home to sea floras and faunas. It should be highlighted that preservation of many cultural sites results in preservation of natural environment as well. This is a point to be explored more by the natural scientist in future and is out of the scope of the present research. Here, it is suffice to stress the

importance of considering the study of natural and cultural resources together in order to pave the path towards an integrated approach for management of coastal zones, as it is a requirement for showing the value of coastal cultural resources in integrated coastal zone management. The present study formulates some criteria and indicators for evaluation of the natural condition in relation to the present and future state of the sites.

Natural and environmental indicators for assessment of coastal cultural heritage

The natural and environmental indicators which control the state of heritage integrity in coastal cultural areas can be divided into a few categories. Based on some studies (UNESCO Secretariat, Culture and development indicators), these indicators can be categorized as follows:

Indicators that control preservation/loss of heritage resources

- Level of erosion and destruction of heritage due to natural factors
- Level of protection of sites and other heritage resources by natural factors

Indicators that control the integrity of the sites:

- Ecological factors
- Geomorphological factors
- Environmental factors (more anthropogenic effects such as development)

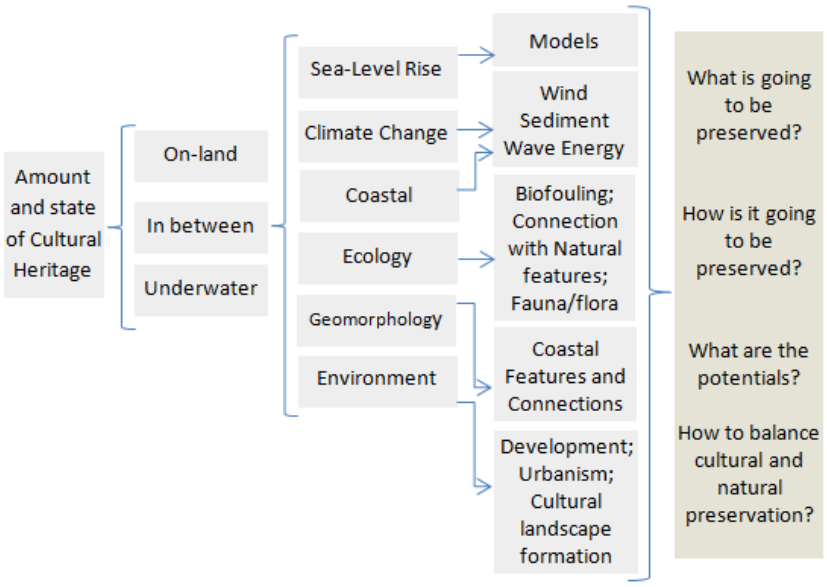


Fig. 2.3: For each natural and environmental indicators indicator the existing information should be collected, and the missing information should be determined. A scientific collaboration between natural scientists and cultural heritage specialists should be facilitated in order to respond to different concerns raised for assessment and management of resources. Following this assessment, a common ground among different scientists can be established and a balanced strategy for preservation and use of different resources can be achieved in line with sustainable development goals.

Based on the natural-environmental indicators developed above, the following evaluation scheme is designed [Fig. 2.3]. This scheme illustrates how the evaluation system should work for assessing a coastal cultural area based on the discussed and presented indicators. These indicators help understanding how natural factors impact the integrity, preservation and protection of sites. The amount and state of cultural heritage in coastal areas, which can be on-land, underwater and in the transitional area, should be mapped. The existing data in this regard varies, depending on whether the areas have been surveyed or not (Deeben et al, 2002). In the second stage, the impact of different natural and environmental factors on heritage preservation and protection should be evaluated through using models and different scenarios of wind, erosion, biofouling coverage, etc. Specific questions should be formulated by experts in the field of cultural

heritage and natural-environmental sciences in order to address both sides' concerns when planning the management schemed. Nature and environment have controlling roles on heritage management in terms of what can be preserves, how it can be preserved, and what are the potentials and threats. Furthermore, considering nature as a factor in forming the context of cultural heritage can be an element that creates a balance between cultural heritage and natural resources preservation and use.

B. Social dimension

As reviewed in chapter 1, social dimension relates to concepts such as human, social, and intellectual capital. Here, all the notions of human inter-connectedness with their environment, sense of place attachment, and identity are evolved. The relation that people have with sea, land, and the products arising from these relationships are the cultural heritage resources that form the integrative part of ICZM and help in the understanding of the social values of heritage, as well as factors that control preservation and management of cultural heritage within social dimension. Nevertheless, social dimension has two sides: one is perception of the public towards heritage as they value their own heritage. The second is to raise public awareness through direct experience of a place while encouraging people to reflect on the value of heritage.

In managing the cultural coastline where residential areas such as cities, towns and ports are located, the main issue is to investigate if and how the archaeological remains bear any values for the local people. These values can result in tangible and intangible benefits for people. On one hand, tangible benefits can be realized through immediate income for the communities through industrial development, urbanization and providing infrastructure. Some of these benefits can be realized in the long term through cultural heritage protection by tourism development, research promotion, and attaining more attention to the areas with protected and well-treated cultural coastlines. It is a long term process and requires a deep and serious collaboration between communities and managers. This point also includes economic studies. Intangible benefits on the other hand, are the benefits out of links that communities can make from their cultural heritage. The stronger these links are, the more respect and protection the cultural heritage will receive. In the case of cultural coastlines, it should be examined if the cultural heritage are rooted into peoples' history and can be related to their identity. Investigating the links between people and their maritime and coastal landscape will help understand the value of the residue of this heritage for communities as a part of their cultural memory, identity, and sense of place attachment. In order to investigate these points, a series of indictors for assessing the influence of social dimension on coastal cultural heritage management is offered as follows.

Social indicators for assessment of coastal cultural heritage

In brief, the non-material benefits people obtain from heritage assets occur through spiritual enrichment; cognitive, emotional and social development; reflection; recreation; and, aesthetic experiences (Millenniumassessment.org, 2015), these can help in shaping a series of indicators and criteria for evaluation of the links between heritage and society. These indicators help to understand how social factors impact the integrity, preservation and protection of sites and what is the value of certain coastal cultural heritage to people and societies. Indicators that control the integrity of sites and the preservation/loss of heritage assets considering the factors in social dimension are:

- Linkage between people and tangible and intangible heritage
- People's memory of the past
- Link and relationship among the heritage assets in people's point of view
- Understanding of heritage values for individuals, communities, nation, etc.

Figure 3.4 illustrates how the evaluation system can work for assessing coastal cultural heritage based on the abovementioned social indicators.

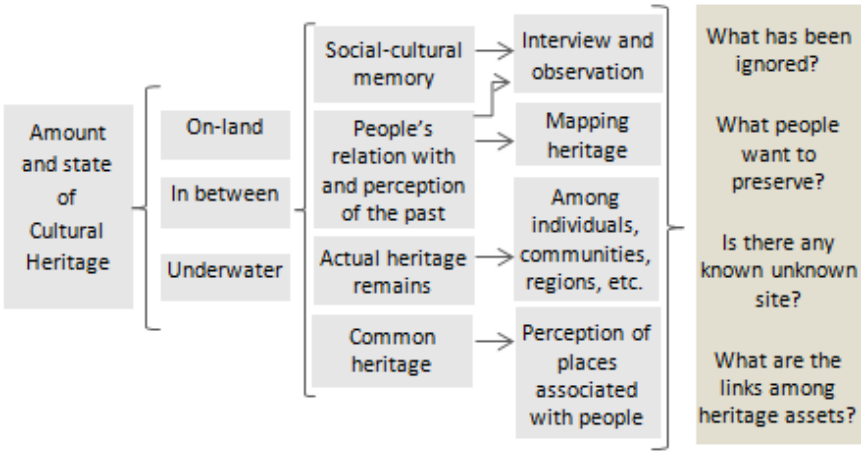


Fig. 2.4: Considering the amount and state of cultural heritage in the coastal areas—on-land, underwater and in between areas—some possible social indicators have been demonstrated on this scheme. Considering the two aspects of cultural heritage—tangible and intangible—heritage has different roles in the society. The connections that people maintain with their traditions or actual heritage remains can shape their social/cultural memory, sense of place, identity, etc. Evaluation of these factors and knowing the amount of existing heritage will help identifying the assets that are significant for the society. The result of this evaluation helps to determine what is needed to be understood better, and what is expected to be preserved for the societies' wellbeing. The process of identifying and evaluation of social values of heritage should be performed in an interdisciplinary manner, applying different techniques from cultural heritage to social science.

C. Economic dimension

An overview of past efforts to value and protect ecosystem services concluded that more research is needed on developing non-monetary methods for valuing cultural ecosystem services and incorporating these into easy-to-use tools (Daily et al, 2009). It can easily be argued that coastal cultural heritage and maritime landscapes are part of the cultural heritage of humankind and are considered as a sort of intellectual capital. Although no economic production is considered here, sustainable preservation of these landscapes is often based on developing new functions that have economic significance. These functions include but not limited to tourism, education, reuse (Rizzo & Mignosa, 2013), or simply enhancing the present situation of traditional activities. Cultural tourism is one of the growing sectors, and monuments, sites and landscapes are the main attractors. Indirectly they offer potential to sustain rural areas and contribute to the local social and natural capital.

In this section, a model will be presented to show how different integrative dimensions can work together to make a balance between heritage preservation and economic benefit. Following this model a series of economic indicators for coastal cultural heritage evaluation will be presented.

C.1. Adopting the concept of cultural capital

An item of cultural capital can be defined as an asset that embodies or gives rise to cultural value in addition to whatever economic value it might possess (Throsby, 2005). A well-defined concept of cultural capital, with a clear delineation of its values in cultural and economic terms, could assist in sharpening the policy articulation process, especially in the heritage area (Kaltenborn, 1998). UNESCO has aimed at developing a set of indicators for evaluation that will be of relevance to measuring stocks of cultural capital and flow of the services they provide (UNESCO, 1998). Figure 2.5 provides an overview of categorizing different types of values in regard to cultural heritage and economics based on the cross study between economics and cultural heritage field.

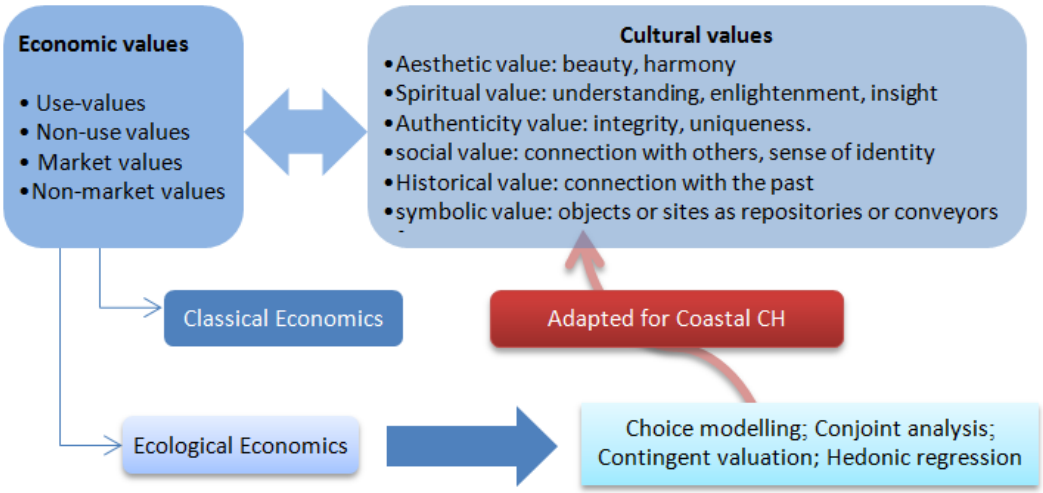


Fig. 2.5: An overview of categorizing different types of values regarding cultural heritage and economics based on the cross-study between economics and cultural heritage fields. Classical economic is based on the market values and use values. In classical economics values are assessed through classical methods of Cost-Benefit analysis. However, Ecological economics has been developed for assessing natural capital. Ecological economics try to evaluate non-market values and non-monetary values of natural resources through methods of choice modeling, contingent analysis, and etc. These methods are adaptable for cultural resources, considering that most of the values that are associated with cultural heritage are non-monetary/non-market values.

In order to create a common ground between cultural heritage specialists and economists, the two following steps should be taken, taking into account factors of cultural justification, economic estimation and political orientation (Mazzanti, 2002):

1. Enlarging the set of stated preference evaluation tools, structuring analysis on a multi-attribute, multi-value framework;
2. Establishing an evaluation set of tools specifically shaped for addressing cultural economic issues.

The aim should be to comprehensively measure the complex set of values, which characterizes cultural goods (from use to different non-use values), and to measure them analytically, with the aim to provide adequate instruments for policy making and economic analysis in considering cultural heritage as a resource in management plans. These instruments will help to create a common ground between economists and cultural heritage specialists in order to encompass all possible values associated with cultural heritage—market values and non-market values considering various dimensions— in the holistic management plans and policies.

C.2. Economic indicators for assessment of coastal cultural heritage

Even when preservation of cultural heritage is able to ensure sustainability in the physical sense, this provides no guarantee of long-term economic sustainability. In this context, controlling factors of different environments (regional economic environment, built environment, national planning environment and community attribute environment) can prove to be powerful forces, blocking the anticipated path to effective economic exploitation. Recognizing and understanding different dimensions and factors, influencing economics is a prerequisite for improving the chances of translating potential heritage gains into effective resources management plans (Pinder, 2003). The indicators for measuring the economic environment are: Weak/strong regional economic situation; flexibility of the built environment; community attitude; national plans. In order to justify the value of coastal cultural heritage as a resource in ICZM, these indicators for evaluation of cultural resources assists to understand the benefit of preservation of coastal cultural heritage in the framework of ICZM. In addition, evaluation through classical and ecological economics affects understanding of different types of values and benefits. Based on these two economics evaluation methods,

indicators that control the integrity of the sites and the preservation/loss of heritage assets in economic dimension need to be developed and studied:

- Classical economics' effect in forms of market value and benefit; and its impact on the other aspects, as well as monetary value as a physical body (e.g. for tourism or scientific promotion.)
- Ecological economics of social effects in the form of non-market values that heritage offer people; effect in the form of shaping the landscape, environment and linkages (as non-market and non-use values, in forms of spiritual and aesthetic significances).

In modern and ecological economics, benefits and values can be in the both forms of market (monetary) and non-market values. The indicators here are developed based on two groups of market value, use-value, and a combination of non-market and non-use values. The purpose of these indicators is to create a common base to compare different values not only between different heritage assets, but also with the values of other resources along the coastlines.

The scheme in figure 2.6 illustrates how the evaluation system can work for assessing a coastal cultural heritage based on the discussed economic indicators. A comparative analysis will provide a thorough understanding of monetary and non-monetary values and benefits, and realize how different stakeholders can be compensated. According to this scheme the three groups of terrestrial, underwater and in between cultural heritage should be identified and their classic economic effect (e.g. use values, property values, benefit out of tourism, and etc.), their physical effect (e.g. restoration and preservation cost), and social effect (mostly concerns with the non-use values and based on ecological economics) will be evaluated. The values and benefit out of other resources (e.g. natural resources) should also come into calculation. These evaluations should help analyze the effect of economic indicators to identify what has been ignored, what people want to preserve, what are the priorities, and how different benefits can compensate for the use or ignoring of resources. The answers to these questions help planning a flexible strategy which considers use and preservation of different types of resources.

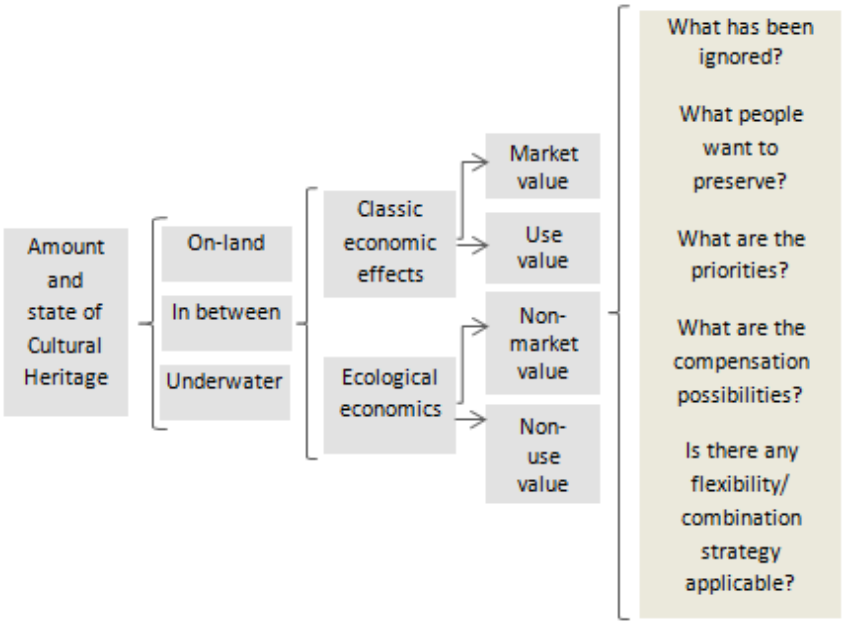


Fig. 2.6: Considering that market value and monetary value are two important aspects of classic economics for evaluation of resources, but not adequate for assessing all non-market and non-use values of cultural heritage, the ecological economics should be adapted for evaluation of other values of cultural assets, as it was done for natural resources. In this respect values and benefits are not only measured based on their monetary values, but also based on their cultural, social, natural, recreational, political significances. In addition, a common understanding among heritage specialist and economists will help to identify cultural assets that can bring different types of benefits to economics and to the society, hence considered as cultural capitol. Therefore, different possibilities for combination of strategies for preservation, use and prioritizing actions can be assessed. This will help to manage resources considering values and benefits in a more balance manner and for long term purposes.

Nevertheless, neglect of cultural capital through heritage deterioration, failing to sustain the cultural values that provide people with a sense of identity, and failing to undertake the investment needed to maintain and increase the stock of both tangible and intangible cultural capital place cultural systems in jeopardy and may cause them to break down with consequent loss of welfare and economic outputs. Therefore, a well-defined concept of cultural capital, with a clear delineation of its value in cultural and economic terms for coastal cultural areas, can assist in sharpening the policy articulation process in the area of heritage. However, it is easier to say that in theory than operationalizing it in actual projects (Rizzo & Mignosa, 2013; Throsby, 2010).

D. Political dimension

Although policy is a direct instrument of governance, it is not always effective in promoting change. Policy effectiveness varies due to different institutional infrastructures and cultural differences regarding compliance and enforcement (Hopkins et al, 2012). Without drawing in the political dimension of culture, it is impossible to understand the contemporary cultures and to determine the scope of the significance of cultural assets (Baig, 2002). In order to create a balance between different stakeholders' expectations and preservation of heritage values, there is a need for policies that aim at connecting heritage conservation to community planning, as well as addressing the political concerns (Greenfeld, 1997). These policies should consider numerous issues in land-use and sea-use with respect to economic and social policies (Duxbury & Jeannotte, 2010; Scriven, 1991). In planning and regulating resources which are performed at different political level, one aspect is a well-informed group of legislators who deign the legislation based on scientific data. Although, political agenda can be based on different motivations, more available information about different aspects of use and benefit of resources helps more alert decision-making. In order for an integrated management approach to work, in addition to a well-informed group of decision-makers, the workability and effectiveness of existing policies and regulations need to be understood, and if the need arises, new policies should be made.

Political indicators for assessment of coastal cultural heritage

In the political dimension several factors are important to face the challenge in the process of cultural heritage determination and cultural resources evaluation in order to not overlook heritage assets which are intrinsic parts of the composite cultural heritage of the coastal region. Therefore, under the political system and workability of the law and regulation in regards to coastal cultural heritage in different levels, the following issues should be addressed:

- Assessment of the religious and spiritual structure of the authorities which define the management system.
- Communication among scientists, local people, authorities and other stakeholders.
- Community empowerment system and tools for communities' involvement in decision making.
- Understanding of the structure of local communities.
- Educational system

Figure 2.7 shows the abovementioned indicators in relation to cultural heritage related goals and existing political dimension as control group.

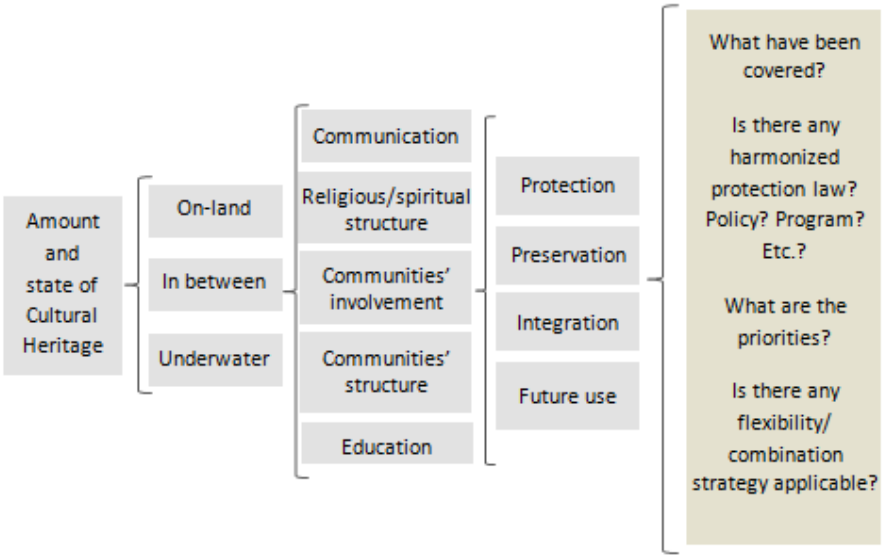


Fig. 2.7: Considering the amount and state of cultural heritage in the coastal areas—on-land, underwater and in between areas—political indicators have been used in this scheme. These indicators should be assessed within the existing political dimension respecting international, national and local systems. With the aims of protection, preservation, integration and sustainable future use, the workability of the existing legal system and policies should be assessed. Communication among heritage specialists, other scientists and authorities can promote an understanding of the values of cultural resources in order to plan for future management and possible adaptation of new policies, regulation and laws.

2.2.3. The effect of overlaps among integrative dimensions

It was shown that each dimension has strong impact on coastal cultural heritage management, and coastal cultural heritage management can also influence other dimensions. However, these influences and impacts are not only between heritage and one dimension, but all dimensions together, influence the end output. The scheme, in figure 2.8, shows the importance each environment can play in heritage preservation. In each environment, different factors can alter the end result and also combination of the impact of several dimensions can increase or decrease the impact of different environments. For instance, strong local policies for heritage preservation, community social values in terms of connection with the local heritage, flexibility in changing the environment, and reuse or use of built heritage not only can decrease the impact of the economic deficit, but can also improve the economic situation.

Therefore, the state of heritage preservation varies considering each environment. Obviously, if all the environments are in their best condition, cultural heritage preservation is appreciated and realized. When the economic situation is degrading, the heritage preservation state depends on the balance that can be made (or exist) between different types of benefits. If the non-market value of heritage preservation is strong (e.g. strong social dimension), it can compensate for the market value of heritage preservation to some extent. However, the social willingness to preserve heritage, due to high levels of attachment and sense of identity, might not result in high preservation, but highlights the positive attitude of people towards their heritage. In addition, especially in weak economic environments, the use and reuse of heritage has showed to be more effective. The heritage, if reused, could become a part of present life and contribute to economic development and benefit as well. The same for each dimension, the influence of different factors can alter the results. Therefore, a deep understanding of the impact of these dimensions, as control groups, is necessary for a sustainable management of cultural heritage along with other resources in coastal areas.

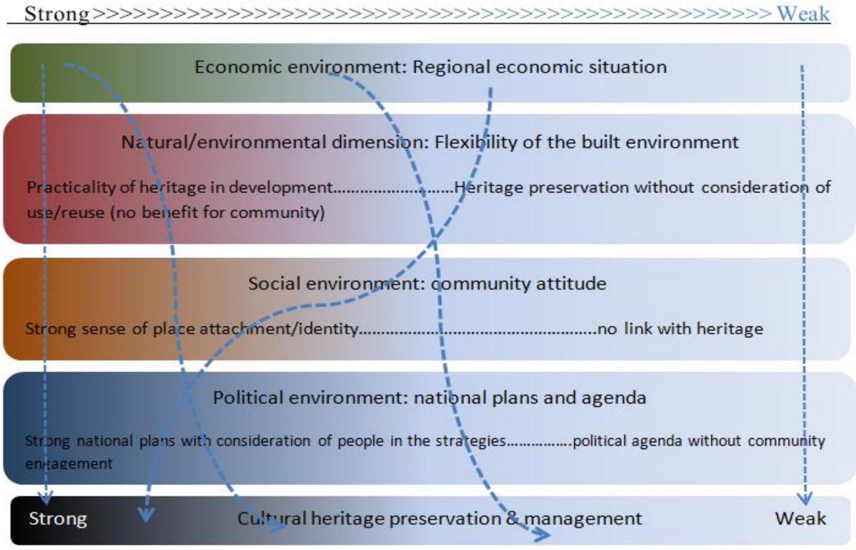


Fig. 2.8: Schematic momentum for cultural heritage conservation. This scheme shows how different dimensions in different stages—weak to strong (from left to right)—influence preservation and ultimately management of coastal cultural heritage. Obviously, if all the dimensions are week, it results in a poor heritage management, and if all dimensions are strong, cultural resources and heritage would receive better attention in holistic management. However, if dimensions are in different status, the combination of the impact of all dimensions together would determine the state of heritage management. In this scheme, the arrows schematically move among the dimensions and show the hypothetical state of each dimension. The calculation of the result can be influenced by political and economic dimensions more severely. However, natural and environmental dimensions can impact heritage in unpredicted manner. Social dimension affect heritage management directly or indirectly through social perception. This assessment requires a deep understanding and calculation of known and unknown factors regarding each known dimensions in addition to other dimensions that in future might be considered important.

Considering that more dimensions can be influencing our decision-making and the growing attention on the influence of culture and the value of cultural heritage as a resource, the following section suggests a new policy approach in order to evaluate and include coastal cultural heritage as a resource in ICZM.

2.2.4. Towards a new policy to evaluate cultural resources for inclusion in ICZM

Integrated coastal zone management (ICZM) deals with management of different resources in the coastal areas, considering the ongoing development activities and values of resources. Following assessment of coastal cultural heritage within the integrative complexity dimensions, understanding its management strategies overlaps with other resources and justification of the broader significance of cultural resources, the following scheme is suggested for designing new policies to integrate coastal cultural heritage as a resource into ICZM. Heritage and culture overlap with nature in terms of physical impacts and context; with social systems, especially in terms of intangible and tangible heritage (traditions, memories, identity, place attachment and etc.); with economic systems as a resource for people benefit (tourism promotion, property's value, scientific and educational purposes and etc.) Because of these significances, in addition to the centrality that cultural heritage has in coastlines in connecting sea and land, culture as a fifth dimension is suggested to be added to natural, social, economic and political dimensions of integrative complexity in order to gain its status, not only as a resource, but also as a control group [Fig. 2.9].

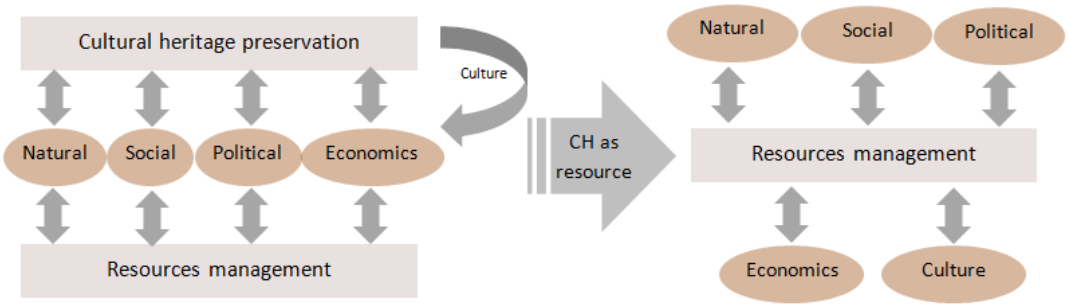


Fig. 2.9: Adding culture as an integrative dimension. The first part of the graphic shows that culture has been regarded as a sub-dimension in coastal resources management and cultural heritage preservation has been dealt with apart from other resources. Considering the importance of cultural heritage not only because of its multi-faceted vales, but also because of the role that it can play in linking land and sea, it is justified that culture should be added as a dimension and control group in holistic coastal management schemes.

As a result, built heritage and intangible heritage, which previously were considered as sub-groups of environmental and social dimensions, will be dealt as a whole entity under cultural dimension. Therefore, cultural heritage gain its deserved attention. In this way, not only culture will be regarded as a resource in management plans, but also other activities under other dimensions, need to be processed and evaluated in regards to cultural dimension. Thus, the integrative model will be altered as shown in figure 2.10.

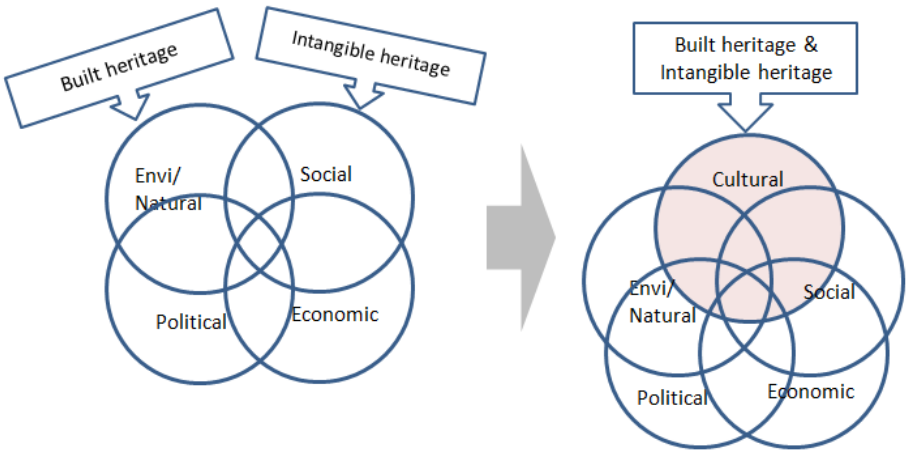


Fig. 2.10: Shows the alternated integrative complexity model with inclusion of culture as a new dimension.

This model shows a greater integrative complexity and overlaps among different dimensions. The role of culture in regards to economics and social and natural sciences creates a new necessity for policy making. In this case, not only the values of intangible heritage are highlighted, but the physical remains and structural heritage in relation to the nature and environment also require greater consideration. Within cultural dimension, cultural indicators should give irrefutable evidences about issues of current concerns and issues that can be influenced by cultural policy response (Carceles-Breis, 1992). The elaboration of a general framework for assessing the cultural dimension in coastal areas can help define the way that cultural assets are addressed and treated in coastal resources management.

Following an integrative evaluation, which is one step of including coastal cultural heritage as a resource in ICZM, the second step is to define a clear entity or zone of cultural resources. This entity or zone will be applied as a tool in Marine Spatial Planning (MSP) for Integrated Coastal Zone Management. As discussed before, Maritime Spatial Planning and Integrated Coastal Zone Management are complementary tools. The

ultimate aim of Maritime Spatial Planning is to draw up plans to identify the utilization of maritime space for different sea uses. MSP is about planning when and where human activities take place at sea, and many of these activities are in the transitional zone—between sea and land—and/or related to sea as well as land (Smith et al, 2010). Therefore, new strategies should be based on coherent application of ICZM with maritime spatial planning which will improve the sea-land interface planning and resources management. In this case, including cultural heritage as a resource in MPS and creating a clear zoning for heritage assets will protect the cultural heritage through early identification of impact, potentials and opportunities for multiple use of space. It will reduce conflicts between sectors and create synergies among activities, and will also highlight the benefits of protecting cultural heritage in terms of education, recreation, and cultural tourism promotion. In many cases there will be conflicted areas and overlap among different activities, and economic benefits, since development plays a great part in decision making. However, zoning will assist in the identification and evaluation of cultural areas and may help prioritize activities.

2.3. Defining coastal cultural heritage zone: Coastal cultural middle ground

To address the third objective of this research—delineation of the cultural area— and facilitating defining the boundaries of coastal cultural heritage, a tool has been developed in this section. This tool is called Coastal Cultural Middle-Ground. The purpose of this tool is to define criteria to determine a zone which encompasses the coastal cultural heritage assets, respecting their links, meanings and values. The process of developing this tool takes the eight principles of ICZM, especially local focus, employing adaptive management strategy, stakeholders' participation in planning and involving relevant bodies into account. Therefore, this tool will be a flexible, but inclusive cultural heritage tool that helps defining the coastal cultural heritage zone. With inclusion of coastal cultural middle-ground into MSP, management of coastal cultural heritage as resource in ICZM will be facilitated.

The boundaries of a resource define the extent of area that the resource can reflect its significance, and is considered as a protective measure for preservation and use of that resource. The boundary determines the spatial scope of the resource (e.g. a coastal cultural heritage zone). In order to determine the boundaries, an evaluation methodology is also needed to define the resources and their extent of meaning and significance. Following the evaluation methodology offered and the elements taken from theories and concept regarding delineation of frontier and in-between space, the following sections will suggest methodologies to define coastal cultural heritage areas as will be called coastal cultural middle ground. The aim is to define the extent of the boundaries with the help of outlining, interpretation and evaluation of cultural criteria.

2.3.1. Relationship between the theories and defining the coastal cultural area

Where is the in-between space? And what is its connection to land and water? And what is the extent of linkage between this in-between space with land and sea cultural assets? Defining this area highlights the importance of the integrative complexity dimensions (natural/environmental, social, economic and political) in controlling decision making in the coastal areas, and also cultural factors beyond those four dimensions.

Different scenarios and case studies show that there are multiple lenses through which one can look at the in-between space. One can zoom in and study a single in-between space or zoom out to look over entire regions and see how the exterior factors of land and sea can have influence on this area. The exterior factors are the elements that should come together to shape a coastal cultural middle-ground. To mediate the situation and the differentiations within the coastal frontier, the Richard White's (1991) theory of "the middle ground" is seemingly applicable. Reaching to a middle-ground is a process based on creative (mis)understandings, which leads to a situation of cultural, social and political equilibrium. The cultural coastal areas and the in-between space with a circulation system of people, ideas and artefact (Gosden, 2004; Murray, 2004) in time and space, can benefit from this equilibrium to create a ground for more considerate decision making. What emerges from the in-between space is a ground of discourse and practice, which is helpful to describe through the theory of the middle-ground. The concept is powerful and it has potential and strength as a metaphor when approaching and describing the in-between space in the coastal settings. This concept can help creating a more effective ground, based on different existing factors, for protection of cultural heritage in the coastlines. Factors which should be considered for creating a coastal cultural middle-ground and the

relationship among different layers of history and cultural entities and also between present and past, and the issues involved are depicted in figure 2.11.

In addition to the social theories relevant to defining coastal cultural middle ground, the concept of ecosystem services facilitates the valuation of the multiple services from ecosystems and landscapes for management purposes. The link between the concepts of "landscape" and "ecosystem" has been emphasized by Leser (1976) in his definition of landscapes as ecosystems of complex systems of biotic (living elements including humans) and abiotic (non-living) elements. The common understanding of "landscape" accords with the definition of the European Landscape Convention (2000) as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". This view highlights the fact that the human dimension of landscape encompasses factors such as people's emotional, intellectual, and socioeconomic inputs, which contribute in many ways to landscape diversity and distinctiveness (Moreira et al, 2006). Therefore, the mentioned factors include not only tangible and physical aspects of defining the actual entity of the cultural area, but also its extent in people's perception and memory, and the links among all the mentioned aspects, which are essential in formation of coastal cultural middle ground.

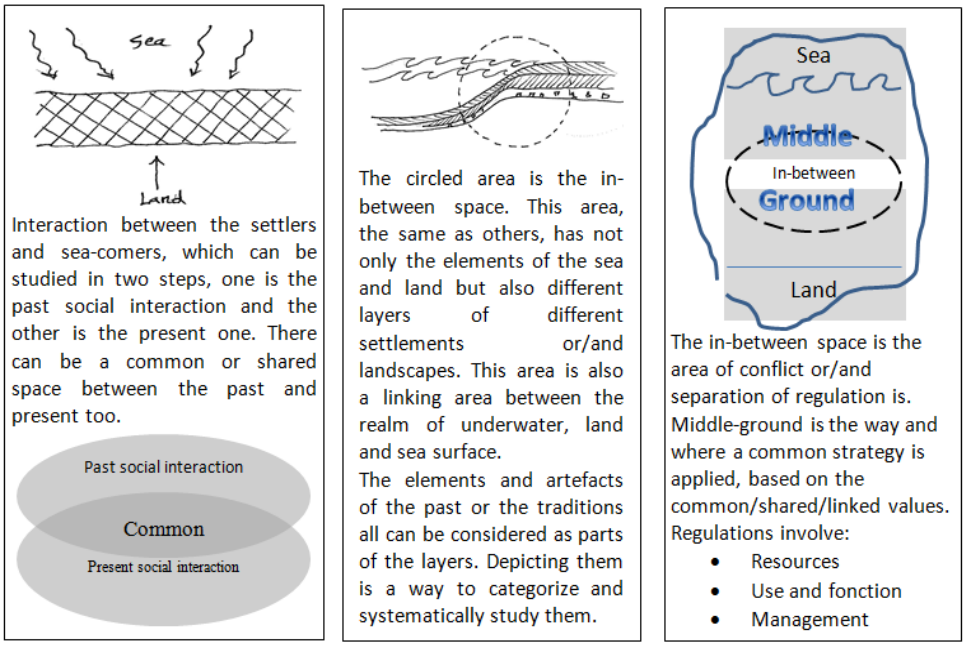


Fig. 2.11: Depicts the role that in-between space can play in linking land and sea. The in-between space which has been created through separation of land and sea by different legal and political boundaries, as well as natural phenomenon, is by no means a fixed line or space. This a space to create a middle-ground for linking sea and land management strategies, for regulating cultural heritage in sea and on land, and to better understand the social interaction and connection of people with the sea and land, not only in present time, but also in the past.

2.3.2. Describing and defining the cultural coastal middle-ground

The in-between space is a part of landscape, where the clash between the sea and land happens in different forms; confrontation of two natural entities of water and land; the differentiation between the regulatory regimes; conflict of interest in the use and/or preservation of resources. The cultural coastal middle ground aims at a harmonious approach for smoothing the clash and to offer a unified zone to be managed in holistic way, respecting it as a link, and not a separating entity between the sea and land. Following this purpose, in this section the steps in defining the entity of coastal cultural middle ground will be presented as follows.

A. Physical entity and the area
B. Evaluation

C. Risks and threats assessment

In each of the steps above some or all of the following factors have determining role:

- Physical extension in terms of natural and cultural assets
- Extension of the intangible values
- Time scale
- People's perceptions and expectations
- Existence of different kinds of resources
- Legal and political boundaries and restrictions

These steps are based on heritage assessment techniques and evaluation of cultural heritage, in order to justify a homogenous management plan for a significant cultural area. It is acknowledged that there are different legal and political boundaries for entities in the sea, on land or/and in the transitional area that might need adaptation, alternation or formation in order to facilitate the homogenous management of cultural coastal middle-ground. In the following section the three steps of defining coastal cultural middle-ground are going to be explored.

A. Physical entity of the cultural coastal middle ground

The aim of this section is to comprehend and demonstrate how the tangible and intangible cultural aspects can help in defining the cultural coastal area, and what needs to be conserved through its physical and tangible body to safeguard the valuable tangible and intangible aspects of cultural coastlines. Following the concept of ecosystem services regarding benefits resulting from different services and resources (Fisher et al., 2009; Boyd & Banzhaf 2006), while evaluating and assessing the cultural heritage resources, it is essential to capture and reflect the benefits out of management of all aspects of coastal cultural heritage. The first step consists of the construction of a general spatial framework which can be used to map and compare the scattered and incomplete information which is available about the cultural and archaeological remnants of a specific coastal area. Several methods have been used widely in land evaluation. Reviews of the different systems are given by Webster and Howard (2011), Mitchell et al (2009), Antrop (1989) and Webster & Beckett (1970), What this section emphasizes is that in this spatial framework several factors of connections and links are important. These factors relate to the connection that people make (made) with their environment over time and in present, and can be related to natural and social contexts. The context of a heritage asset should be used to describe any significant relationship between one to other heritage assets. These relationships can be cultural, intellectual, spatial or functional (English Heritage, 2008). The heritage assets also include the intangible heritage of communities and people in the designated shorelines, and therefore, include sense of place, identity and memory.

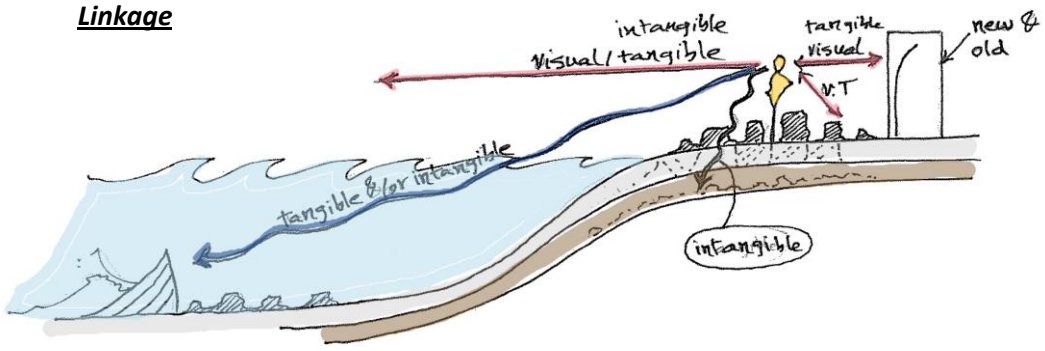


Fig. 2.12: Illustrates the linkage that people can have with their environment and heritage. This linkage can be tangible, meaning that people can easily see them, or use them and be in contact with them. Or it can be a type of intangible linkage, such as memory of the past or an imaginary perception of the existence of something (e.g. a shipwreck or a town underwater). Also the visual contact with the sea and from the sea to land creates another linkage between people, sea and land.

The mapping of the cultural elements in the landscape is primarily based upon the natural regions (defined by geomorphology and natural context), the consecutive cultural and historical organization and

different layers of landscape which were superimposed during centuries or even millenniums. These aspects, which make the linkage and connection between people and their heritage and environment, shape seascape, seabed scape and landscape all together. The graphics below [Fig. 2.12 and 2.13] show how different elements and layers are related, even if they are not visible from one or different angles.

Contact

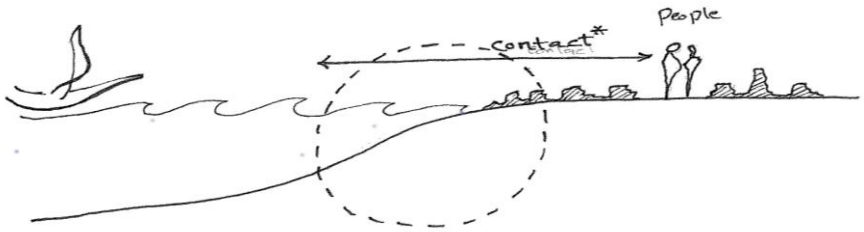


Fig. 3.13: This figure illustrates a kind of contact between people and sea; or between seascape and landscape. Two main types of contacts have been recognized for defining the middle ground:
1. Past and present contact with the sea has been through people interaction, use of resources, and connection among places; 2. Present contact with the past which is through traditions and places. These would lead to memories, identities and sense of place attachment.

In addition to landscape, seascape is very important in the people perception of their space and in unifying the land and sea. The Concise Oxford Dictionary defines 'Seascape' as a 'picture or view to the sea'. According to Natural England (2012; 2010) 'a 'seascape' is 'an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land and sea, by natural and/or human factors.' The social importance of seascape and, the linkage and connection between people and the sea, has well been explained by G. Cooney: "Seeing and thinking of the sea as seascape - contoured, alive, rich in ecological diversity and in cosmological and religious significance and ambiguity - provides a new perspective on how people in coastal areas actively create their identities, sense of place and histories" (Cooney, 2010: 323). Seeing the lands from the sea and the connections among different lands through the seas resulted in similarities in lifestyle and beliefs of people in different coastal environments. Also recognition and marking of the land and sea in ways that may leave material traces, and landmarks and seamarks which facilitate movement and the identification of boundaries; and people's belief in spiritual power of the sea, islands and coastal zones (Scarre, 2002; Pollard, 1995), all are important aspects which incorporate into formation of cultural and natural heritage in the coastal areas.

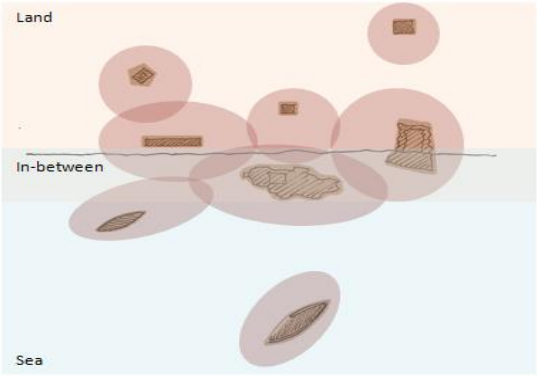


Fig. 2.14: Recognizing the main cultural zones is an essential step in defining coastal cultural middle ground. These zones, related to a specific history, event, value, etc. have to be superimposed upon natural and environmental resources' zones. Thus, this allows highlighting the core zones and their relation to each other, in addition to the relation between smaller landscapes, seabed scape and seascape units to form larger regions. Each cultural heritage units is described in a systematic way using characteristics of their actual and past situation. Again, both natural and physical characteristics are used in combination with historical, cultural and scenic ones. This evaluation is not only horizontal, based on what can be seen on the surface, but also vertical, based on our knowledge of what exist beneath the water, sand and earth, and also what people know and feel. Thus, the context, coherence, completeness, authenticity and identity of the cultural heritage can be evaluated in a certain area, and its extension in the sea and on land can be assessed.

Seabed-scape, on the other hand, is underwater. It is a terrain that is usually invisible to people, unless they dive. However, not only the

archaeological remains from shipwrecks and submerged cities and landscapes are important aspects of heritage that should be considered important, but also customs, believes and traditional activities create a sort of connection between the people and the seabed. Examples of these can be seen in many areas in the world, such as in the Persian Gulf, Mexico, Australia and Gulf of Mannar (De Silva, 1995) etc., with activities such as pearl diving. These kinds of activities usually had a long history in an area, either abandoned now, or still active. The knowledge about all aspects of coastal activities in the past as well as in present, in addition to features that form seascape and landscape and seabed-scape should help the planners and managers, and the cultural heritage specialists to better understand the variation in the types of relationships, communications and movement that characterize different zones from the coast out to the open sea (Breen & Lane, 2003).

Considering that in many coastal areas there are scattered cultural features, such as shipwrecks underwater, fishing heritage on land, remains of past and present seafaring, in addition to traditions and maybe traditional social setting, each item can be regarded as a core heritage, however, the meaning of the whole can only be realized if the links among these cores can be preserved and interpreted, and the integrity of the whole landscape can be conserved (Firth, 2006; Draye, 2006). Defining the core zones and buffer zones helps to define a clearer boundary of the culturally valuable terrain and assets in the coastal area, and results in creating a common ground among the developers, and natural and environmental advocates, especially considering the increasing pressure on the coastal areas (Carreno & Peru ICOMOS, 2006). The general concept of core zone and buffer zone is very much applicable to any cultural/traditional landscapes (Antrop, 1997), including cultural coastal areas and maritime cultural landscape [Fig. 2.14].

B. Evaluation of the coastal cultural middle ground

As the second step in defining the extent of coastal cultural middle ground, the physical entity of the middle ground and its extension should be evaluated through several factors. These factors are determined not only by the physical remains as we know as built heritage and artifacts, but also by the intangible relationships created by people's perceptions, memories, sense of place and identity. All these aspects of connection—intangible and tangible—are assessed through some factors which are formulated based on the landscape studies (Antrop, 1997), the underwater archaeological theories (Muckleroy, 1980), World Heritage (Rössler, 2006) and cultural heritage studies (Nara, 1994), and also lessons from ecosystem management approaches. These factors are as follows:

• Context: the way the elements of this area are integrated in its larger environment between the sea and/or the land;
• Coherence: the degree the elements of the middle-ground fit together, are related to each other in a structural, functional and imperceptible way;
• Completeness: the amount of all present necessary elements to characterize the ideal middle-ground;
• Authenticity: the degree by which the whole as the elements represents the original condition or reflects its development not only in present time, but through the history
• Identity: the way the middle-ground can be personalized and the degree of its uniqueness; landscapes represent a closely woven net of relationships, the essence of culture and identity.

C. Risks and threats assessment

As aforementioned, risk of removing the dimension of culture and heritage from the ecosystem services and planning can cause irreversible damages to coastal cultural entities and threats loosing this valuable resource. The driving forces behind these threats are urbanization, accessibility and globalization (Antrop, 2005). This caused irreversible damages not only on physical entity of cultural remains, but also in social setting and economics.

Parallel to defining and assessing the integrity of the cultural coastline, the process of risk assessment also should be performed. This process will help to determine the elements that are threatened by external factors and/or need attention. Coastal areas are highly multi-functional/multi-attributes spaces which are continuously under alternation for the use and benefit of people. As a result, the evaluation process of the cultural coastlines is largely determined by the social context at a given time period, considering the past changes and the future needs (Jones-Walters, 2008; Antrop, 1997). Today, the changes are seen as a menace, as a negative evolution because they cause a loss of diversity, coherence and identity, which were

characteristic for the traditional cultural landscapes that are rapidly vanishing (Antrop, 2005), and are gentrified.

Two main factors are threatening our understanding of the coastal cultural landscape: 1) Fragmentation is the most common, which is caused by a sudden impact (e.g. road construction) or gradual process. This example can be seen in many coastal areas in the world. One example of this is in Warraversijde in Belgium, where the road has cut through the historic maritime landscape of a partially submerged 16th century fishing village; and 2) Loss of landscape's functionality which leads to degradation and decay of its elements and it whole in long term, also change of its structure due to a new functionality leads to alternation of the physical entities of the landscape, and abandoning and abolishing the historical assets of the coastal cultural landscape. The examples of this case can be seen in the traditional fishing villages in North Carolina coasts, where abandoning historical docks and fish houses caused their degradation and gradual replacement by new urbanism (Khakzad, 2012).

In addition, to all natural and anthropogenic threats and risks, the separation of legislation and protective measures in land and on sea is a threat for a homogenous management of coastal cultural landscape. Therefore, understanding these factors should be a part of the process of mapping cultural values, in order to explore the potentials and obstacles on the way to create a coastal cultural middle-ground.

2.3.3. Formulation of models for defining coastal cultural middle ground

The ideal area of coastal cultural middle ground would be where a common sense not only through physical remains, but also through knowledge and feeling might exist. In the suggested model [Fig. 2.15], the areas of core zones and where values of heritage are obvious would be mapped. However the ideal model areas consist of the intangible links and peripheral/buffer zones. In the analyses, in the final step, the social, natural and economic aspects would be considered and a plausible area would be suggested to be regulated.

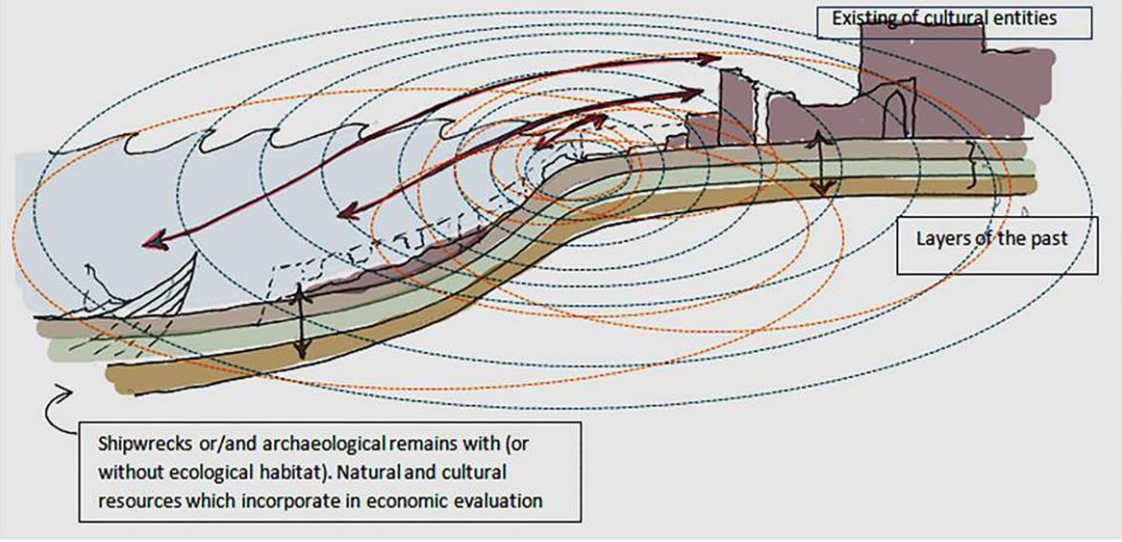


Fig. 2.15: In formation of coastal cultural idle ground, connections among cultural entities can be in physical, social and economic forms. The extent of this area and defining it all depends on the links and connections among different factors. The circular lines give an idea of how the common ground can be defined, encompassing the maximum amount of heritage values. However, the circles can include one area more or less, and not always follow a regular shape. All depends on the extent of existence of the tangible and intangible heritage.

As mentioned before, on the way to define coastal cultural middle-ground and regulate it for inclusion in holistic management plans, one step is considering risks and threats. Risks and threats can be due to anthropogenic or natural factors, including the existing or non-existing laws and regulations. Figure 2.16 shows

where this matter should be dealt with in the process of formation of coastal cultural middle ground and its inclusion in holistic management plans. Although, MSP and ICZM have been considered linking sea and land approaches, cultural heritage needs separate attention, since it has been dealt with separately for a long time.

The coastal cultural middle ground study offers two approaches that are in line with integrated approaches for holistic management plans of the coastal areas. First, it offers a general framework of spatial landscape units which reflect differences in historical development, linked to the local cultural, natural, economic and social conditions. This can be compared to the actual situation, so remnants of the old landscapes can be detected and mapped. Secondly, the idealized model descriptions can be used as a holistic tool to evaluate the landscapes values and to define the integrative elements that in whole make a harmonized image of the coastal cultural middle ground.

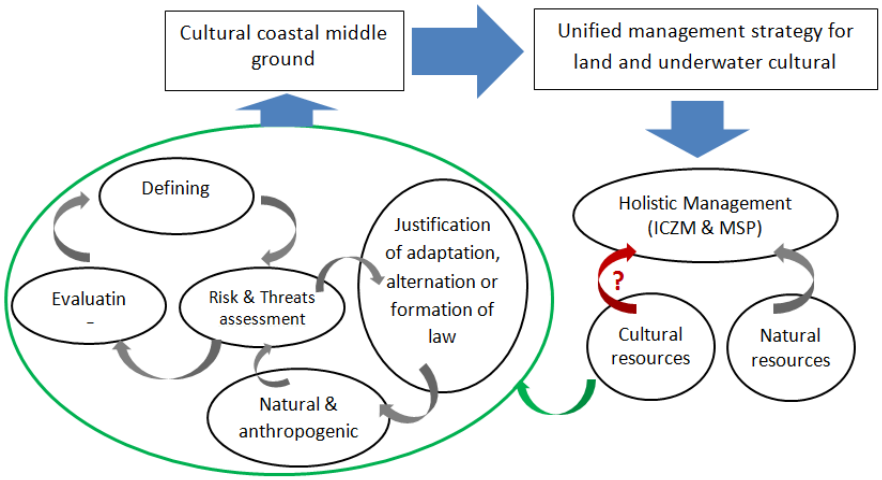


Fig. 2.16: Demonstrates the process of defining, evaluating and risks/threats assessment. The red connection is the ultimate goal of the present research—inclusion of coastal cultural heritage in ICZM and MSP. However, this will not be feasible before addressing multiple factors of defining, evaluating and assessing risks and threats. Considering the separation of regulation on land and underwater, and different types of links and connections that exist among heritage assets, people and nature, a coastal cultural middle-ground should be formulated in order to facilitate inclusion of coastal cultural heritage in MSP and ICZM.

2.4. Results

According to the present study and learning from previous experiences, especially in regards to natural resource management this section presents the process, models and guidelines for assessment of coastal cultural heritage and its inclusion in ICZM and MSP. Figure 2.17 shows the conceptual framework for including coastal cultural heritage as a resource in balance with natural resources into ICZM framework for the future use and benefit.

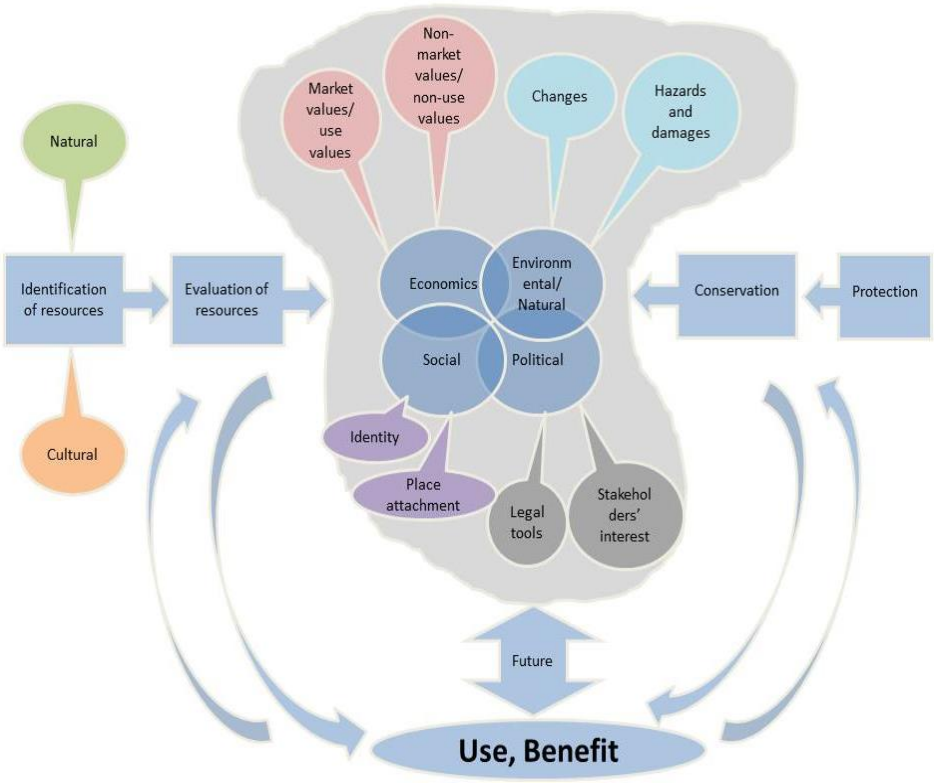


Fig. 2.17: The conceptual framework for including coastal cultural heritage as a resource in balance with natural resources into ICZM framework for the sustainable use and benefit.

Flowchart presented in figure 2.18, which was developed following the conceptual graph, shows a step by step process of identification and evaluation of coastal cultural heritage to justify its value as a resource for policy making and inclusion in ICZM. Stages 1 and 2 are the preparatory stages to understand the significance of coastal cultural resources.

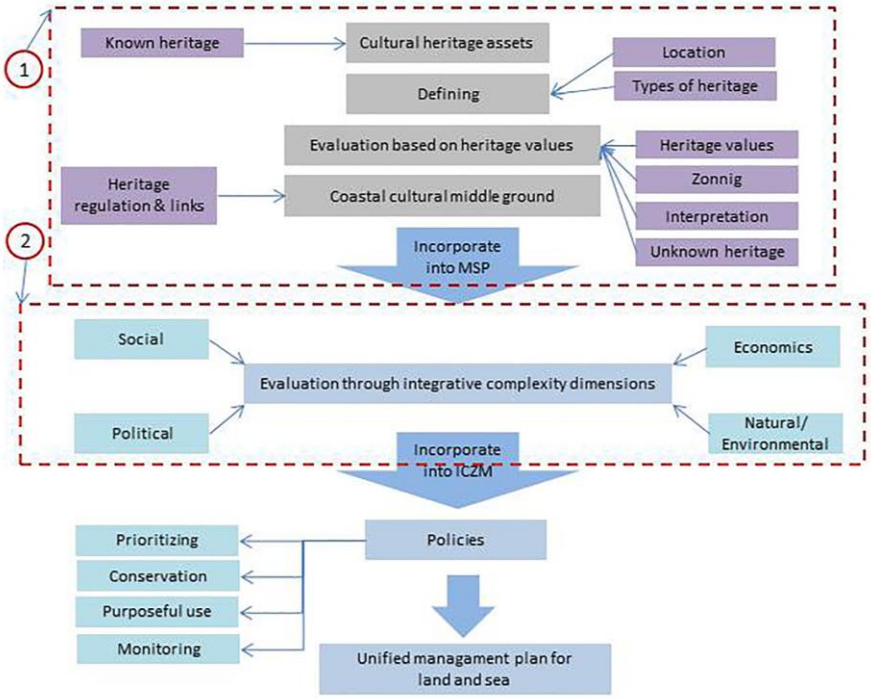


Fig. 2.18: The process of including coastal cultural heritage in integrated coastal zone management policies. The first stage (1) is what should be well covered by cultural heritage specialists, archaeologists, historians, etc. in order to justify the significance of cultural heritage in MSP. The second stage (2), which is integrative evaluation of the heritage assets, is an interdisciplinary action. Considering different impacting dimensions and control groups, coastal cultural heritage should be evaluated in order to be justified as a resource in ICZM. In this way the importance of culture, as a separate dimension, is also highlighted.

Based on the studies of ecosystem services and integrative complexity model, it was discussed that coastal cultural heritage should be assessed in an integrative way, and culture as a dimension should be added to the integrative complexity model. Therefore, figure 2.19 shows a full framework for evaluation of coastal cultural heritage and assessment of the impact of different integrative dimensions, including cultural dimension, on heritage management.

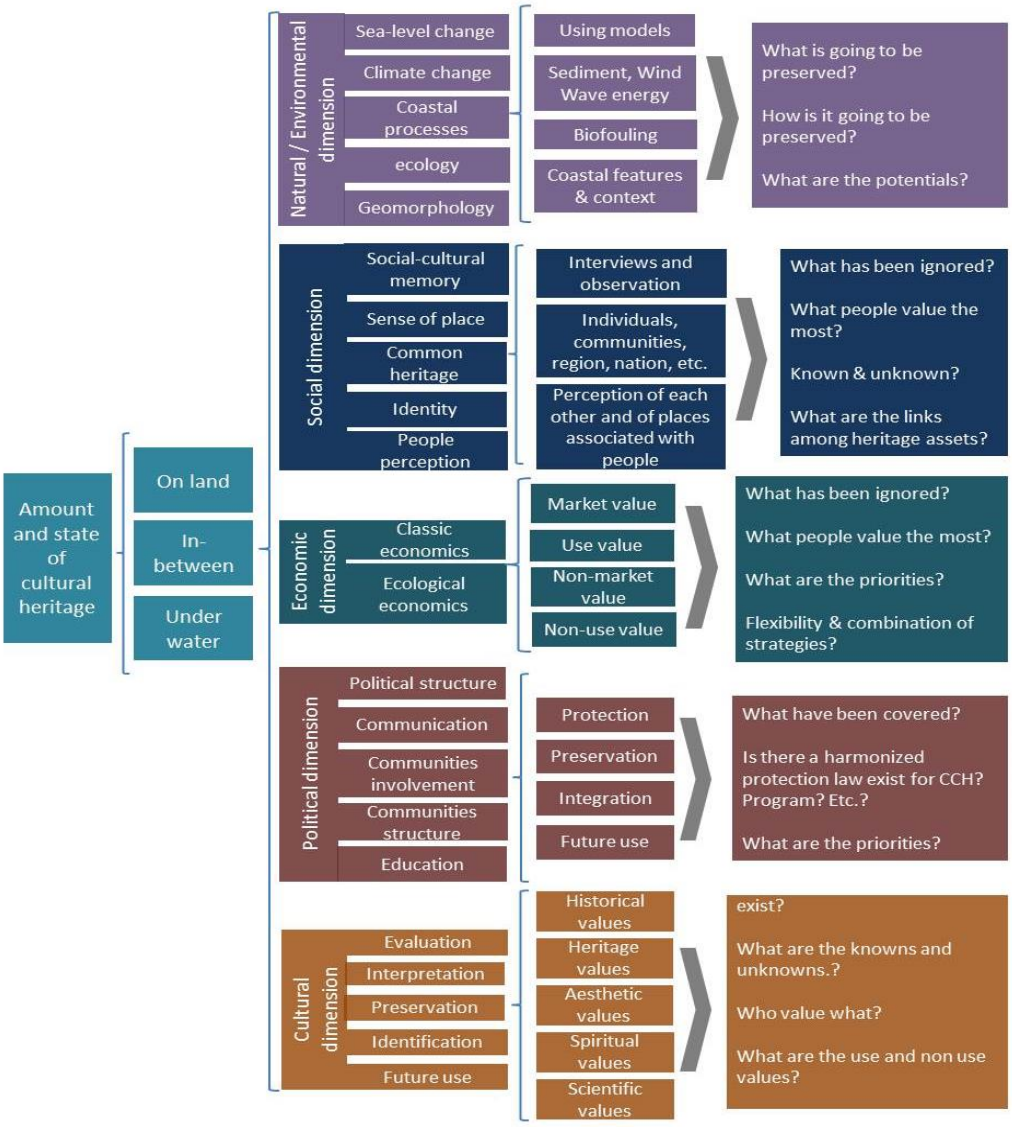


Fig. 2.19: Shows an integrative framework for evaluation of coastal cultural heritage, and assessment of the impact of different dimensions, including cultural dimension on heritage management.

Base on this framework, in each dimension, different potential sectors might be engaged in evaluation and assessment of resources, including cultural resources. The first section of this scheme that deals with defining the amount and state of cultural heritage on land, underwater and in in-between space, needs to be operationalized prior to integrative evaluation. That is the first step that has already been mentioned in figure 2.14. In the second step, cultural resources will be assessed within each dimension and the impact of each dimension as control group will be evaluated. This task needs to be performed in an interdisciplinary way, integrating different disciplines and sectors involved. In addition, for the policy making, the integration among sectors should be both horizontal and vertical in order to enable dialogues among different levels in order to create a common ground between each dimension and cultural dimension, as well as among all dimensions while evaluating all resources in a balanced way.

Adding cultural dimension helps to understand the values of cultural assets in relation to other resources. The importance of 'culture' as a base for preservation and revitalization of traditions as well as heritage and its role in present socioeconomic and natural/environmental dimension was highlighted in previous chapters. Cultural indicators make connection between production of data on cultural phenomena, and the analysis of those phenomena; between the supply of cultural data and the demand for meaningful analysis, evaluation

and policymaking (Baeker, 2002). The indicators to analyze the cultural dimension should aim at portraying the cultural situation in motion (i.e. Cultural change) as linked to socio-economic development, natural and environmental changes, and political agenda. The process of monitoring cultural indicators has to cover different spheres. Here are some indicators in order to assess and monitor the cultural dimension in regards to other dimensions:

- Connection between cultural heritage and other objectives related to coastal resources (e.g. to assess if cultural indicators contribute to achievement of any defined objectives such as sustainable development, economic promotion, natural preservation, and etc. and its role in integrated coastal resources management.)
- Assess interconnection among data, cultural indicators, analysis and impact of different action from and to cultural related actions, especially in respect to linking sea and land management approaches.
- Assess to which dimensions (economic, social, natural/environmental and political), cultural indicator contributes and how.
- Assess if the cultural indicators have been changed and/or adjusted over time and if they are in line with the objectives of other dimensions. This can relate to specific coastal related activities such as commercial fishing, traditional trades, boat building and a comparison with the present state of these activities and relationship between people and their coastal environment.

Following understanding links and connection among cultural assets, people, nature and environment, the outcomes of this part of the study, considering all the aspects of functionality, social setting, development, aesthetic and historical values and economic benefits, will incorporate in developing the concept of unifying and integrated management strategies for cultural heritage in the coastal areas, which is in line with ICZM framework. Therefore coastal cultural middle ground for cultural resources in the coastlines, similar to the marine spatial planning for natural and other resources, has been proposed here to be adapted as a tool in integrated coastal management plans.

Conclusions

Due to the many threats to coastal cultural heritage it was acknowledged that there is an immediate need for new approaches to integrate cultural heritage of the coastlines in the integrated coastal management plans. In light of integrated approaches, it has been suggested to add culture as a dimension to the Integrated Complexity Model for coastal zone management. In addition, it was suggested to adopt a tool (similar to MPS), and create a zoning for heritage assets. Since an integrated marine spatial planning aims at making the most of the opportunities at hand, if culture can provide opportunities, cultural zones can be added to MSP.

Integrated approaches for site management have been developed based on the need to understand an entire landscape rather than separate fragments. In a way, by registering and listing heritage, we create “Heritage”, or at least highlight part of the heritage which seems to be more important. ‘‘Creating’’ heritage is a dynamic process that involves both an institutionalized, top-down planning process creating official heritage, and the bottom-up relationship between people, objects, places and memories creating unofficial forms of heritage usually at a local level. Consequently, all places (landscape/seascape) have various meanings and significance depending on different perspectives.

In the present study, many of the advantages of an integrated approach were introduced. Negative impacts of overlooking and losing heritage in ICZM, besides direct loss of heritage, include loss of cultural identity associated with certain habitats, including the ability to carry out cultural and spiritual practices (e.g., burials in mangroves), loss of tourism and recreational opportunities, loss of educational opportunities, decline in local ecological knowledge, skills and technology pertaining to habitat management, and loss of opportunities for social and cultural capital (e.g., women gathering/harvesting together or the case of ignoring the traditional fishing methods in the northern areas of Iran/ southern shores of the Caspian Sea which resulted not only in losing a part of the heritage, but also some damages to the fishery in this area).

In the first section of this chapter the problems regarding holistic management of coastal cultural resources was tackled. The eight principles for integrating coastal cultural heritage in ICZM were developed. These principles include: adopt a broad holistic perspective; local focus; employing an adaptive management strategy; adaptive measures towards natural processes; taking a long-term view; stakeholders participation in

planning; ensure the support and involvement of all relevant bodies; and adopting a combination of instruments and tools.

In the second section, the importance of developing an integrative evaluation methodology was emphasized and a methodology based on integrative complexity model was developed. Although, the essentiality of heritage values was stressed, it was noted that external control groups have extensive impact on management of cultural resources. Therefore, integrative complexity theory was adopted to introduce economic, natural, social and political dimensions for the management of coastal resources. It was noted that ecosystem services offers an approach to highlight the benefits of cultural heritage values as the benefit resulting from these services along with other resources. Ecosystem services concept has been applied for management of resources in integrated coastal zone management (ICZM). However, it was pointed out that cultural resources have mostly been overlooked. Therefore, an analysis and combination of these concepts and their applicability for management of coastal cultural heritage was presented in this study. The results were presented in form of a model to evaluate coastal cultural heritage—including cultural resources on land, underwater and in between space—through integrative dimensions.

In the third section of this chapter, a methodology to form coastal cultural middle ground as a tool to encompass the most possible cultural resources was developed. It was suggested that the links of heritage assets with other heritage or people's feelings and beliefs is a factor which helps define an area of cultural value. In coastal areas, in addition to the natural and social links, the connection among different assets is very important, and also very fragile due to numerous potential risks and threats. In order to define coastal cultural middle ground some criteria were shaped according to natural and socio-cultural value of the sites. These criteria were chosen to assess the level of integrity of the remains with their environment, plus the degree of impacting that intervening in historic sites can impose on the environment. For studying the socio-cultural context and the linkage between people and their cultural heritage, as well as among different assets of heritage, it was noted that variables should also be established to define these links. Linkage in this sense was considered to be both tangible and intangible. The degree of importance of such link needs to be assessed in the community, local, national and international level, based on different cases and when relevant.

Several tools to address the problems listed through this research and achieving the objectives indicated by this research were developed in this chapter. In chapter 3, these tools will be examined for the coastal areas of Belgium, Belgium Part of the North Sea.

Chapter 3: Case study Flanders, Belgium: The feasibility of adapting integrating approach for coastal cultural heritage

Introduction

The purpose of this chapter is to examine and apply the models and guidelines that have been developed in this research as they relate to the Belgian coast. As a maritime region, Flanders has been a center of human settlement and cultural, social and technological innovation for millennia. Maritime related activities has resulted in a myriad of archaeological remains in Flanders, including artifacts dating from as far back as early prehistory, to Ancient Rome, to the medieval period. However, these wealth of cultural artifacts and remains, as cultural resources, have not been well integrated into holistic management plans in Belgium (Pieters et al, 2013). In 2013, as a result of more awareness and attention given to coastal cultural heritage, the Flemish Heritage Agency, in collaboration with four other institutions, developed an interdisciplinary project—the SEARCH project (Archaeological Heritage in the North Sea, 2013-2016)—for studying, evaluating and managing underwater cultural heritage with the aim to harmonize land and underwater cultural heritage management approaches. Following the collaboration between the SEARCH project and the Raymond Lemaire International Center for Conservation, the present research aims at fulfilling part of the objectives of the SEARCH project.

The first section of this chapter will present an overview of the current situation including management projects directed at underwater and coastal cultural heritage, and ICZM and MSP approaches in Belgium. The issues with holistic management of coastal cultural heritage will be addressed. The discussion will help understand the obstacles in the way of developing proactive steps in accordance with ICZM principles to include coastal cultural heritage into the ICZM scheme in Belgium.

The second section will examine the integrative approach for evaluation of coastal cultural heritage in Belgium. The impact of four integrative complexity dimensions (social, economic, natural and political) will be inspected. The results from previous studies in different fields, in addition to the outcomes from the current SEARCH project, will be acknowledged and incorporated into the analysis. The possible aspects which are missing and what lacuna exists in our present data will be investigated and analyzed. In turn, this will allow for experts and authorities to plan for future actions.

In the third section, the possibilities to adapt the guidelines for delineating a harmonized coastal cultural area—coastal cultural middle ground—will be examined. The potentials and obstacles will be discussed. It will be evinced that a concurrence among different disciplines is necessary in order to create a harmonized strategy for management of coastal cultural heritage in Belgium. In addition, the role of policies and legal systems in producing a common ground for enhancing the national plans, as well as facilitating the implementation of a management plan which harmonizes management strategies on land and underwater (in sea), for Belgium will be discussed.

3.1. Overview of the present coastal management in Belgium

The Belgian coastal area is characterized by its typical social environment, with a high population density, a large ageing population, a high amount of second homes and high house prices (Coudenys et al, 2013). Furthermore, the coast constitutes a specific region from an economic perspective (Maelfait et al, 2012; Breyne et al, 2007). Belgium has long recognized that there is an urgent need to integrate both land and sea planning and to make full use of public participation processes in this integration (Bogaert & Maes, 2008). However, Belgium has a complicated political and juridical system. Belgium is a federal kingdom with three regions, only one of which, *Vlaanderen* (Flanders) is coastal. *Vlaanderen* is in charge of spatial and environmental planning, but the federal government has jurisdiction over natural (except for fishery) and cultural resources in the North Sea. Therefore, at first glance, there appears to be some complication in

adapting a harmonized management strategy for coastal cultural heritage. Additionally, for a long time the sea coast has been the domain for sectorial planning mainly serving tourism and recreation (BLAST WP6 members, 2012; Committee on Coastal Erosion Zone Management, 1990). Also, due to the small length of the sea coast (~65 km) and heavy population pressures, most of the sea coast is now urbanized.

Belgium has given special attention to the development and management of natural and industrial resources. Regarding integrated coastal zone management, although an interdepartmental steering group for ICM has been active since 1996, bringing together federal, regional and provincial administrations and NGOs, an ICZM policy does not yet exist. However, Belgium was among the first countries to implement an operational, multiple-use marine spatial planning system that covers its territorial sea and exclusive economic zone. Belgium uses zoning in a 'Master Plan' to allocate marine space for specific maritime uses (Douvere & Ehler, 2009; Douvere, 2008). Over the past 10 years, marine spatial planning in Belgium has evolved from a "Master Plan" (really a zoning plan, based primarily on sectorial interests) to an integrated, multiple-use plan with strong legal authority (UNESCO, 2015c). In the new Marine Spatial Plan in Belgium, the ecological, cultural and recreational values of coastal and underwater cultural heritage have been addressed briefly (Belgium MSP Brochure, 2014). Although a general map for the location of shipwrecks exist, in the overview map of Belgium MSP, there is no indication of the zone (or zones) of cultural values.

Maritime and coastal cultural heritage of the Belgian coast covers a very wide range of aspects. It includes maritime archaeological heritage in the sea as well as on land, maritime heritage, architectural heritage (which is typical for the coastal zone), coastal landscapes with heritage value, maritime movable heritage and intangible maritime heritage. Due to the increasing scarcity of open space on the coast, the remaining heritage comes increasingly under pressure both in the coastal and hinterland municipalities (Maelfait et al, 2012). The necessity of a comprehensive work and integrated approach to deal with maritime and coastal cultural heritage has been acknowledged in Belgium (Compendiumkustenzee.be, 2015).

Although there are numerous studies and data bases on different costal cultural heritage aspects (Maritieme-archeologie.be, 2015; Vlaamsehydrografie.be, 2015; Wrecksite.eu, 2015), comprehensive works that cover management of maritime heritage in the Belgian part of the North Sea (BNS) and the adjacent coastal area do not exist (Compendiumkustenzee.be, 2015). While there has been significant study concerning shipwrecks and some other submerged cultural heritage in Belgium (Maritieme-archeologie.be, 2015; and Vlaamsehydrografie.be, 2015), until now, little attention has been paid to the management of coastal cultural heritage in Flanders. Maritime and coastal cultural heritage include, but is not limited to: shipwrecks, submerged landscape, embankments, harbor structures, lighthouses, traditional salt extraction, etc.

Considering the fact that Belgium ratified the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage in 2013, the country is obligated to regulate its underwater cultural heritage. In 2014, a new federal law on the protection of cultural heritage underwater was adopted in line with obligations of the UNESCO 2001 Convention. In addition, heritage agencies and experts in Belgium identified the values of cultural landscapes extending from sea to land. However, due to nonexistence of a harmonized evaluation methodology, integrative approach and separation of regulatory regimes for land and sea based cultural heritage, a harmonized approach for management of coastal cultural heritage is a complicated matter in the Belgium Part of the North Sea.

Acknowledging the value of coastal cultural heritage and the importance of an interdisciplinary approach for study and management of coastal cultural heritage, the Flanders Heritage Agency together with several partners—University of Ghent, VLIZ (Flanders Marine Institute), Deltares (Department of Geology and Geophysics)—is running a four year project (2013-2016) entitled 'Archaeological Heritage in the North Sea' or 'SEARCH'. The IWT project "Archaeology in the North Sea - Development of an efficient evaluation method and proposals for sustainable management in Belgium" attempt to develop a reliable research methodology for efficient evaluation of the archaeological potential of marine areas, and on the preparation of a proper legal framework and clear policy for protection of underwater and coastal cultural heritage, without standing in the way of necessary economic exploitation of the North Sea.

In general, no management system exists in Belgium exclusively for archaeological and other heritage in the marine area. Infrastructural and commercial activities such as dredging, windmill farms, aggregate extraction and pipelines, as well as coastal protection works, already occupy a very large part of the North Sea

and near shore area, and are in general carried out without any systematic scheme and built in consideration for the marine archaeological heritage (Van Haelst et al, 2014; OSPAR, 2009; Garbutt, 2005). However, there have been several national and multi-lateral projects concerning studying and management of underwater and coastal cultural heritage in Belgium initiated and a wealth of data is available. In the following section, an overview of Belgium initiatives, from coastal resources management in general to coastal cultural heritage management, will be presented.

3.1.1. Underwater and coastal cultural heritage management initiatives

Since 2006, *Vlaams Instituut voor de Zee* (VLIZ) and *Vlaamse Hydrografie*, Flemish Heritage Agency (former *Vlaams Instituut voor het Onroerend Erfgoed*—VIOE) set up a database to collect all possible information on archaeological heritage in the Belgian territorial sea, on the Belgian continental shelf and on the river beds in Flanders, as well as all available information on maritime subterranean heritage resources in Flanders situated on land. This database provides a good basis to know about the underwater cultural heritage and archaeological sites in the Belgian part of the North Sea (Watererfgoed.be, 2015). Flemish Heritage Agency defined the tasks of their Maritime Heritage Section as research and exploitation of all heritage related to the marine environment. This database has been used for several studies such as MACHU and MoSS (Mossproject.com, 2015) with focus on underwater cultural heritage. In the following sections, an introduction to some of the projects which also included underwater and coastal cultural heritage are presented.

A. Coastal Atlas (*De Kustatlas*)

The Coastal Atlas provides a database of different coastal resources in Flanders. The specific section on "Heritage and Culture", offers information about material maritime heritage such as maritime sites and shipbuilding, maritime archaeology and shipwrecks, military heritage, active maritime heritage, heritage landscape and architecture (Coastalatlas.be, 2015a and b) [Fig. 3.1]. Furthermore, there is data available on natural resources and other aspects of the coasts from several research initiatives. Collecting and analyzing this data can be used as a first step towards management of data about the maritime and underwater heritage sites. The combination of natural and cultural data provided through this data base can be used for integrative evaluation of coastal cultural heritage under the natural dimension studies.

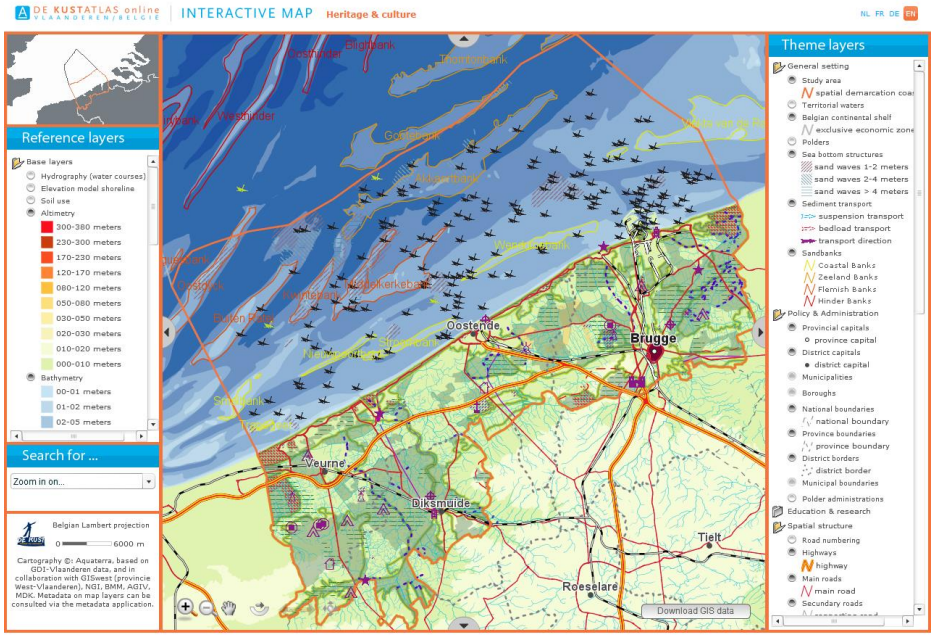


Fig. 3.1: The map provided by the Coastal Atlas provided a data base, including an interactive map, with different types of resources. © Coastalatlas.be, 2015

B. Belgian shipwreck: hotspots for marine biodiversity" (BEWREMABI) program

Results from "Belgian shipwreck: hotspots for marine biodiversity" (BEWREMABI, 2001-2004) program (Vliz.be, 2015) provide essential knowledge of the biodiversity and biomass of shipwrecks in Belgian marine waters. The influence of abiotic factors on the biodiversity of shipwrecks in Belgian marine waters has been characterized and novel standard protocols for the study and monitoring of fauna of hard substrates have been tested and adapted to the North Sea conditions. This project clearly demonstrates that the shipwreck network along the Belgian coast greatly enhances the biodiversity of hard bottom and acts as stepping stones for hard bottom species to spread over the Belgian Continental Shelf (BCS). As such, this network represents a particular habitat that deserves more attention; in the general context of global change and loss of biodiversity, there is an obvious need for a clear management program (establishment of protected area encompassing shipwrecks) in order to conserve this unique diversity of the BCS (Mallefet et al, 2008). In the conclusion of this research the archaeological and cultural value of shipwrecks along with their biological colonization has been acknowledged (Pieters, 2006). 'BEWREMABI' highlighted the importance of natural environment in relation to cultural environment. An integrated management strategy and evaluation can obviously benefit both natural and cultural resources in the Belgian part of the North Sea.

C. IIC and PLANARCH II

In the framework of EU and as a part of ICZM Demonstration projects (EU Demonstration Project, 2000), the Interreg IIC program for the North Sea region concerns six countries, about 20 regions, a population of 36 million and a land area of around 390,000 km². Most of the regional Interreg IIC programs included a topic on integrated coastal zone management. This has enabled them to contribute a strategic vision and framework to the ICZM demonstration program. One of the objectives of the North Sea project of the Interreg IIC program refers specifically to the ICZM demonstration program and aims to promote integrated coastal zone management. The projects of IIC program represent the diversity of the ecological, economic and social situations of the European coastal zones.

Following IIC project, Planarch II (2000-2006) was built upon the conclusions of the IIC project to protect and enhance the historic environment and archaeological heritage within the framework of spatial planning (3b.nweurope.eu, 2015). The main objectives of the project are to develop common standards, terminology and methodologies for heritage records, which should support all decision making relating to the historic environment, seeking to make heritage information more accessible to planners at both strategic and local levels; to create a pilot action leading to wider co-operation, a multi-lingual web-site presenting information about the heritage of their respective regions and key sites within them, together with an overview of the Planarch region as a whole; and to develop cost-effective methodologies for locating archaeological remains and establishing their value, particularly working in a spatial planning framework (3b.nweurope.eu, 2015; Pieters, 2014).

The results of initiatives related to coastal cultural heritage shows that in addition to the fragmented studies and projects on coastal cultural heritage in Belgium, the separation of land and sea legal systems or management approaches is the same as many other places in the world. In Belgium, the different legal systems at the local, regional, and federal levels create additional complexity to deal with heritage on land and under water in the coastal areas. Belgium aims to manage its underwater and coastal cultural heritage in a harmonized way. Following ratification of the 2001 Convention, and several initiatives and projects regarding underwater cultural heritage (as a sub-group of coastal cultural heritage), the necessity of developing of an efficient management method for the Belgium coastal cultural heritage has been realized.

D. SEARCH project: Development of an efficient assessment methodology and approach towards a sustainable management policy and legal framework in Belgium

In line with linking land and sea management strategies, and protecting cultural heritage in the coastal areas in Belgium in an effective way, SEARCH project 'Development of an efficient assessment strategy and approach towards a sustainable management policy and legal framework in Belgium' (SBO 120003) was developed. SEARCH project aims at incorporating awareness of Belgium underwater cultural heritage in the developing management plan in coastal areas which will largely contribute to new insights for ongoing projects

on MSP and ICZM. Introducing UCH in marine spatial planning can contribute to a renewed attention in linking integrated coastal zone management with marine spatial management through planning. The project aims to incorporate UCH in marine spatial planning (in terms of process and zoning), and to bring the care for heritage in the North Sea to a similar level as heritage present on land. SEARCH focuses on three main categories of activities with following objectives:

a. Technology / Methodology: To develop a reliable survey methodology based on geophysical and remote sensing techniques that allows accurate and cost-effective evaluation of the archaeological potential of marine areas under development (offshore, nearshore, and intertidal areas) which can be made available to the maritime industry and which should ideally be shipshape.

b. Management / Policy: To prepare (based on the methodology) a correct implementation of the commitments with regard to UCH and work out comprehensive proposals for a transparent and sustainable management policy and for the further development and implementation of a legal framework related to UCH in Belgium. This legislative framework should protect the marine historic environment but at the same time allow the necessary marine exploitation.

c. Outreach / Communication: To offer practical guidance towards the stakeholders (marine industry, fisheries, government agencies, harbor authorities,…) on how to implement the new methodology and management approach, and to increase the general awareness with regards to UCH. The basic idea has been to work with test-sites and find a way to deal with the unknown.

In line with the SEARCH objectives, the models and guidelines for evaluation and delineation of coastal cultural heritage will be tested for the Belgium part of the North Sea. However, accomplishing these two tasks—evaluation and delineation of coastal cultural heritage— requires a comprehensive collection of data and collaboration among different disciplines and sectors. SEARCH project aims at gathering information through gradual collaboration with different sectors. The project aims to develop an evaluation system for sites and zones, rich in heritage elements to be assessed through their significances on various levels (archaeological, historical, paleo-environmental, economic, social, etc.) therefore, the results from the SEARCH projects, as well as other projects, should be fed gradually into the models.

Since SEARCH project has an interdisciplinary approach and aims at harmonizing action amongst heritage on land and underwater similar to ICZM objectives, and Belgium has a well-developed MSP, an overview of ICZM and MSP in Belgium will be offered in order to understand the state of coastal cultural heritage in these schemes. Later, the ICZM principles regarding coastal cultural heritage in Belgium will be discussed. The integrated evaluation will be examined, and in line with including coastal cultural heritage in MSP, the guidelines for formation of a coastal cultural middle ground will be applied.

3.1.2. Belgium coastal management: ICZM and MSP

New activities, expansion of existing activities, as well as nature conservation requirements, would definitely lead to an increased conflict potential that cannot be dealt with by a permit system or an environmental impact assessment only. Therefore, the need for MSP as a tool for an ecosystem-based, sea use management and the implementation of an integrated coastal zone management (ICZM) has become widely accepted in Belgium (Douvere et al, 2007). A brief introduction to MSP and ICZM in Belgium is presented in the following sections. The purpose here is not to analyze MSP and ICZM in general, but to analyze the status of coastal cultural heritage in these schemes.

A. ICZM in Belgium

Sustainable coastal management is extremely important for the European Union (EU). That is why EU asked member states to develop national strategies and measures. In doing so, the member states rely on the European principles of integrated coastal zone management (ICZM), described in the Recommendations on the Implementation of Integrated Coastal Zone Management in Europe (2002/413/EC). ICZM has no legal binding in Belgium. However, in Belgium, Coastal Stakeholders are engaged in the ICZM process through official procedures (e.g. for Environmental Impact Assessment, spatial planning procedures) and hearings for concrete projects (Cscope.eu, 2015a and b).

In Belgium, the Coordination Centre for Integrated Coastal Zone Management was established in 2001, a year before the ICZM recommendation (Maelfait et al, 2013; Ec.europa.eu, 2015). Although Belgium has no national strategy for ICZM, the recommendations and the principles stipulated in the EU recommendation (2002/413/EC) were followed by the Coordination Centre for ICZM. This center was, until 2014, collaboration between federal, regional and provincial government and served as the contact point for ICZM. At present, the coordination center for ICZM has been transformed to 'Regional Cooperation Coast', under the parent institute of 'Province West-Vlaanderen'. There are bilateral agreements between the province of West-Flanders and the federal and regional (Flemish) government in support of ICZM (recently called ICM).

As government and legislation are sectorial, one of the objectives in Belgium is closer cooperation among the competent administrative bodies and different levels of authority. The Belgian government's 2006 Report on the ICZM contains recommendations for a joint and sustainable approach to coastal management (Coastalatlas.be, 2015).

There are two spatial planning types which exist in Belgium:

On land, environmental planning is an important instrument in the elaboration of an integrated strategy. As far as the landward side is concerned, the coast is designated as an urban network in the 'Flemish Environmental Structure Plan' (*Ruimtelijk Structuurplan Vlaanderen*)[21]. In the 'Provincial Environmental Structure Plan' (*Provinciaal Ruimtelijk Structuurplan*) this zone is included as a separate sub zone (Nandelstädt, 2008).

At sea, a 'Master Plan for the North Sea' was formulated in 2003, aiming at sustainable management for the North Sea. The spatial planning for the North Sea would take place in two phases. In the first phase, there should be systematic consultation with all actors concerned. In the second phase, protected marine areas should be delineated and the necessary management measures should be defined (FOD, 2006) (Marbef.org, 2015b). However, defining the state and role of cultural heritage in these two phases has been overlooked, and that is due to the fact that a proper inventory and strategic planning for cultural heritage did not exist while the 'Master Plan for the North Sea' was prepared in 1999 (Personal communication with Kathy Belpaeme, advisor for Regional Cooperation Coast, on 14 Jan. 2015). The legal framework concerning spatial planning for the Belgian coastal zone can be found in the coastal codex (Kustcodex.be, 2015).

In September 2011, Belgium celebrated the 10th anniversary of ICZM and a critical reflection was made in the publication '*10 jaar Coördinatiepunt een kwestie van evenwicht*' (Belpaeme, 2011). In this evaluation, several issues such as socio-economic aspects of development, importance of integrated cooperation among different municipalities, as well as among different levels of government and among different sectors, the necessity of effective stakeholders' participation and were pointed out. It was noted that the essence of sustainable development is that all actors in the coastal area seeking a balance among environmental, economic, social, cultural and recreational objectives. It was concluded that there is a need not only for planning, but also for implementation. As a tool to ICZM, it is discussed that not only a conceptual MSP, but a flexible and strategic Marine Spatial Planning is necessary for ensuring the appropriate coordination of MSP processes with integrated coastal management strategies.

B. Marine Spatial Planning in Belgium

Belgium was among the first countries to implement an operational, multiple-use marine spatial planning system that covers its territorial sea and exclusive economic zone. Belgium started creating a Marine Spatial Planning since 2003 in order to deal with the high demand for resources and space in the Belgian Part of the North Sea (Maes et al, 2013; Douvere et al, 2007). The expansion of offshore activities and the increasing need to meet international and national commitments to biodiversity conservation has triggered the idea of marine spatial planning (MSP) as a tool for sea use management (Maes, 2008). The concept of MSP is derived from planning experiences on land (Smith et al, 2010) although it is accepted that those land planning tools cannot easily be implemented at sea due to legal reasons and the nature of activities at sea (e.g. various forms of

[21] The *ruimtelijk structuurplan* forms the policy framework for the desired spatial structure. It holds a long term vision on spatial planning for a specific territorial entity. It also includes subjects like mobility, nature and environment including public safety. The *ruimtelijke structuurplannen* are developed at different levels of governance: regional, provincial and municipal (nofdp, 2006).

authority; three dimension of sea uses, lack of private ownership, etc.) (Douvere et al, 2007 and 2010). Marine Spatial Planning (MSP) in Belgium is not supposed to be limited only to the seaside, but also includes the harbors and land components in the coastal areas and shorelines (Belgium MSP Analysis, 2011), therefore, it is important to adjust planning on land and at sea.

The use of the marine spatial planning which is based on an ecosystem approach, supposedly takes into account several factors. Through zoning, MSP provides necessary protection and management for coastal resources considering the needs to include marine cultural heritage in line with its interests (Vande Lanotte, 2013). Belgium uses zoning in a 'Master Plan' to allocate marine space for specific maritime uses. A second planning phase determines sites for marine protected areas. The plan allows permits and licenses for a given type of activity to be granted only within the identified zones and is subject to monitoring and evaluation (Unesco-ioc-marinesp.be, 2015a; Health.belgium.be, 2015). Marine Spatial Planning (MSP) is a process that never ends. It is a process where continuous improvement is possible (Belgium MSP Analysis, 2011). This flexible process is an advantage for areas and/or resources that have not already found their proper status in this plan. Therefore, with justification of the values of different resources, there will be possibilities to add new areas and/or resources to MSP.

The latest MSP in Belgium was approved by Royal Decree on 20 March 2014 [Fig. 3.2]. The new plan lays out principles, goals, objectives, long-term vision, and spatial policy choices for the management of the Belgian territorial sea and Exclusive Economic Zone[22]. Management actions, indicators and targets addressing marine protected areas and the management of human uses including commercial fishing, offshore aquaculture, offshore renewable energy, shipping, dredging, sand and gravel extraction, pipelines and cables, military activities, tourism and recreation, and scientific research are included in the Belgian MSP 2014 (Unesco-ioc-marinesp.be, 2015a). The Royal Decree itself doesn't mention underwater or coastal cultural heritage anywhere. But annex 2 states that 'no separate areas should be provided for the protection of UCH.' Therefore, for coastal cultural heritage to gain its proper attention, it is important to examine where underwater cultural heritage can profit from other protective measures; for example, in the context of nature conservation or energy production. This way, heritage can contribute to the multiple uses of space, which is one of the basic options of the MSP. As mentioned before, some wrecks can have ecological value as natural habitats for various fauna and flora species.

Reviewing ICZM and MSP shows that the sectorial approach for coastal management still exists in Belgium. With new changes in political structure, the sectorial approach would be stronger than before, however, some voluntary collaborations still exist among ex-partners of the Regional Cooperation Coast (former ICZM Coordination Center). These partners include *Afdeling Kust, Agentschap voor Natuur en Bos,* VLIZ and Federal Public Service Health, Food chain safety and Environment. They are still active in coastal planning process and act in different levels of governance.

[22] The exclusive economic zone (EEZ) is a sea zone prescribed by the United Nations Convention on the Law of the Sea over which a state has special rights regarding the exploration and use of marine resources, including energy production from water and wind. It stretches from the baseline out to 200 nautical miles (nmi) from its coast (UNCLOS, Part V, Art. 55).

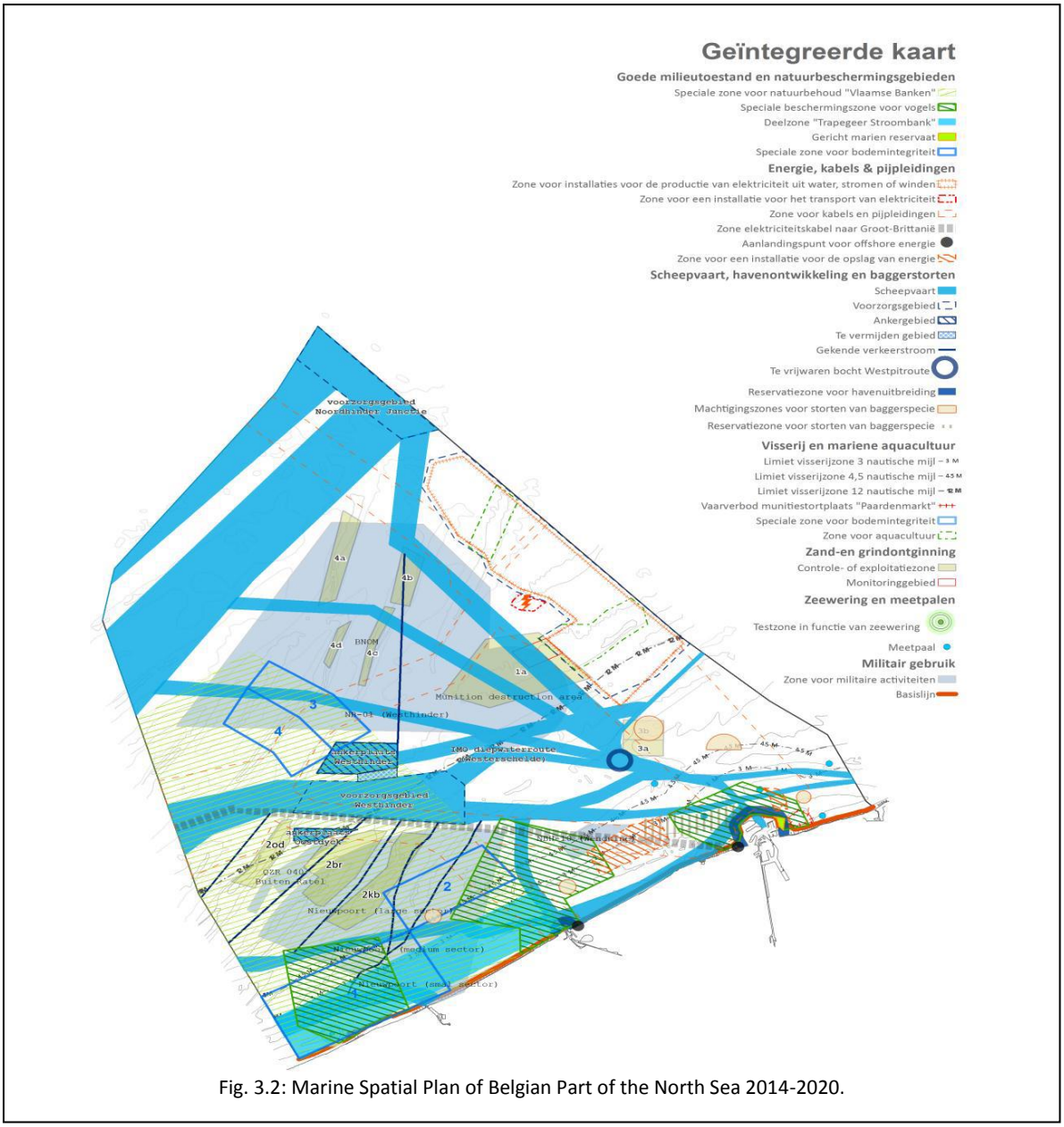


Fig. 3.2: Marine Spatial Plan of Belgian Part of the North Sea 2014-2020.

The lack of a proper inventory, evaluation of coastal cultural heritage, as well as non-existent strategic planning for cultural heritage, has been the reason to overlook coastal cultural heritage in coastal management. There is a need to show the values of coastal cultural heritage and prioritize the actions on protection, preservation and use of coastal cultural heritage. An integrative evaluation strategy which highlights the values of coastal cultural heritage within ecosystem services both can benefit people and promote preservation of coastal cultural heritage. It is important to stress that coastal cultural heritage as a part of human heritage has latent values which need to be highlighted and used for the benefit of people. However, due to the dynamics of the coastal areas and conflicting interest in the relatively small Belgian coastal area, the heritage assets are in immediate danger of destruction by natural and anthropogenic factors. Therefore, an immediate attention for identification, evaluation and strategic planning for the Belgian coastal cultural heritage is necessary. And following that, if ICZM principles will be applied by all sectors, considering coastal cultural heritage in their plans, the coast will benefit from a more unified management approach with less conflict among different levels of government and stakeholders.

In conclusion, if the actions for ICZM and MSP can be synchronized with actions in projects such as SEARCH and other interdisciplinary projects, there is promising potential to integrate coastal cultural heritage in holistic management plans. This will help benefit the already established principals for harmonizing actions on land and in sea, and adapt combined protective measures for cultural resources and other resources.

3.2. Experimentation of the workability of integrative and unifying approaches

In this section, the principles of ICZM regarding coastal cultural heritage, the integrative evaluation system and the guidelines for defining coastal cultural middle-ground will be examined for the Belgian part of the North Sea. These systems and guidelines were developed in general terms, therefore, for each case (geographical, economic, cultural, political and social region, country, etc.), they should be examined and adjusted separately.

It is noteworthy to highlight that with the changes in the political structure of the 'Regional Cooperation Coast' which acts only at provincial level, implementation of a holistic and integrated approach might seem less feasible. However, adapting a guideline based on the ICZM principles which follows an integrative approach, even in regional scale, can result in a more harmonized coastal management in the end.

3.2.1. ICZM principles for including coastal cultural heritage

The eight principles of 'Best Practice from the EU Demonstration Programme' on ICZM were adopted by the European Union in 2002 and explained in relation to coastal cultural heritage in chapter 2. Here, the status of coastal cultural heritage in regard to these principles will be examined and explained as applied to Belgium:

1. **Adopt a broad holistic perspective:** In order for all elements in the coastal area to receive proper attention and facilitate a holistic approach, the general terms for delineating the coast is necessary. Since competency of land and sea belongs to different authorities in Belgium, a holistic approach that includes cultural heritage on-land and under water in the coastal areas is a complicated matter. Considering that Belgium has an integrative approach and realizes the importance of linking sea and land approaches, management of coastal cultural heritage should be fit into the general schemes of ICZM. In addition to the legal complexities, studying and understanding the extension of the maritime and coastal cultural heritage should be performed in a harmonized manner. A study of the whole cultural landscape/sea-scape will help to gain an understanding of the coastal cultural areas and respecting links among people, heritage assets and environment. The aim is to provide an opportunity to adopt a strategy which includes many aspects of heritage in regards to establishing connections to people and the environment, and also its flexibility to extend the protective boundaries according to assessment of values and priorities, rather than administrative agreements.

2. **Local focus:** Although a holistic approach is crucial for harmonizing actions regarding sustainable protection and management of coastal cultural heritage, it is necessary to compliment the approach with a thorough understanding of specific issues in the coastal area of interest. Specific information concerning local conditions and local resources help to address particular issues of one certain area. Geopolitically, the coastal area in Belgium is defined as ten municipalities and the Belgian part of the North Sea (BPNS). However, culturally these areas can be connected and heritage assets are shared among them. Therefore, studying each area thoroughly will help not only in appreciating the assets that are of value in each area, but also in understanding the shared heritage among different communities. Considering different conditions, such as industrial and urban development, natural preservation and fisheries, and so on along the Belgian coast, obviously heritage and cultural assets are in different states of preservation. Local focus can help in identifying the assets that are important to people, the threats to heritage, as well as finding ways for better protection through stakeholders' participation and authorities' involvement. If each area develops a comprehensive management for its coastal cultural heritage, the whole maritime and coastal cultural landscape can benefit from a general protection measure.

3. **Employing an adaptive management strategy:** Complying with adaptive management provides flexibility to the management plans and facilitates the inclusion of new information and conditions during a gradual process of developing and implementing ICZM programs. This fact is important for the Belgium coast, considering the fact that comprehensive protective measures for cultural heritage is still weak, development rate is high, and cultural heritage sites are expected to be found, especially underwater, that are still unknown.

4. **Adaptive measures towards natural processes:** Belgium, as a low land, is very susceptible to any changes in the sea-level and coastal processes (Lebbe et al, 2008). Therefore, in several areas protective measures,

such as jetties, are in place in order to prevent erosion and destruction of the beaches. Although the general tendency in the coastal defense policy in Belgium is to use soft measures, mainly beach nourishments, to safeguard the natural dynamics of the coast, the consequences of any intervention in the coastal area needs to be studied and its impact on the cultural environment should be assessed. These impacts can be both on the physical remains of cultural assets, such as destruction of historic buildings and extinguishing traditional landscape, as well as alteration of the social settings and communities that can result in gentrification and loss of intangible cultural heritage. As for Belgium, a master plan for coastal safety exists. This plan needs to be superimposed with the coastal cultural heritage map (which includes all known heritage assets). This will help to identify where coastal cultural heritage is under the threat of coastal development (e.g. beach nourishment, wind turbines, dredging, etc.) (Imdc.be, 2015). However, at the moment there is no strategic plan available for coastal cultural heritage. Therefore, the first step is to create a coastal cultural heritage map for Belgium, in order to be used along with other resources map in ICZM.

5. **Taking a long-term view:** As a result of an integrative approach to land and sea planning and management, Combining Sea and Coastal Planning in Europe (C-SCOPE) a European collaboration between the Dorset Coast Forum (DCF) and The Coordination Centre on Integrated Coastal Zone Management in Belgium, funded by the 'EU Interreg IV A Two Seas' program was initiated in 2008 (Cscope.eu, 2015a and b; Interreg4a-2mers.eu, 2015). The aim of these spatial planning initiatives is to generate sustainable management of the coast that takes into account tourism and other economic interests, social concerns and creating a pleasant living environment which do justice to the unique nature and cultural heritage of the coast. The aim is to sustain a coast that retains its attraction for present and future generations while maintaining and strengthening the social cultural capital (Vliz.be, 2015a). Complying with this plan, and incorporating cultural heritage in this vision, can provide a long term protection and management of coastal cultural heritage within ICZM scheme in Belgium. However, at the moment there is no strategic plan for coastal cultural heritage available.

6. **Stakeholders' participation in planning:** Good communication, transparent information, greater media attention for underwater heritage, a clear regulatory regime and building trust between the government and the sectors in sea are indispensable in promoting good practices in relation to the coastal cultural heritage management. Considering the high level of attraction to the coastal areas and several interests at stakes, stakeholders' participation in planning need to be better addressed and their opinions better integrated in decision-making. For example, the result of a survey that was conducted before SEARCH project shows that people are concerned about underwater cultural heritage. The points that were stated in response to this questionnaire showed people's concerns about the threatening activities, distribution of the information, and the necessity of combining underwater cultural heritage in MSP. These points, in addition to several other points, highlight the benefit of including stakeholders in the planning process for raising awareness, and protection and management of coastal cultural heritage.

7. **Ensure the support and involvement of all relevant bodies:** ICZM can only be effective if it is supported by all of the relevant administrative bodies (e.g. between government departments), and across all levels of government (e.g. between local and central government). In line with this principle, it is crucial to make sure that all relevant cultural heritage bodies are involved and support heritage protection in the coastal areas. For this purpose, expanding the integrative approach and including culture as a dimension can facilitate more agreement among different sectors and bodies involved. Since ex-partners of the Regional Cooperation Coast (former ICZM Coordination Center) are still actively involved in coastal management, and several of them have already been involved in interdisciplinary projects where coastal cultural heritage has been a major focus (e.g. involvement of VLIZ in SEARCH project), securing support for integrating coastal cultural heritage in coastal plans is not unrealistic.

8. **Adopting a combination of instruments and tools:** Since Belgium has a complicated political and judicial system regarding sea and land, a harmonized management approach for heritage on-land and in the sea needs formation of a common ground among different authorities and application of different instrument and tools. In this regard, since MSP has a longstanding state in the Belgium part of the North Sea, combining its strategies of zoning and use of the marine areas, along with integrative evaluation of the coastal cultural heritage and formulating coastal cultural middle ground can help including coastal cultural heritage in ICZM. In this manner, not only all the dimensions will be included in evaluating cultural

resources, but also an overarching policy for protection and management of coastal cultural heritage in the Belgian Part of the North Sea can be developed.

As previously explained, coastal cultural heritage can be fit within each principle of ICZM. If coastal cultural heritage was to be in ICZM process, not only its preservation can be better guaranteed, but also ICZM scheme can be improved. Including culture as a dimension shows a greater complexity, as well as flexibility and comprehension of different needs. Belgium can create more effective management of the coastal areas in the Belgium part of the North Sea given that Belgium has already acknowledged the importance of coastal cultural heritage, follows the ICZM recommendations and its principles, and has a well-developed MSP, including cultural resources.. For this purpose, as mentioned before, an integrated evaluation is necessary. In the following section the integrative evaluation model will be tested for Belgium coastal cultural resources.

3.2.2. Integrative evaluation model

In this section the integrative evaluation model is tested for Belgium. Considering the extensive amount of activities in the Belgian Part of the North Sea and coastal area, the value and state of cultural heritage as a resource in spatial planning and integrated coastal zone management is assessed through the model that was presented in chapter 2. Thereby, in this section, the available information is used in the model and helps to identify the gaps in our knowledge, missing data that needs to be collected, and regulation and guidelines that need to be addressed in order to have a comprehensive evaluation of coastal cultural heritage and its assessment as a resource. Nevertheless, the outcome of heritage assessment based on the heritage criteria assists in justifying many arguments about the heritage protection and preservation in an area where benefiting and managing different resources are in competition with each other. Heritage assessment is a requisite for this model, as it was presented in 'cultural dimension' in figure 16, chapter 2. Cultural dimension will be dealt with after explaining the other four dimensions, in order to explore its links with other dimensions.

Fig. 3.3: Soft sediment sampling using air-lift. Kilmore wreck 2005, Project EV/42- "Belgian shipwreck: hotspots for marine biodiversity" (BEWREMABI), ©http://www.vliz.be/projects/bewremabi/photo_gallery.php?album=74&pic=813 (Last accessed: 15 Jan. 2014)

A. Natural and environmental dimension

The importance of studying nature and the environment in relation to coastal cultural heritage has been shown through several studies in Belgium. Studies show that during the last ice ages sea level was over one hundred meters lower than it is today and large parts of the Southern North Sea were dry land (see map below). Being less cold and arid than the European hinterlands, these areas were attractive landscapes and therefore crucial in the development of prehistoric and proto-historic societies and civilizations. As sea level began to rise quickly at the end of the last ice age (around 20.000 years ago) large parts of the maritime regions became drowned (see map below) (Coles, 2000; 1999; 1998). At present, this vast cultural heritage lies on the seafloor or is buried beneath it. The information stored in the marine sediments is essential to understand the cultural history, land-use strategies and hominid demography across the Channel and North Sea plane.

Fig. 3.4: Birkenfels6 shipwreck, © Norro, Alain. ©http://www.vliz.be/projects/bewremabi/photo_gallery.php?album=72&pic=784 (Last accessed: 15 Jan. 2014)

The mentioned natural issues are particularly important in the Belgium Coast, due to the unique setting of the Belgian part of the North Sea. Whereas in most of the southern North Sea a thick Pleistocene sediment layer is present and offshore works do not necessarily affect older (Palaeolithic) archaeological heritage, the seabed in the Belgian Part of the North Sea is covered with a thin layer of Pleistocene deposits. These deposits are constantly being reworked in a sediment starved setting, and as a result prehistoric archaeological artefacts and sites may occur at limited depth and are therefore extremely vulnerable (Alappat et al, 2010).

Due to this particular reason and the ongoing developmental projects in the North Sea, an immediate and thorough survey for identification and documentation of such archaeological sites was identified as crucial by the SEARCH project.

The information that has already been collected through different projects (Mumm.ac.be, 2015a, b, c; Zintzen et al, 2006; Massin et al, 2002), such as BEWREMABI, regarding marine natural-cultural environment (Mallefet et al, 2008; Sun et al, 2003) [Fig. 3.3; 3.4; 3.5], in addition to the ones that are and will be collected through SEARCH projects, should be used in an integrated evaluation scheme. Acknowledging the wealth of information about natural and environmental aspects in the Belgian coast (Danovaro et al, 2002), the natural indicators regarding preservation and integrity of cultural resources can be specified for Belgium coast.

Geological and ecological studies have shown the importance of the relationship between heritage preservation and nature. Studies such as SECOA (Solutions for Environmental contrast in Coastal Areas, 2009) can provide relevant information to create risk maps for the coastal cultural heritage which are endangered by natural hazards and changes. Climate scenarios indicate that by the end of the 21st century Western Europe, including Flanders, will be significantly warmer year round. Therefore, the level of evaporation will increase as a result of the increase in temperature, both in the winter and the summer.

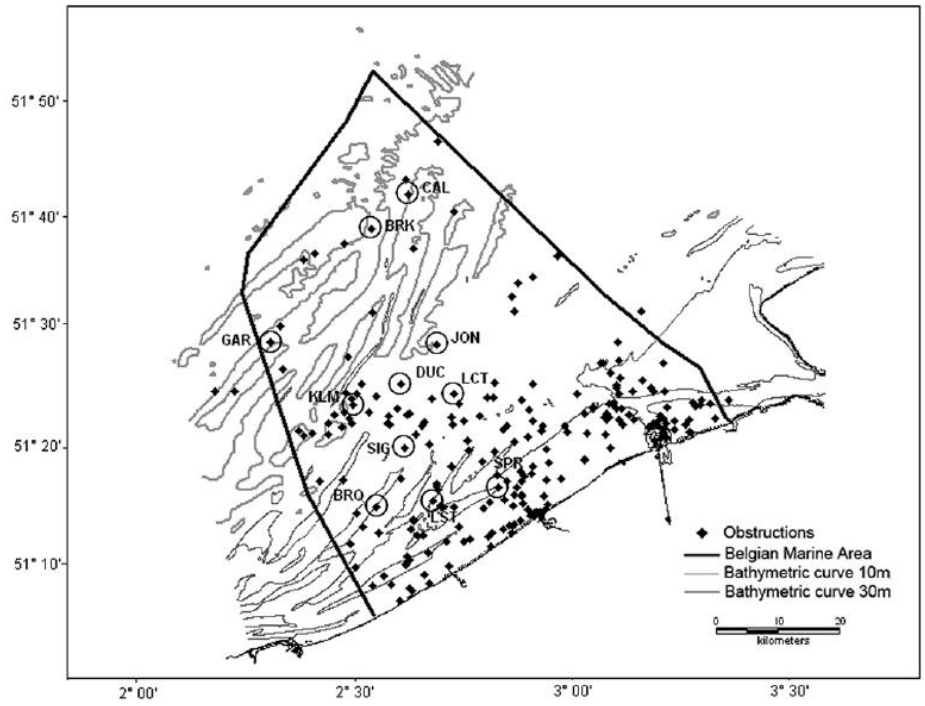


Fig. 3.5: Shows the localization of investigated shipwrecks. BRQ: Bourrasque, BRK: Birkenfels, CAL: Callisto, DUC: Duc de Normandie, GAR: Garden City, JON: John Mahn, KLM: Kilmore, LCT: LCT 457, LST: LST 420, SIG: Sigurd Faulbaums, SPR: Sperrbrecher 142 & 143. Source: Afdeling Waterwegen Kust (AWK), Belgium.

The four wrecks of Birkenfels, Kilmore, Bourrasque and Sperrbrecher142 have been the most studied ones among several more. These shipwrecks were sampled for biotic and abiotic data at different periods of the year. The oldest site made of steel on the Belgian Continental Shelf (BCS) is the Kilmore which sunk in 1906. World War I and II are responsible for a large part of the ship wreckages (26%). Other wreckages were caused by collisions and storm events. The observation by divers shows that coastal shipwrecks which are always in shallow waters (<20 m) are generally in poor conditions, often buried in sand and largely broken into small pieces, while further offshore, they are still well preserved. For example, the Kilmore has been underwater for 100 years and most of its structures are still clearly identifiable. On relatively protected conditions, the life span of shipwrecks is potentially long and further enhanced by the presence of fouling organisms which prevent the direct exposure of steel to sea water.

The precipitation results show that climate change will have an impact on storm frequency (MIRA, 2009). Nevertheless, nature and the environment can affect cultural heritage in several ways. Models can help to identify the heritage places that might suffer from sea-level rise, severe storms, changes in the humidity, and other geomorphological changes in order to adapt and mitigate actions for their protection and management. Well documented temporal effects of nature and environment can help identifying heritage areas that might be in risk of damage, or/and protected by these factors. For the moment, there are operational models available for the sea related activities (Mumm.ac.be, 2015a, b, c). These models include: hydrodynamic models, wave modes, and physical and chemical development of pollutants models. However, in the adaptation and mitigation policy for Belgium, naturally, more emphasis has been given to residential and industrial sites, rather than natural and cultural sites (MIRA, 2009: P. 301).

Considering the protective/destructive role of habitat on underwater cultural heritage, the added-aesthetic values and the links that can be formed between heritage and nature, the identified cultural heritage sites should be evaluated through the mentioned indicators in this section. Each site should be evaluated individually, as well as in relation to other historically and naturally important entities. However, a thorough study would not be possible before identifying as many sites as possible.

Although studies on the environmental and natural factors (such as CLIMAR or MIRA) have not always included cultural resources, the outputs from these studies can be used for risk assessment and drawing policies for cultural resources management. The combined set of natural/environmental and cultural information is fundamental for assigning the physical entity of the coastal cultural middle ground, where a combination of natural and cultural resources produces natural-cultural sites. In addition to natural factors, anthropogenic interventions in the coastal areas affect not only natural resources, but also cultural heritage preservation and management. Examples of these interventions are windfarms, coastal defense structures (OSPAR, 2002), transportation, fishing, dumping and dredging (Van Haelst et al, 2014), and many more (Vanden Abeele et al, 2005).

Currently, the natural significant areas in Belgium are protected under the following: Flemish recognized nature reserves, bird conservation areas protected under the Birds Directive, Habitat Directive, wetlands conservation areas protected under the Ramsar Convention, areas protected by the dunes decree and VEN-areas (Flemish ecological network). A better knowledge of marine (pre)historic environment and the development of (pre)historic coastlines which improve our understanding of the present-day changes in the coastal/nearshore area related to sea level rise and climate change is crucial for coastal management planning. This knowledge will help to define protected areas in more efficient ways in order to include protection of heritage and cultural values as well, especially in the event that defining separate cultural zones is not supported by the new MSP in Belgium.

Considering the integrated evaluation model, the existing data should be fed into the following scheme [Fig. 3.6]: the shortcomings should be assessed and the plans for future studies, collecting necessary data, and collaboration between heritage specialists and natural/environmental scientists need to be developed.

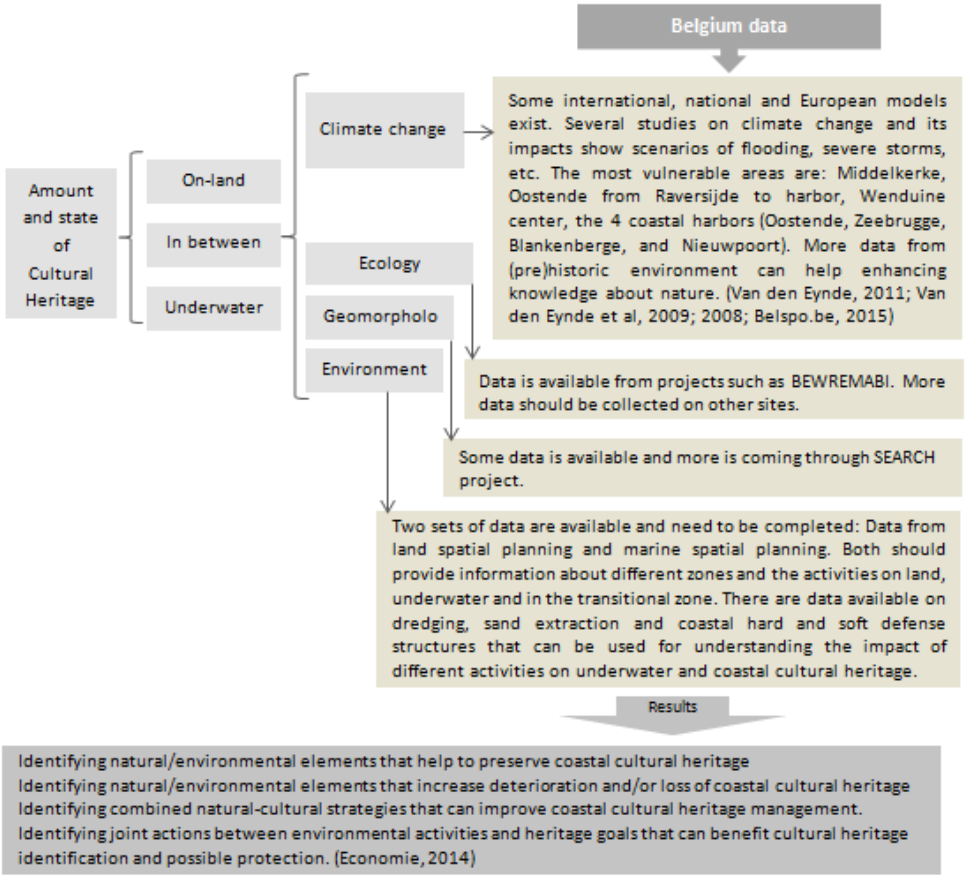


Fig. 3.6: The natural and environmental factors should be analyzed based on collected data for cultural heritage on-land, underwater and in transitional area, through the mentioned model. This analysis attempts to define how a balanced approach towards natural and cultural resources management can be maintained, and how knowledge about nature and environment can promote coastal cultural heritage management. In addition, studies on archaeological sites, (pre)historic landscape and buildings can also incorporate in better understanding of the environment and nature.

B. Social dimension

Historical landscape and seascape provide many goods and services and are essential to social wellbeing, as well as an economically healthy society – helping to increase health, education, social inclusion and regeneration. Following the discussion about benefit and values, the pursuit of optimal social cohesion enhances the quality of life in coastal communities and people's wellbeing. Social cohesion in traditional and cultural coastal communities helps safeguarding cultural activities and associated built heritage.

In the social dimension, the values of cultural heritage in relation to the communities, public and any other users should be assessed. There is an extensive urban and industrial development in the coastal areas of Belgium. Therefore, identifying different local and traditional coastal communities and their relationships with their natural and built environment is essential. In the context of a European project 'Coastal Communities 2050 (Lavalle et al, 2011), the significance of coastal cultural communities and their sustainability were emphasized. The importance of social values of coastal and underwater cultural heritage for different groups of people has been highlighted through several studies in Belgium (Wise-rtd.info, 2015). Additionally, based on a survey that was conducted for SEARCH project, people stated that incorporating underwater cultural heritage in the processes of marine spatial planning and integrated coastal zone management is important (Van Haelst et al, 2013). Public involvement and awareness of coastal cultural heritage can improve the visibility of this heritage and promote its protection. As of now, only a few cultural and social studies on Belgium coasts have focused on a wide range of aspects related to the perception, needs and ideas about the

marine cultural heritage and future management and/or legal framework in Belgium. Social studies revealed that people acknowledge the necessity and benefits of protecting underwater heritage at sea. For them, underwater heritage is considered a large collection with historical, cultural and scientific value as well as a tourist and ecological asset. A combination of national-specific criteria and maritime criteria should be shaped for the evaluation and protection of coastal cultural heritage as a common heritage of coastal communities. The studies showed that people are willing to participate in the decision-making processes of coastal cultural management (Van Haelst et al, 2013).

Despite the above mentioned studies, more studies on different social groups, locally and nationally, is necessary in order to have a comprehensive understanding of the role of social dimension on management of coastal cultural heritage in Belgium. This will help not only to identify coastal cultural resources, but also social studies which are crucial to understanding the role of social settings and people's perception towards their heritage. Landscape and seascape character assessment in relation to people is a factual and objective process to determine what makes one area unique from another (Natural England, 2012) and what has the priority to be preserved in long term for the benefit of people and societies, along with ongoing development.

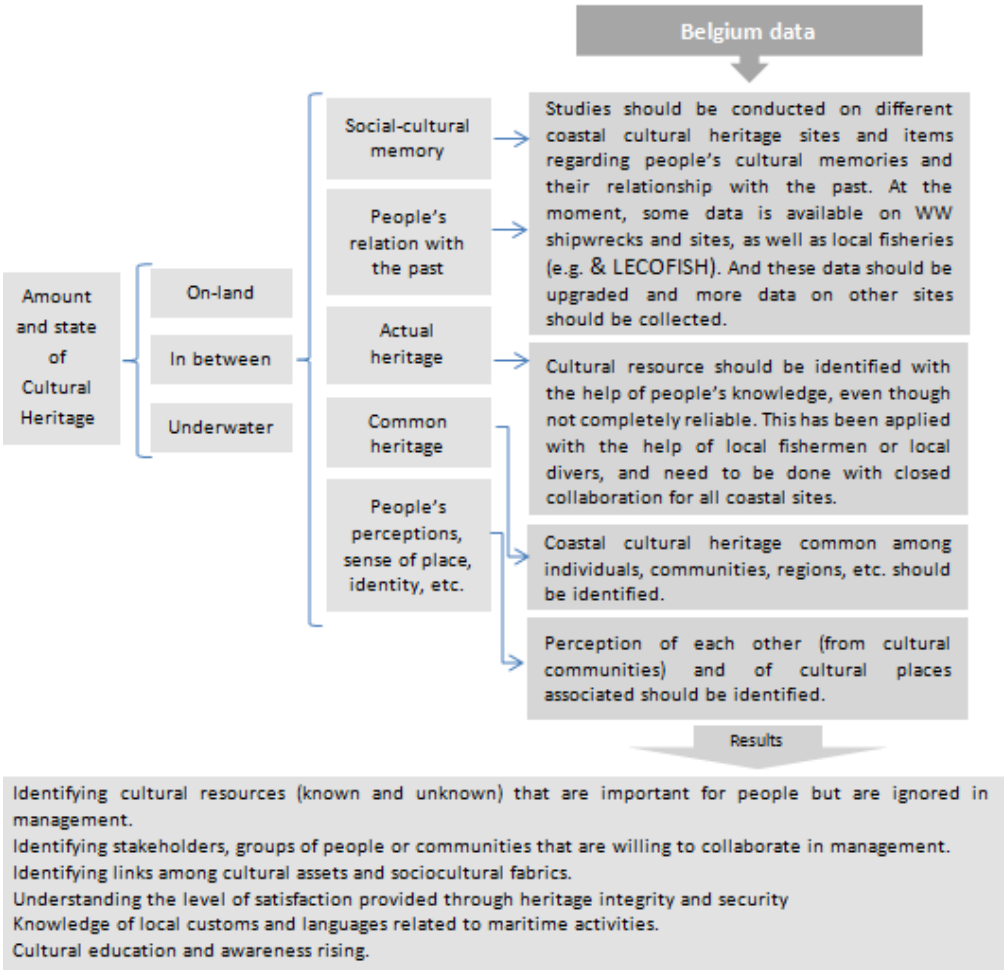


Fig. 3.7: This scheme helps to list, analyze and understand social factors influencing coastal cultural heritage management. Understanding of the influence of social dimension is a complex matter which requires developing proper sociocultural indicators. Indicators related to social memories, sense of place, identity and etc. in relation to coastal cultural heritage need to be identified. These indicators will help to understand people's perception towards their coastal cultural heritage, identifying unknown cultural resources, as well as promoting people's participation in decision making. Social links and values, sometimes, break through administrative boundaries and therefore require new policies for management.

Considering the integrated evaluation model, some of the existing data has been introduced into the integrative evaluating scheme in figure 3.7. The indicators of this scheme have been used to assess the relationship between coastal cultural resources and social aspects. Some of the necessary factors that should be studied are highlighted here. However, a thorough interdisciplinary study is needed to assess the state of coastal cultural heritage within the social dimension with collaboration both social scientists and cultural heritage specialists.

C. Economic dimension

The North Sea and the coast encompass important resources. In addition to ecological resources, the coastal areas also performs economic functions, such as (fresh) water production, supporting tourism and recreation, provision of landscape quality, water storage for safety purposes, and nutrients production. Furthermore, the area also contributes to the health and well-being of the coastal population. In line with ecosystem services, cultural heritage and its role in shaping and altering the nature and environment is an added value (Coastalatlas.be, 2015). Therefore, existing information about the economic benefits out of coastal cultural heritage supports the goal of better management of this resource and its inclusion in holistic management schemes. In regards to the economic benefits, increasing knowledge about coastal cultural heritage can foster economic benefits through known and previously unknown information. This knowledge helps to create and enhance coastal museums and historical interpretation centers which offer opportunities to continuously renew their attractiveness for tourists and researchers. Presently, there are about twenty museums located in the coastal zone, some of them specifically focused on the coast. In addition, there are actors (museums, libraries, archives, etc.) that offer interesting collections about maritime and coastal heritage but are not located in the coastal zone (Compendiumkustenzee.be, 2015; Maelfait et al, 2012). In addition to direct monetary benefit from cultural heritage, there are non-monetary benefits for local communities as well as the whole nation regarding promoting sense of place, identity and pride. For example, the proximity of immovable heritage creates a better living environment which affects the value of housing (see also theme Social and economic environment) (De Baerdemaeker et al, 2011). In a number of historic shipyards, social employment projects are developed. Museums and cultural centers are also involved in education, although, there are no clear data available regarding their impact. In spite of the mentioned economic benefits, many aspects of the socioeconomic importance of cultural heritage in the coastal zone are less known and mostly fragmented figures and information are available.

In the economic dimension, the crucial debate is to create a balance between the non-use values (non-market values) and the used-market (monetary) values. Different stakeholders have major roles in final management plans and decisions making. In the Belgium case, since the heritage preservation might be in conflict with developmental activities (dredging, windmill farms, etc.), a value assessment that considers the both mentioned values with the aim of benefiting from coastal resources in the best possible way is necessary. The non-cultural values of economic activities include economic values of ports, progress of businesses, spatial productivity, employment in different sectors and commercial fishing. Some of these activities can involve heritage and cultural values, as well. For instance, commercial fishing, which is a traditional occupation in the coastal areas as well as in Belgium, carries a long history. The residue of this activity from the past, such as traditional boats, traditional fishing gears, historic fish houses and facilities, shapes part of the cultural heritage at the present time. Therefore, in evaluating the economic assets in the coastal areas, a wide perspective to valorize cultural heritage in relation to preservation, tourism promotion, social values and integration is necessary.

Economic benefit derived from heritage preservation for Belgium in regard to its diverse coastal heritage can be substantial. This diverse coastal heritage creates a strong image of the whole maritime landscape, including different eras (including layers of archaeological and historical assets). However, for considerable small country, the types and number of tourism centers on underwater and coastal cultural heritage is a determining factor in economic valuation. Therefore, a separate study should be conducted on the potential areas for erecting museums and tourism center and the analysis should reveal the strategy that best suits Belgium.

Economic dimension has overlaps with several dimensions and involves different aspects. Economic dimension is strongly interconnected with social dimension. For instance, a high level of attraction to the

coastal areas caused increase in the number of second homes. The coastal housing has created an active real estate business along the coast with its economic benefits for certain groups in the society. Increasing non-permanent residences result in a low social control and create a sense of insecurity. A large surplus of residential units can lead to social isolation and diminishing traditional social settings (Coastalatlas.be, 2015a).[23]

An economic evaluation in an integrative way helps to define the locations and phases of human activities which take place in the coastal areas and ensure that these initiatives are as efficient and sustainable as possible. According to ICZM and Maritime spatial planning approaches, planning of maritime activities involves stakeholders in a transparent way. Therefore, for the Belgian Part of North Sea, along with identification of heritage assets, valuation of activities related to heritage assets is fundamental for valorization of this resource. Obviously, a great deal of economically successful heritage initiatives (such as promoting tourism and museums) relies on people and local communities. Therefore, the social aspects play important role in making a balance between the market values and non-market values of heritage preservation, in order to define the ultimate benefit.

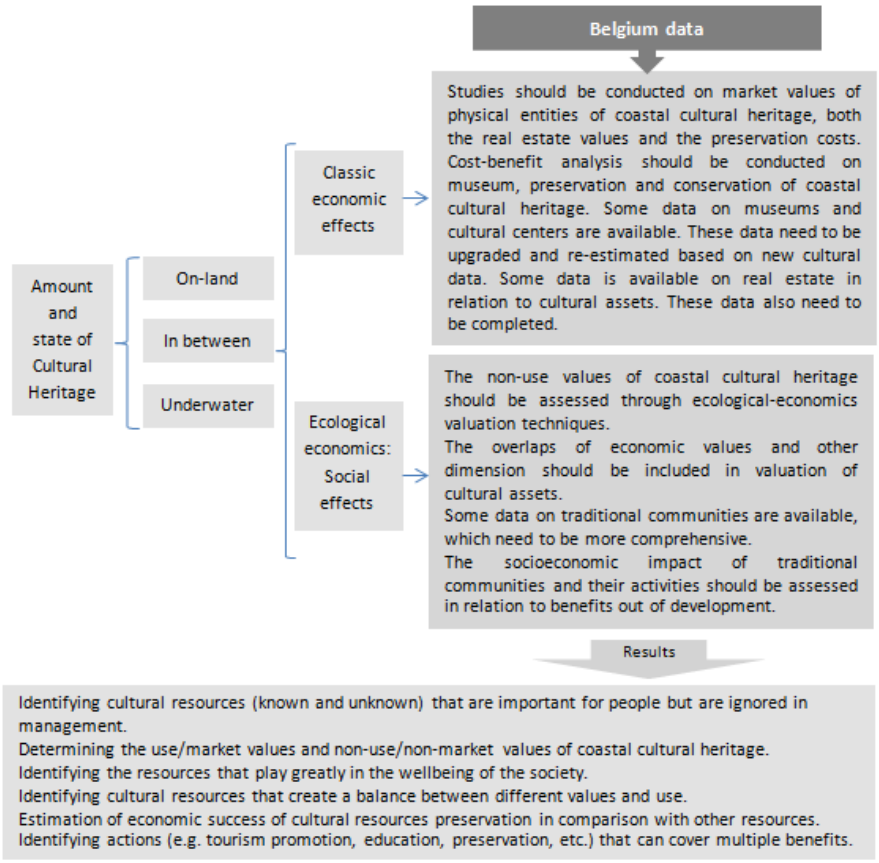


Fig. 3.8: This scheme helps to list, analyze and understand cultural assets that can bring benefit. Understanding of the influence of the perception of benefit in the economic dimension is crucial for predicting the level of success of coastal cultural heritage management. Determining the benefit of coastal cultural heritage and analysis of costs and benefits of cultural heritage preservation can help justifying of the values of heritage as resource in ICZM schemes. The ultimate goal is to make a balance between use/market values and non-use/non-market values of different resources in ICZM, and realize that combining action on management of diverse resources can increase benefits in different forms.

[23] Based on the studies conducted by 'De kustatlas', there is a big difference between the municipalities on the coast and those in the hinterland. The coastal municipalities have a housing surplus of 40% as compared to their total housing supply. The housing surplus is at 11.5% in the hinterland municipalities. Also, the use of the extra houses of the housing surplus differs in the two zones. A large amount of the housing on the coast is used as a second home, which is a phenomenon more prevalent on the coast than anywhere else. 70% of the housing surplus in the coastal municipalities can be labelled as a second home (2008). This is a lot higher than the province's average which is at 23% (based on the available tax information).

Considering the integrated evaluation model, different economic data has to be used in the integrative evaluating scheme in figure 3.8. Economic data should include evaluation of coastal cultural heritage through classical economics as well as ecological economics. The indicators of this scheme should be developed to assess market values and non-market values of coastal cultural heritage in a balanced way. Some of the necessary factors that should be studied are highlighted here. However, a thorough interdisciplinary study is needed to assess the state of coastal cultural heritage within the economic dimension with collaboration both economists and cultural heritage specialists.

D. Political dimension

The political structure of Belgium and its regulatory regimes in regards to the coastal areas need to be analyzed in order to evaluate the impact of political dimension on coastal cultural heritage management and compose an analysis of the possibilities of inclusion of cultural resources in ICZM and MSP. Here, an overview of the Belgium system is presented.

The policy in Belgium is to create a sustainable coastal management plan. A sustainable management of underwater cultural heritage requires a transparent and realistic legal framework developed with the input of the stakeholders active at sea. This legal framework is not a standalone national or regional framework but depends on existing international legal obligations, rights and policy opportunities, as well. It should be aimed at integrating environmental protection as required by the EU and the protection of our cultural heritage at sea with the legal security for industry to conduct their socio-economic activities at sea. This legal security is of utmost importance for a cost-benefit assessment of certain activities at sea, to secure investments and to provide for transparent procedures for new activities. Since most activities at sea create an added value for activities on land and our underwater cultural heritage is clearly linked with the coastal zone, attention should be given to developments that are taking place in an integrated coastal zone management perspective.

Despite the fact that, based on the New Marine Spatial Planning, claiming specific areas for heritage purposes in the North Sea has not been approved, this research highlighted that formulating an area (or areas) of coastal heritage values will assist in highlighting the values of coastal heritage. Nevertheless it is a good start here to study the cultural heritage areas and analyze their statuses in regard to other resources in order to examine the feasibilities of defining cultural areas that can be included in MSP and ICZM. The framework suggested through this research not only protects the marine historic environment but also at the same time acknowledges the importance of development and the use of other resources. Examining the existing policies and legal tools is also a good step towards finding a common ground among different policies and regulation in order to formulate proper policy to preserve coastal cultural heritage, which is suggested through this research.

In this section an overview of the tools and legal systems that are relevant to coastal heritage and coastal areas in Belgium will be presented. Belgium is a federal state with a civil law system and is a member of the European Union. These three qualities basically account for the legal system the country has adopted (Nyulawglobal.org, 2015).

In the Belgian legal system, legislation and binding legal rules consist of several levels of international, European and national laws. At an international level, the policies related to cultural heritage are primarily defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO). At the international level there are conventions (e.g. UNCLOS, Valletta, 2001 Convention, etc.). Following the international conventions, there are European directives that Belgium must comply with, given its status as an EU member. Within the field of coastal zone management, concepts and policies such as Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM) have their places. MSP and ICZM in Belgium are the scientific result of European projects.

At the national level, Belgian has different legislative levels. The first is the federal level, where the adopted laws are applicable for the whole country. Then, there are the three Regions (the Flemish Region, the Walloon Region and the Brussels Capital Region) and the three Communities (The Flemish Community, the French Community and the German-speaking Community). The governments of these Regions and Communities are competent in their own territory and for the matters that have been explicitly assigned to them (*i.e.* heritage). They can make decrees which only apply in their territory. Finally, on a lower level, we

also have provinces and cities/municipalities. In addition, there are cooperation agreements among countries or regions that may not necessarily be the result of the typical legal framework (Hostens et al, 2013). The multi-level governance and competency is shown in figure 3.9.

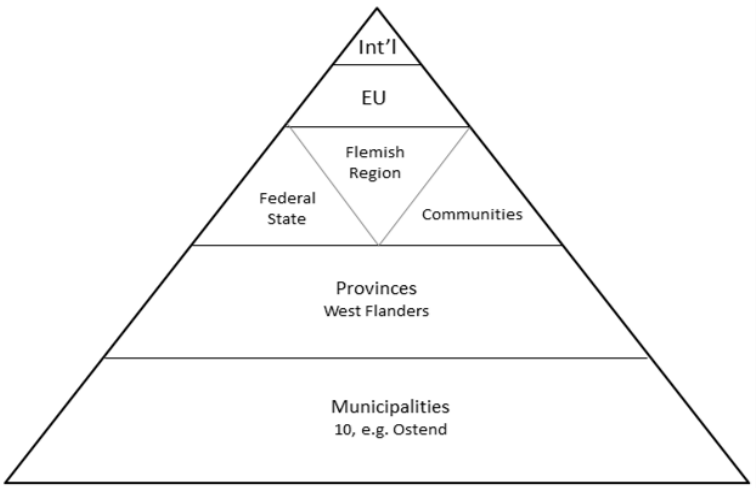


Fig. 3.9: Management framework complies with multi-level governance © F. Maes

These different levels and regulations which are relevant to coastal cultural heritage and the present research are briefly discussed as followed.

D.1. International regulatory tools and framework

Belgium has adopted two international Conventions that are relevant to coastal cultural heritage.

a. Valetta Convention of 1992

The "European Convention on the Protection of the Archaeological Heritage (Revised)" of 1992, usually referred to as the "Valetta or Malta Convention", was signed by Belgium in 2002, ratified in 2010 and finally enforced in 2011 (Conventions.coe.int, 2015). This convention is adopted by the Council of Europe (CoE). The Valletta Convention covers archaeology on land and underwater (Council for Independent Archaeology, 2015). Having ratified the Valletta Convention brings advantages for the coastal areas (coastal towns and urban settings) where cultural heritage is present and needs protection because the Convention recognizes the holistic nature of the historic environment, aims at protecting all of its aspects (known and unknown), and promoting understanding of the past. Considering the dispersion of the maritime cultural elements and cultural heritage in general in the coastal areas (under water in sea and on land), the Convention provides a good system of protection for coastal cultural middle ground. The principles of the Valletta Convention were implemented in the Flemish decree on immovable heritage of 12 July 2013.

b. The 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage

In 2013, after several years of debates, Belgium ratified the 2001 Convention. The "UNESCO Convention on the Protection of the Underwater Cultural Heritage" of 2001 had been agreed to by the Brussels-Capital Region, the Region of Flanders, and the Flemish Community, but could not have been ratified and enforced by the country until all other regions and communities accepted it. Following the ratification of the 2001 Convention, Belgium was obliged to create proper national legislation for the preservation of underwater cultural heritage.

D.2. Belgian cultural heritage policy and governance in the coastal areas

Cultural heritage governance is a complex matter in Belgium. The responsibility for cultural heritage in Belgium is fragmented and regulating different categories of cultural heritage falls under the competencies of Federal Government, Regions and Communities. The federal state delegates the country's heritage management to the various Regions and Communities. Each Community and Region has its own legislation and institutions, co-existing with the federal government's legislation. In general, the Regions are the competent authorities for immovable archaeological heritage whereas the Communities are competent for movable archaeological heritage. The Council of State declared that the geographical delineation of the Flemish Region implies that the open sea and the territorial sea are not part of the Flemish Region. Consequently, the North Sea does not fall under the competence of the Regions but under the competence of the Federal Government. This means that both immovable and movable archaeological heritage in the sea (Belgium territorial water) are federal matter (Deweirdt, n.d.).

In Belgium, the federal state has competence over the natural (except for fishery) and cultural resources of the Belgian Part of the North Sea (Mumm.ac.be, 2015a, b & c; Belpaeme et al, 2011). The low water mark, facing seawards, is the start of the federal competence for the territorial sea. Internal waters and rivers located within the territory of the Flemish region belong to the competence of the Flemish region. The Flemish region is also responsible for the coastal zoning starting at the low water mark, facing landwards, including beaches and dunes, belonging to the public domain as well. However, concerning the in situ maritime heritage, the legislation is more complex. Authority lies with the region that borders the location of the heritage site (Plets et al, 2013); therefore, maritime heritage in Belgium is a matter of both the Flemish region and federal authorities (Van der Linde, 2013). In order to facilitate the communication between the two governments, a collaboration agreement was drafted in 2004 but never enforced (Pieters et al, 2010; Deweirdt, 2006). The collaboration agreement can be a convenient toll in order to unify management strategies for managing coastal cultural heritage, where cultural resources are regulated under two or more competencies.

Federal law on the protection of cultural heritage underwater

In view of the Belgian ratification of the UNESCO Convention for the protection of the underwater cultural heritage (2013), a new federal law on the protection of underwater cultural heritage, along with the "Royal Decree on the Protection of Underwater Cultural Heritage" was approved in 2014.The new federal law on the protection of underwater cultural heritage has adopted the definition of underwater cultural heritage from the UNESCO 2001 Convention. Based on this decree, the protection of underwater cultural heritage, located in the Belgian Part of the North Sea, is under the jurisdiction of the federal government.

D.3. Flanders: Applicable archaeological and heritage legislation and decrees

In Flanders the Flemish Minister (At this moment Sven Gatz, Flemish minister for Culture, Media, Youth and Brussels) is competent for "movable" and intangible heritage (i.e. objects once displaced such as artefacts, archives, and intangible heritage such as traditions, customs, etc.). Presently, the immoveable archaeological sites are the competence of Geert Bourgeois, Minister-President of the Flemish Government, and Flemish minister for Foreign Policy and Immovable Heritage. The agency for Arts and heritage is in charge of the implementation of the Flemish government's cultural heritage policy with regard to the support of cultural heritage organizations and projects, encouraging local authorities to preserve movable and intangible heritage and to manage the organizations and the private collections of the Flemish Government, including the acquisition of cultural heritage. An important instrument in the implementation of the cultural heritage policy is the 2008 Cultural Heritage Decree. FARO- Flemish interface center for cultural heritage (*Vlaams steunpunt voor cultureel erfgoed vzw*) — was established as an intermediary center between the government and the field of cultural heritage. FARO's mission is to support and stimulate actors in the field of cultural heritage, local and provincial authorities, as well as managers of cultural heritage. One of the core assignments of FARO is to sustain and transmit cultural heritage of the communities to future generations, as well as dissemination and communication with the public (Faronet.be, 2015).

An overview of the existing decrees, relevant to the present research, is presented in the following sections.

Decrees on the protection of immoveable cultural heritage in Flanders:

In 2013 the Flemish government adopted the immovable heritage decree. This decree covers all the aspects of immoveable heritage: Decree for immovable heritage, 2013. This has replaced three decrees: Monument Decree of 1976, Archaeology Decree of 1993 and Landscape Decree of 1996. The new decree on immovable heritage includes a new, integrated approach to immovable heritage aiming at proper management of archaeological sites and monuments, rural heritage and historical-cultural landscapes, which are underground, surface or underwater and are value(s) of heritage (The 2013 Decree for protection of immoveable heritage (*Decreet betreffende het onroerend erfgoed*)). It allows the Flemish government to indicate the instances and actors active in the immovable heritage policy, to make inventories, and to define the rules on how to deal with archaeological finds and to determine how research on archaeological heritage should take place. The decree also gives the Flemish government the possibility to protect an archaeological site, monument, cultural historic landscape, townscape or village view. The decree describes the procedure that must be followed for this protection and the consequences hereof. Besides this, the decree also gives the Flemish government the possibility to construct an immovable heritage plan for each theme or area. Finally, the decree also deals with funding and enforcement.

In addition, it is worth mentioning that the policy document on immovable heritage (*beleidsnota onroerend erfgoed* (2009 – 2014) 214788), the policy document on culture (*beleidsnota cultuur* (2009 – 2014) 214791) and the vision document for intangible cultural heritage (*visienota voor immaterieel cultureel erfgoed* 214591) contain the guidelines for the heritage and cultural policy in Flanders. The Province of West Flanders is responsible for the 'depot policy' and invests in maritime heritage by developing projects in which coastal actors can participate. This policy focuses on two lines, the registration of movable heritage held by museums, local heritage societies and other heritage managers, as well as the conservation and management of these pieces.

Based on the primary definition of sites and objects, the "*Decreet betreffende het onroerend erfgoed*" (The 2013 Decree for the protection of immoveable heritage, 'OE decreet-parlement-def0307') seems to be more inclusive and covers archaeological zones where the probability of existing archaeological remains is high based on observation and scientific arguments. The decree gives the Flemish Government the possibility to set up a heritage master plan that is shaped by theme or area.[24] This fact gives some potential to set up an area of coastal and maritime cultural theme.[25] Acknowledging the unknown heritage and considering a possible zone for such heritage is very effective for protection of coastal cultural heritage, if implemented in full. The decree of 2013 entered into force in January 2015.

D.4. Analysis of the state of coastal and underwater cultural heritage in Belgium legislations

As mentioned, due to the Belgium political system, the situation is entirely different when discussing the archaeological legislation of the Belgian Part of the North Sea. As stated above, Belgian heritage regulation is normally delegated to the three Regions and Communities of Belgium. However, this rule does not apply to the North Sea since the sea does not form part of any of the Regions or Communities. The existence of the "Collaboration Agreement" shows that there are possibilities of collaborative approaches for coastal cultural heritage management between different levels of government, although the one from 2004 was never entered into force.

[24] According to Chapter 7 (Real Heritage Point Plan) of this decree, Art. 7.1.1 states that The Flemish Government can set up a real heritage master plan by theme or area. The Flemish Government may set further rules. Art. 7.1.2. A real heritage master plan provides, among other things, based on the data recorded in an inventory as stated in Article 4.1.1 from the heritage values, a vision of the future development of the immovable property concerned in the theme or area, explains the attention from the real heritage policy and formulates management and development. Art. 7.1.3. A real heritage master plan can be reviewed at any time in whole or in part. The Flemish Government may set further rules. Art. 7.1.4. The real heritage master plans are the sectorial proposals for establishment plans and spatial implementation plans. Art. 7.1.5. A real heritage master plan as a program can be linked. The Flemish Government may set further rules. The Flemish Government undertakes to perform an action. An action for immovable heritage lists the tools and resources at the disposal of the administrative authorities which are useful or necessary from heritage point of view to achieve the vision, and reach management goals.

[25] However, the areas that are in the sea (seaward from the low water tide) still are under the federal competency.

Nonetheless, after objection to the lack of effective archaeological heritage protection legislation [at sea] (Deweirdt, n.d.), and ratification of the 2001 Convention, now Belgium has a Federal law on the protection of underwater cultural heritage. In addition, to get a concession for development at sea, an environmental impact assessment must be conducted where heritage protection is taken into account ((Ejustice.just.fgov.be, 2015a and b)[26], although it does not ensure full protection of underwater cultural heritage (E-mail communication with Lenaerts, T. (Scientific attaché) and Vermeersch, J. (Researcher Maritime Heritage) from Flemish Heritage Agency, 2012, regarding Maritime Archaeology Law in Flanders).

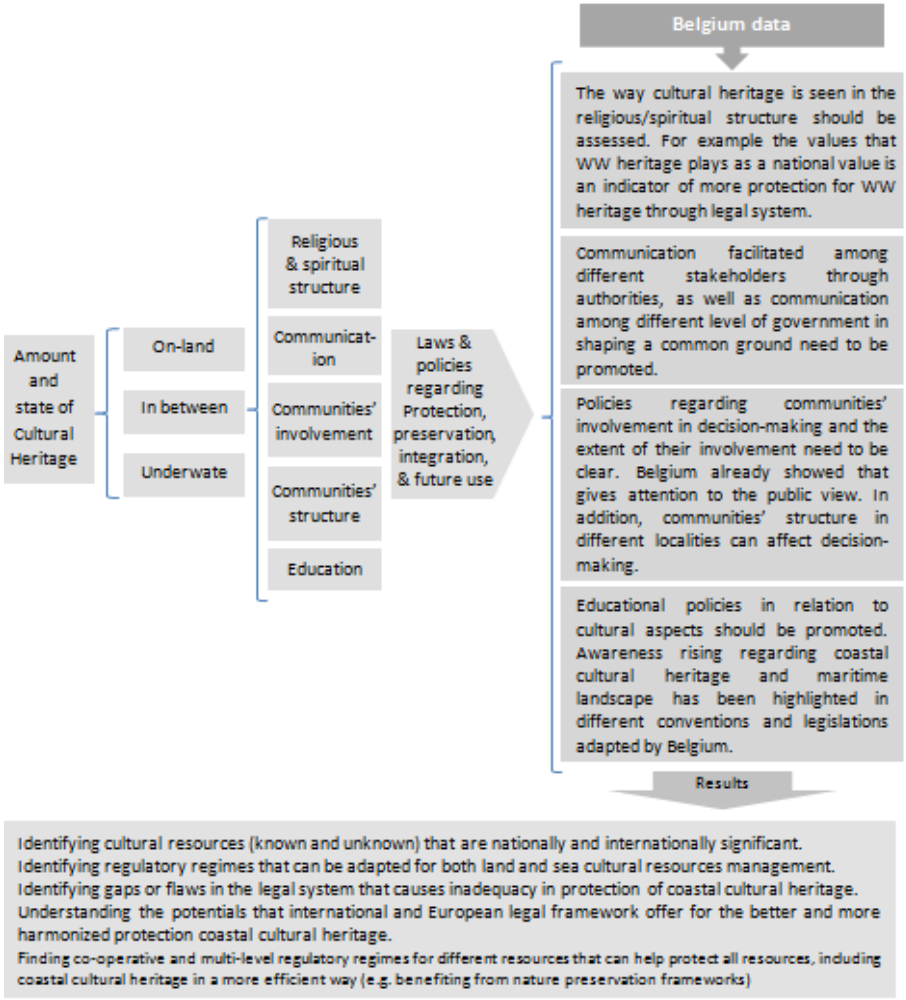


Fig. 4.10: The impact of each indicator in relation to protection, preservation, integration and future of the coastal cultural heritage should be assessed through the existing regulatory regimes. This assessment will help to understand what elements have been covered, and if there is any harmonized protection law, policy, program, etc. are in place to benefit from for the protection of coastal cultural heritage. Considering different level of governance in Belgium, in addition to the international and European conventions that are ratifies by Belgium, there are potentials for a harmonized management strategy for land-sea cultural heritage. This is in line with ICZM strategy of linking sea-land resources management approaches.

Overall, the division between federal and regional law can cause management problems for the heritage which extends from land to sea and passes the intertidal area, including both the area under authority of the

[26] Article 10,°3 of the Royal decree of 9 September 2003 *"houdende de regels betreffende de milieu-effectenbeoordeling in toepassing van de wet van 20 januari 1999 ter bescherming van het mariene-milieu in de zeegebieden onder de rechtsbevoegdheid van België"* and which further explains the *"Wet ter bescherming van het mariene milieu [en ter organisatie van de mariene ruimtelijke planning] in de zeegebieden onder de rechtsbevoegdheid van België."*

Federal and Regional Governments. Furthermore, another challenge is that there are varieties of areas with different underwater cultural heritage in Belgium. For example, there are the rivers and other inland waters for which a different archaeological regime exists according to the region where they are situated. Each region has its own heritage legislation. These two issues only can be addressed if there is a unified approach to address underwater cultural heritage in Belgium. Taking from the concept of middle-ground can help to identify a common ground among different laws, and stakeholders' viewpoints. It also helps to define the areas of heritage protection and preserve the integrity of cultural areas. Furthermore, adapting ICZM strategy that has already has a sea-land linking approach can benefit harmonizing management approaches regarding cultural heritage on land, underwater and in transitional zone in the coastal areas.

Considering the integrated evaluation model, different political factors from different levels of governance need to be understood in order to explore the best way to regulate our management strategies and actions regarding coastal cultural heritage. Figure 3.10 shows some of the indicators that should be assessed within the existing political dimension respecting international, national and local systems. With the aims of protection, preservation, integration, and sustainable future use, the workability of the existing legal system and policies can be assessed.

E. Cultural dimension

In Belgium, coastal cultural heritage has been divided into several groups and each receives its own attention (Compendiumkustenzee.be, 2015). The geographical position of the maritime heritage (including shipwrecks and underwater cultural heritage) in marine areas is included in a number of databases (Maritieme-archeologie.be, 2015; Wrecksite.eu, 2015). However, as far as maritime heritage is concerned, it is not evident to claim specific marine space for the purpose of maritime heritage preservation and it gets attention only when underwater heritage has to disappear for compelling reasons (Pieters et al, 2013). Another type of coastal heritage is the architectural heritage in the coastal area with their geographical location (Geo.onroerenderfgoed.be, 2015). The other type landscapes with heritage values; the new geo-portal of the Flemish Heritage Agency provides an overview of the locations of these landscapes (Geo.onroerenderfgoed.be, 2015). In addition, there is also intangible heritage related to the coastal activities such as horseback shrimping in Koksijde that is inscribed in 2013 on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity.

As for an integrated management policy, and in order to include the cultural dimension in the marine spatial planning and integrated coastal zone management, these data bases provide a good start for identification and evaluation of coastal and underwater cultural heritage. Furthermore, these can be used to evaluate the socioeconomic and environmental values of these assets and identifying links between heritage assets and between people and their heritage. Considering all these factors will help to identify the elements that can be used for formulating coastal cultural middle ground.

At this stage it is crucial for Belgium to shape the coastal cultural middle ground(s) which consists of a group of heritage assets, which connected to each other through heritage, cultural, historical and social values. Coastal cultural middle ground will assist in creating a policy for a unified approach to regulate coastal heritage which is crucial for preservation of the maximum values of this heritage given that Belgium has different governmental bodies regulating land and sea.

Identifying a cultural ground that encompasses natural, social and economic values helps to justify the value of coastal cultural heritage as a resource. Figure 3.11 demonstrates these values and presents some existing information for each factor. As a result, inclusion of (a) cultural zone(s) in marine special planning as a tool to be included in integrated coastal zone management can be validated.

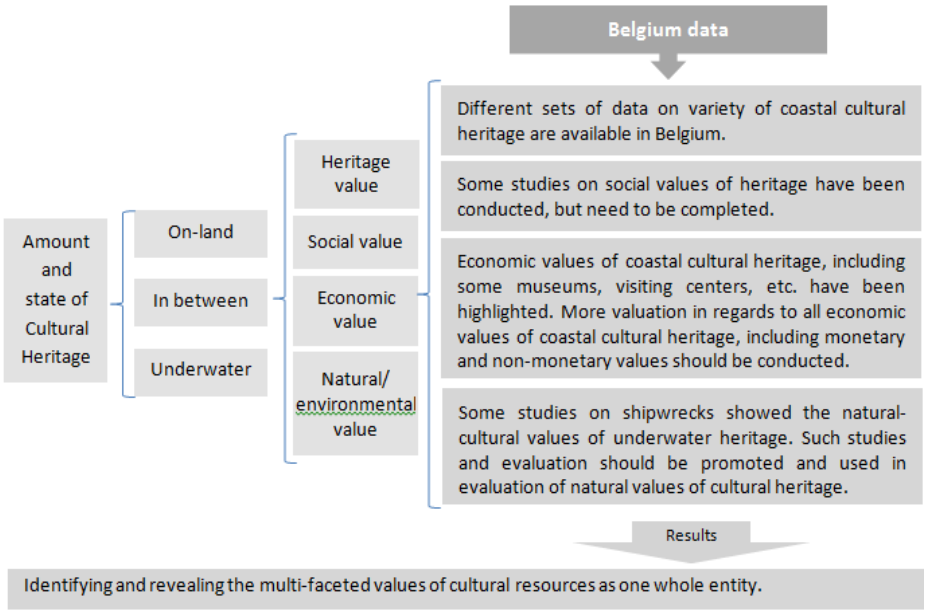


Fig. 3.11: In line with the sustainable development goals, the values of resources that should be considered in management include also culture. There are several past and ongoing studies in Belgium that highlight the values of coastal cultural heritage. But these studies have been conducted separately. If all the results come together, formation of (a) zone(s) of cultural values can be facilitated.

3.2.3. Coastal cultural middle-ground: potentials and obstacles

Coastal cultural middle ground is an area that is defined through a combination of cultural assets that are linked together based on their heritage and social, economic and environmental values. Defining this area helps to create a ground for different stakeholders and legal and scientific bodies to cooperate for unifying protection and management strategies. Since this area includes the assets that are important for a variety of stakeholders, a unified approach to manage this area makes the decision making in favor of multiple parties.

Presently, Belgium has several sets of data related to maritime, underwater and coastal heritage. The SEARCH project has also focused on the collection of more data (natural and cultural). This is a good time to include as much information as possible to create the coastal cultural middle ground and to find the possible links between the sea and land. In addition, the role of people and social settings is crucial. A substantial study on economic condition of the coastal traditional communities and different environmental aspects (development, ecology, and etc.) is also needed to formulate the coastal cultural middle ground.

The coastal cultural middle ground for the Belgian coast can bring several benefits. Since the current Belgian MSP does not allow for cultural zones, benefiting from other assets' mutual preservation and protection strategies can improve protection and management of coastal cultural heritage. This approach can help to include coastal cultural heritage as a zone or several zones, along with other resources, in MSP. In addition, an interdisciplinary evaluation of costal cultural heritage will justify the importance of an integrated approach for management of coastal cultural heritage in Belgium. Furthermore, regarding the separated legal system in Belgium (Federal, Regional and Commune), heritage at sea and on land is treaded under different legal systems and legislation. As a result of an integrated approach, a new policy needs to be made to promote harmonized heritage management on land and under water in the Belgian coastal area.

In the following section, the possibility of defining a coastal cultural middle ground for the Ostend area will be presented.

3.3. Case study: Ostend area

The city of Ostend is the service center of the Belgian coast. It is an attractive sea resort and has been one of the important ports on the Southern North Sea for many centuries. The old town center with its seawards position compared to the rest of the coastline and low laying city center at about the mean high water level, is protected against flooding by a seawall which was built some 130 years ago (Balens et al, N.D.; Verwaest et al., 2012) [Fig. 3.12]. As a port city, Ostend has several maritime infrastructures, but also the infrastructures that connected this town to hinterland areas (Van Acker, 2011). Many of the older infrastructures still exist and are considered historically valuable. These remains are part of the maritime cultural landscape of Ostend and are incorporated into its image as a historical port city. The continued links between sea and land is an important aspect in Ostend. In addition to the importance of trade and communication, the connection between land and sea has brought many other values to the city. Here, tourism is a revenue generating source of income for many. Considering the importance of Ostend as a tourist resort, and considering the maritime history of Ostend, cultural tourism can be promoted in Ostend through a stronger emphasis on coastal and underwater cultural heritage.

Fig. 3.12: Ostend Harbor.
©http://www.cruisetimetables.com/cruises-to-ostend-belgium.html
(Accessed: Feb. 2015)

Considering the fact that Ostend is a major city with ongoing development at sea and on land, and at the same time encompasses several valuable tangible and intangible heritage assets, a well-managed coastal cultural heritage can not only promote preservation of coastal cultural heritage, but also benefit people through a well-managed resource in line with the sustainable development goals.

Following having theoretically adapted the ICZM principles, the two other steps for management of the Ostend area are formulated and proposed as follows:

3.3.1. Integrated evaluation: Ostend Area

In this section, the integrative evaluation schemes are going to be used in order to recognize factors that are needed to be considered for evaluation, and to identify gaps in our knowledge that need to be filled in. The first step here is to identify the heritage assets of the area and to make an inventory and strategic plan for management of cultural heritage.

In general, there are several categories of coastal cultural heritage in the Ostend area. They include: a partially submerged town, shipwrecks from different periods, World War remains, historical monuments and sites on land, intangible heritage, and traditional communities and their associated heritage. Although, there is some knowledge available about coastal cultural heritage in Ostend, they are scattered and there is no strategic plan for coastal cultural heritage assets available for Ostend (According to the personal communication with Kathy Belpaeme, advisor for Regional Cooperation Coast, on 14 Jan. 2015). Therefore, the first step of the scheme presented in figure 3.18, still needs to be completed for Belgium, in general, and specifically for Ostend for this particular case study. This information needs to be added to the Cultural dimension section.

Furthermore, there is some data available for testing the integrated evaluation model for Ostend. Although, this data has not all been collected for the purpose of coastal cultural heritage management and are from different sources, it can be used to identify the gaps in our knowledge. This will help to propose study projects that are designed in a more interdisciplinary style for the purpose of coastal cultural heritage

management and its integration into MSP and holistic coastal management schemes. In the following sections all five integrative dimensions are presented for Ostend.

A. Cultural dimension

The Ostend area encompasses several coastal and underwater cultural heritage sites. They include, but are not limited to: the archaeological site of Walraversijde (in Raversijde); the Atlantic Wall Museum and remains of the World War bunkers at the shoreline; in the western side of the Ostend harbor; and the Fort Napoleon; as well as remains of World War bunkers at the eastern side of the Ostend harbor. At the sea there are remains of the submerged village of Walraversijde and several historically and archaeologically important shipwrecks. In addition, the city has an active maritime tradition such as commercial fishing, fish markets, and historical boat festival (Ostend at Anchor).

Fig. 3.13: The Vindictive sunk in front of the harbor. ©http://www.europeana.eu/portal/rights/rr-f.html

These assets are of different heritage, natural, social and economic values. Heritage values include archaeological, aesthetic, spiritual, and historical and so forth. In addition, assessing the state of heritage in the society, its role in bringing economic benefit to people, as well as its natural-cultural values are important factors in evaluation of coastal cultural heritage for sustainable management of these resources.


Fig. 3.14: Bird view of Fort Napoleon and some WW II defensive structures. ©http://www.jackfly-events.be/nl/partenaires/fort-napoleon-ostende/

Among coastal cultural heritage the following items are valuable within the vicinity of Ostend harbor:

The remains of the ship Vindictive can be found on land on the eastern harbor arm. Vindictive was scuttled in the harbor channel of Ostend in May 1918 in an attempt to block the harbor of Ostend [Fig. 3.13]. In an earlier attempt two other ships were scuttled: HMS Sirius and HMS Brilliant. The wrecks can still to be found in the position where they were scuttled. The three ships have significance in the context of the British raids on Ostend (April-May 1918). Vindictive is preserved partly on land, the two other are still partly out at sea. In addition, ZH 114/255 d/houten wrak haven Oostende, which is close to the shoreline and harbor of Ostend and has heritage status, now is protected by Royal Decree as well.


Fig. 3.15: Mercator at Ostend Harbor. ©https://www.kustpas.be/?lang=en

On the shoreline, there are the coastal defense remains from WWII (Atlantik wall). On the western side of the harbor, on land, there is fort Napoleon, in addition to some WWII defensive structures and bunkers [Fig. 3.14]. The harbor infrastructure itself and other wrecks are linked to the harbor (such as a 19th century wooden shipwreck that is also recognized for its heritage value).

In the Yacht-Harbor lies the Mercator Ship [Fig. 3.15]. This ship is a floating museum. The Mercator was the ship that was used by the Belgian Navy for the instruction of the military sailors and navy-men.

These sites and many other coastal sites that have already been identified and recorded in the heritage inventory in the Ostend area and have been mapped in relation to other data in the output of this research. However, the specific evaluation of each site, individually, is out of the scope of the present research. A map with the records of all these heritage assets will help to formulate a strategic plan for coastal cultural heritage in Ostend. Some of these sites have been introduced in section 4.3.2 of in order to demonstrate how to delineate a coastal cultural middle ground.

At the second stage, to proceed with the integrative evaluation, these assets should go through the other four integrative dimensions for assessment and evaluation as follows.

B. Natural and environmental dimension

In using the scheme for evaluation of the effect of natural and environmental dimension on coastal cultural heritage preservation in the Ostend area, some existing information can be used [Fig. 3.16]. However, more information can be collected on each site individually and be analyzed for each site, as well as for the whole coastal cultural area in order to have a more specific assessment of the sites. For the moment, studies such as plans that have been produced in the event of a flood and coastal defense structure have been used to determine the impact of existing natural and environmental factors on coastal cultural heritage in the Ostend Area.

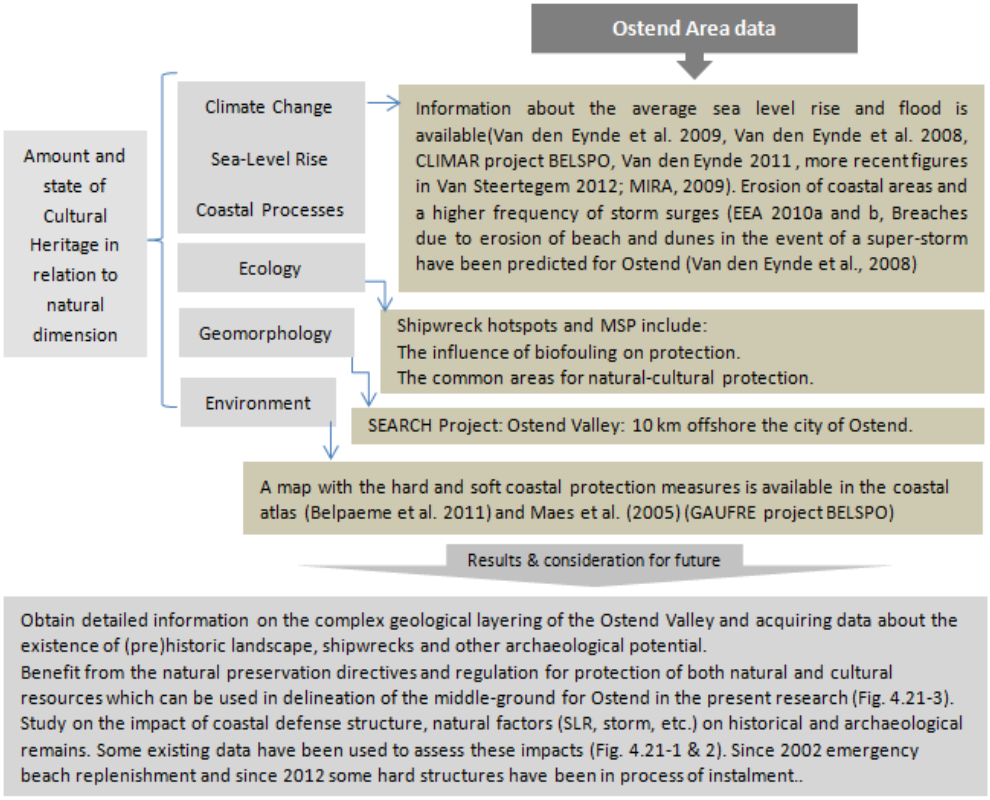


Fig. 3.16: Filling the Natural-Environmental Dimension scheme with existing and needed data.

C. Social dimension

In the RSV (Flemish Spatial Structure Plan), the coast is regarded as an urban network and a touristic, recreational network (Coudenys et al, 2013). The cultural heritage aspects of the coast can be used to promote these networks. Heritage can link people with the coast in a different way. Although there have not been many studies on the social aspects of coastal cultural heritage in Ostend, there are several facts that show the social values of different types of this heritage for people.

Ostend, as a fishing city, has fishing communities. Fishermen with their boats, fish houses, ship yards, crafts, traditions and other elements related to fishing, not only have intervened in the natural environment over centuries in the coastal areas, but also established a kind of identity and place attachment. They are a part of an existing maritime cultural landscape, as well [Fig. 3.17].

In addition, the remains from World War I and II are an important part of the citizen's heritage. Connection with the sea, shipwrecks and casualties at sea, as well as the defensive structures left at the shoreline, are still a part of many people's memories. All these are not only valuable to promote tourism, but also form a part of people's identity, sense of place and memory [Fig. 3.18].

To evaluate the importance of tangible and intangible coastal cultural heritage and understand the kind of links and connections that people have with these heritage assets, more in depth social studies are necessary. Some studies are suggested through the scheme below to be done or to be completed [Fig. 3.19]. A comprehensive study is suggested to be designed and performed in collaboration with heritage specialists and social scientists on coastal cultural heritage. The aim of such a study should be to collect enough data to shape links between people and their heritage, and to find out how heritage assets can influence the formation of the communities, and in promoting sense of place and identity. This study can already be started on the known heritage sites in Ostend. Similar projects have been conducted for terrestrial heritage in Belgium such as the activities at the abbey domain of Roosendael (LAMOT, 2009).

Fig. 3.17: View of fishing boats in Ostend. Coastal fishermen provide a daily supply of fresh shrimps, which can be bought at the famous Ostend *Vistrap* (fish market). ©Bert Kohlgraf

Fig. 3.18: Ostend Beach in WW II. © Reiben. http://www.panoramio.com/photo/1889395

Nevertheless, the existing information about WWs, social employment at traditional shipbuilding projects, traditional fishing (horse-back shrimping, and local knowledge about fishing through LECOFish have been used in the present research for evaluation of the social aspects of coastal cultural heritage in Ostend.

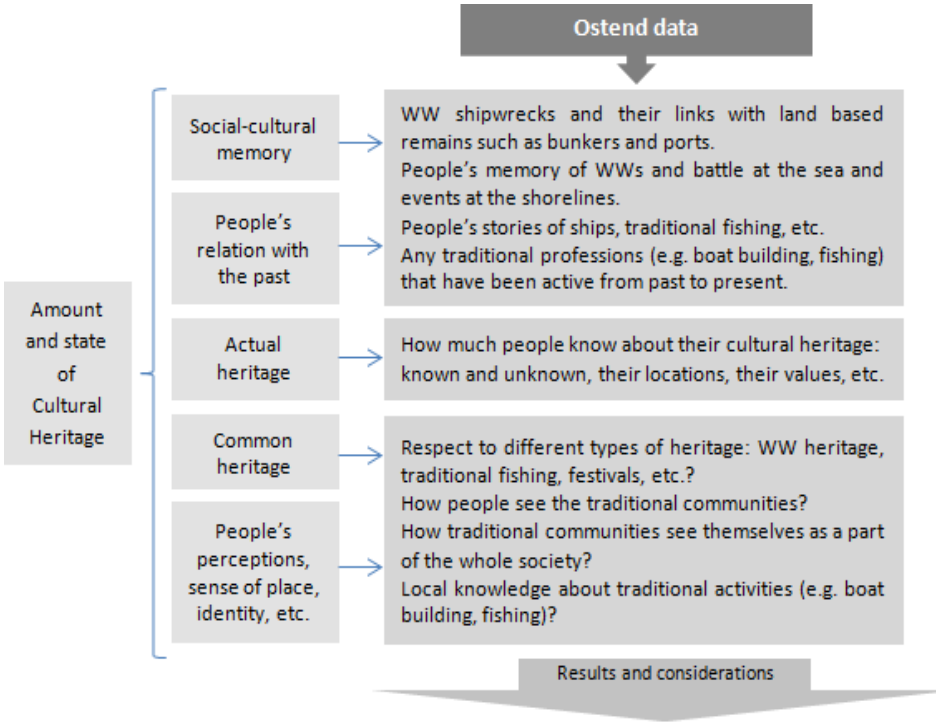


Fig. 3.19: This scheme shows some suggested social studies on relation between people and coastal heritage. Through social studies the links between people and their heritage can be highlighted.

D. Economic dimension

Different studies show that cultural heritage has brought economic benefit to people in direct, indirect and induced ways in the Flemish Region (De Baerdemaeker et al, 2011) and in the coastal areas (Maelfait et al, 2012). In some cases, heritage related activities can bring socioeconomic benefit to people. For instance, in a number of historic shipyards, social employment projects are developed in Belgium (Pieters et al, 2013). Although some information is available on the benefits that museums, traditional activities and cultural tourism bring to people (De Kust, 2013), more in depth study on the impact of economic development on coastal cultural heritage management is necessary. In addition, the impact of coastal cultural heritage management on development should be assessed for the Ostend area considering that this city is a major port. A balanced study on the market values and non-market values of coastal cultural heritage can provide information about the priorities that should be considered in integrated management of coastal cultural heritage. Some existing information from different studies has been presented in the following scheme, and some studies suggested to be conducted [Fig. 3.20].

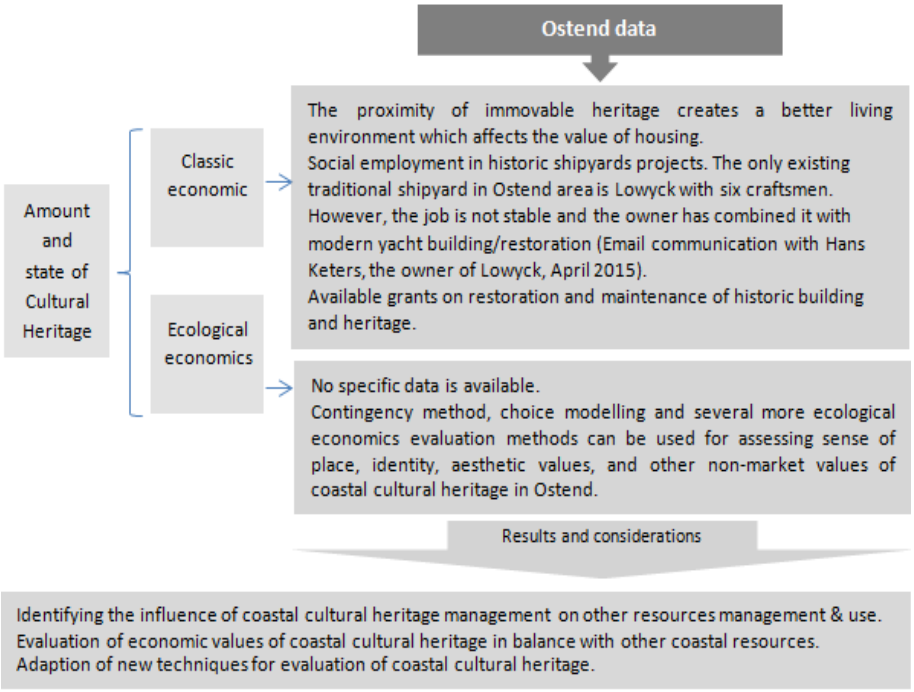


Fig. 3.20: Shows the two economic evaluation methods that should be performed for coastal cultural heritage in order to understand the market-values and non-market values of coastal cultural heritage. The ecological economics methodologies such as contingency method and choice modeling can be adapted for this purpose.

E. Political dimension

Different levels of heritage legislation were explained in the previous sections. The legal framework concerning spatial planning for the Belgian coastal zone can be found in the coastal codex (coastal codex, theme Spatial Planning) (Kustcodex.be, 2015)). Belgian MSP 2014 has been approved as a Royal Decree and it has summarized its spatial policy options regarding coastal cultural heritage as:

- Allowing cultural heritage to take advantage of protective measures already in place.
- Ensuring that appropriate mitigating measures are taken when cultural heritage is threatened by certain activities.
- Making optimal use of shipwrecks in the framework of nature conservation.

In addition to this, there are legal frameworks for the protection of terrestrial cultural heritage in Flanders. Considering the existing legal system, the policies regarding education, public engagement, communities' involvement, raising awareness, and so forth, in relation to coastal cultural heritage need to be studied. A balanced policy for protection and integrated management of coastal cultural heritage can be made. The possibilities of linking a land and sea management approach in the present legal framework must be formulated for the Ostend municipality, along with other coastal municipalities.

Dealing with legal aspects is a general issue that should be considered for all Belgian coastal municipalities. However, benefiting from a regional or provincial regulatory regime for integrated coastal cultural heritage management can reduce conflict among the municipalities and can enhance an integrated approach for the whole Belgian coastal zone. Ostend can be a pioneering example for an integrated approach for coastal cultural heritage management and this approach can gradually lead to a harmonized management policy for all of Belgian coastal cultural heritage.

In the following section, the existing and known coastal cultural heritage items are going to be positioned on a map. Benefiting from some social and natural studies, the links among heritage and their environment

and people are going to be studied, in order to delineate coastal cultural middle-ground(s). The aim of this delineation is to define zone or zones of cultural values that can be regulated for the preservation and better management of coastal cultural heritage in Ostend within coastal management plans.

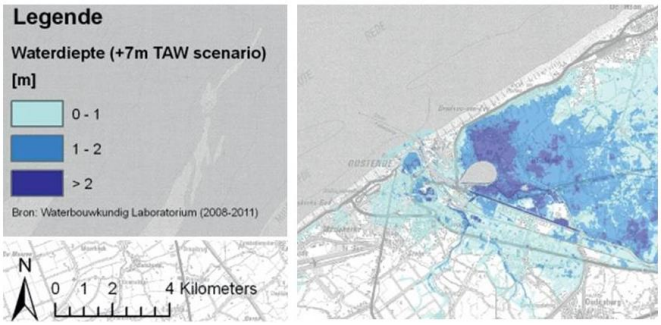
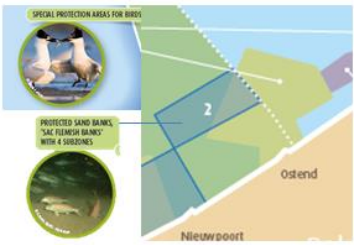
3.3.2. Ostend coastal cultural middle ground

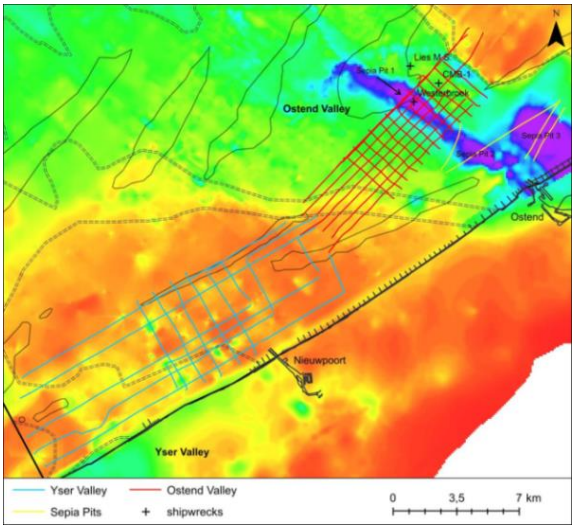
As mentioned before, there are several sets of data on underwater and coastal cultural heritage in the Belgian Part of the North Sea, including the Ostend area. In addition, there is some data that has been collected on the natural and environmental condition of the Belgian Part of the North Sea, including some information about shipwrecks. Although data collected in these projects were not specifically collected or analyzed for coastal cultural heritage management, some raw data (e.g. data about biofouling, location of defense structures, etc.) can be used for evaluation of coastal cultural heritage. Furthermore, the current MSP in the Belgium Part of the North Sea and also "Strategic plan for the Harbor" (Gysens et al, 2011), "the Master plan for Oosteroever" (Global Master Plan, 2012), the Spatial Plan for Oostende, and similar plans, can be used along with coastal cultural heritage data to assess the state of cultural heritage in the Ostend coastal area.

Relevant data from the previous cultural and natural studies, as well as the natural protected area (Habitat Directive, Protected Sandbanks and CONDEMIUM) (Belgium MSP Brochure, 2014; Health.belgium.be, 2015), and shipwrecks (Maritieme-archeologie.be, 2015) are briefed in the table in figure 3.21, and are projected on the geological survey map on the Ostend Valley (De Clercq et al, 2014) [Fig. 3.23]. Superimposing this data shows the location of protected natural habitat as well as some known coastal cultural heritage.

Considering the number of historically important shipwrecks, archaeological and historical sites on land and underwater in this area, the vicinity with natural protected areas and shipwreck biological hotspots, and the scientific importance of the Ostend Valley, there is potential to define a coastal cultural-natural zone, which can be used for the integrated management of coastal cultural heritage in Ostend. Although it might not be feasible to protect the whole area and the valley, awareness of its archaeological importance is essential. It can therefore be suggested that regulating the area in a way that foresees the possible presence of archaeology/paleontology and enforcing Heritage Impact Assessment is essential while other planning and implementation of projects are in process. Defining a cultural area also can be beneficial in order to reconsider demolishing historical buildings such as the historical shipyard of Beliard which happened a couple years ago. Since this archeological site and its buildings would be considered as a part of coastal cultural middle ground, their values as elements that contribute to a bigger image would be better highlighted. In addition, while assessing the coastal cultural middle ground through integrative evaluation scheme, the values of every element would be regarded in relation to social, natural, economic and political dimensions and there will be better chances for justification of broader values through this type of assessment.

Fig. 3.21: A brief summary of some existing maps and data on the coastal zone of Ostend

Natural & environmental factors	Examples of available materials, used for the present case study
1. Flood and Storm Surge. Projection of data on the map shows the areas with possible flood risks.	 Climate change exposes the coastal region to three main types of impact: floods during storms, wave, coastal erosion, and deterioration to or loss of natural ecosystems. Sea-Level Rise for the period 1927-2006 show an increase in mean sea level estimated at 16 to 17 cm/century, with possible sign of acceleration during recent decades. (Van den Eynde et al, 2009; MIRA, 2011).
2. Coastal defense structure (Human intervention).	 http://www.coastalatlas.be/map/?lan=en&theme_id=5 More information is available from GAUFRE, 2005, 'SCIENTIFIC SUPPORT PLAN FOR A SUSTAINABLE DEVELOPMENT POLICY (SPSD II)' TOWARDSA SPATIAL STRUCTURE PLAN FOR SUSTAINABLE MANAGEMENT OF THE SEA (Vanden Abeele et al, 2005).
3. Ecologically marine protected areas and ecologically valuable areas.	  Left map from Belgian MSP shows the protected areas for bird watch and sand banks protection. Right map shows the areas that are ecologically valuable. As indicated on this map Ostend area is of ecological value and high value (Vanden Abeele et al, 2005).

4. Corridors for cables and pipelines (Human intervention)	 (Belgium MSP Brochure, 2014) These corridors in addition to in addition to ship routes are factors to be included in the formation of the cultural heritage area due to their conflicting impact on heritage protection.
5. Beach replenishment at Ostend.	 http://www.kustveiligheid.be/gemeente.asp?TAAL_ID=1&ITEM_L1_ID=15&GEMEENTE_ID=9 Since 2004, emergency beach has since been regularly maintained, for protection against at least a thousand year storm. Since 2012 hard infrastructure were planned to be installed. This is a Seawall, combined with tourism, monumental, urban and historical aspects in order to strive for an optimal integration of the Zeeheldenplein, the western jetty, the pier and the Visserskaai.
6. Geological survey of Ostend Valleys.	 The survey area in May 2014 visualized on top of the Palaeogene surface. This valley evolved from a river valley into a more open estuary and the valley got cut off by a large aeolian dune blocked the river more inland redirecting it to the north. Two shipwrecks are in this valley.

As the first step, some of the existing data were projected on the geological map [Fig. 3.22].

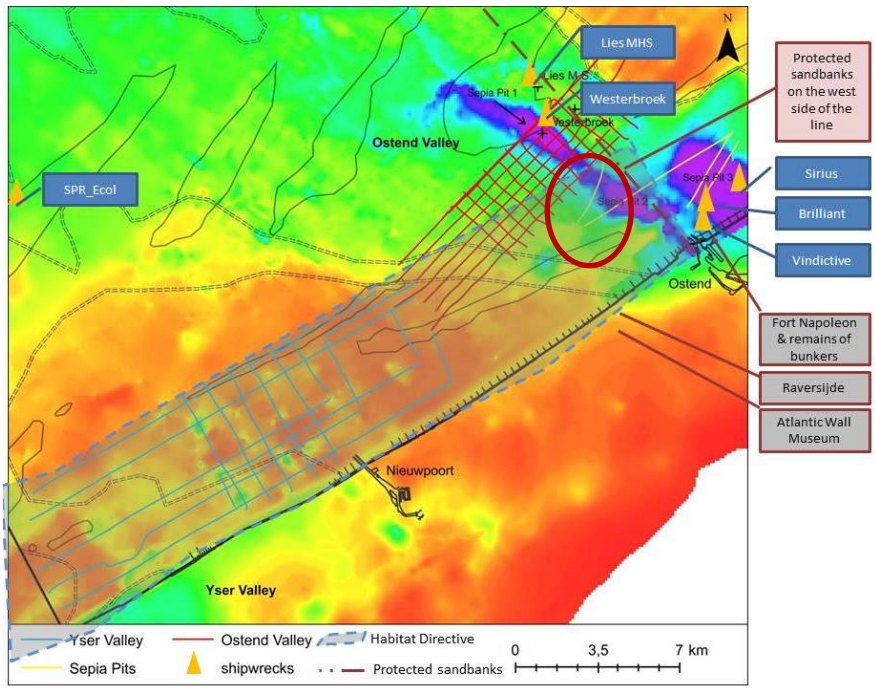


Fig. 3.22: Shipwrecks, cultural and archaeological sites are projected on the geological map. The habitat protected areas and shipwrecks biological hotspots are positioned. The protection umbrella for nature can be extended for heritage sites as well. This can justify a stronger protection zone for management of cultural-natural resources. The red circle shows the Ostend area.

Second step, a more sophisticated superposition of data and different layers were applied [Fig. 3.23]. The more data is available from different field, the more sophisticated this map will be generated, which results in more possibilities to create different scenarios.

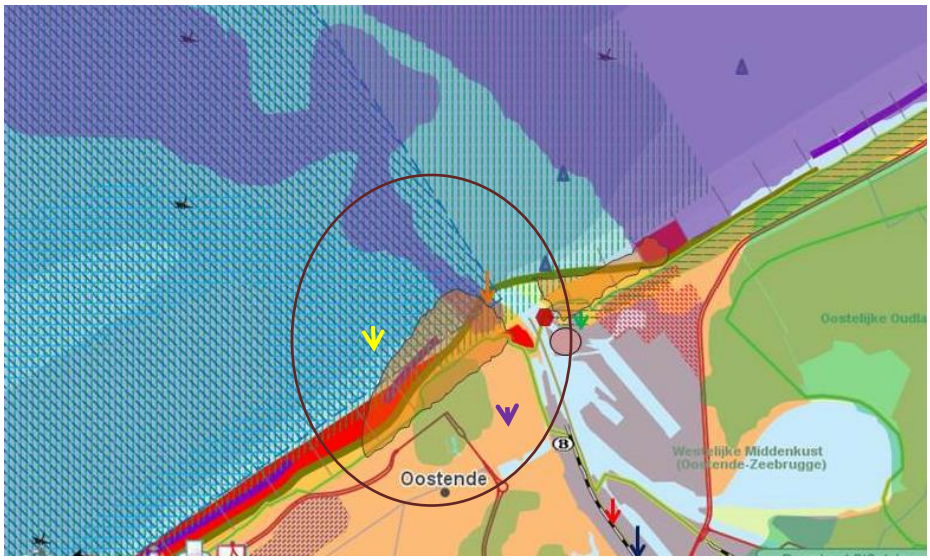
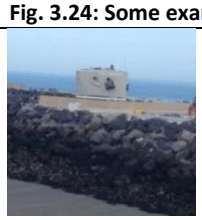


Fig. 3.23: Superposition of several layers of data including heritage assets, geology, cultural landscape, flood zones, coastal protection, etc. resulted in this map. The red circle is the Ostend area with illustration of some of its historical and monumental sites on and underwater. The arrows shows some terrestrial heritage and blue triangles in the sea show the location of shipwrecks.

Predicted Flood zones
Nature protected zones
Parts of Ostend Valleys
Beach nourishment
Protected beach dunes
Protected landscape
Coastal protection

Some examples of different types of cultural heritage sites at the Ostend coastal area are presented in figure 3.24. These are not the only cultural assets that can be included in the coastal cultural middle ground. There are more known heritage assets exist in Ostend including the historic houses, seafood restaurant, historic sea-wall, and so forth.

Fig. 3.24: Some examples of the cultural sites

Shipwrecks e.g. Vindictive & ZH 114/255 d/houten wrak haven Oostende	 Vindictive remains © Pieters, M.	Warehouse-Stock house	 Santy, Pieter, ©Vlaamse Gemeenschap
Lighthouse	 Santy, Pieter, ©Vlaamse Gemeenschap	Vlotdok	 Santy, Pieter, ©Vlaamse Gemeenschap
Bunkers and the landscape around, including two slipways	 Santy, Pieter, ©Vlaamse Gemeenschap	Two slipways	 Santy, Pieter, ©Vlaamse Gemeenschap
Shipyard Lowyck the only active in traditional shipbuilding in Ostend area	 © Hans Keters	National Mariners Monument	 Santy, Pieter, ©Vlaamse Gemeenschap

In the Ostend coastal area, around the harbor, different themes of cultural heritage elements related to maritime heritage, sea-war heritage, trade and so forth can be observed. Some have memorial component (National Mariners Monument), some more heritage and historical values (Fort Napeleon), and some traditional and social values (traditional shipyard). Some are active heritage involving people's everyday work, and some more touristy aspects. The entire area reflects a long living tradition of connection of people with the sea, and every element is a cruitial component to illustrate and preserve the integrity of this image.

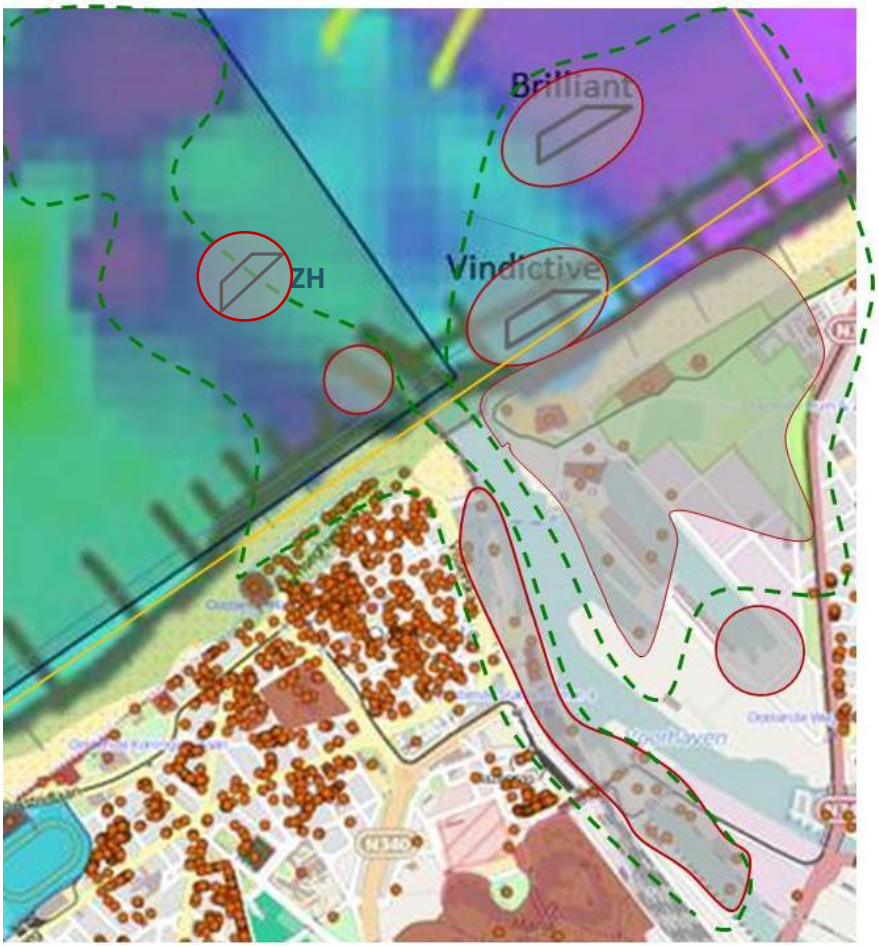
Superimposing some of the available data helped shaping a few scenarios for a coastal cultural middle ground in Ostend [Fig. 3. 25-26]

On these two maps, heritage sites, related to maritime activities and coastal characteristics with their possible core zones and buffer zones are highlighted. The maximum number and amount of cultural heritage sites with possible links among them are taken into account, in order to formulate cultural landscapes. Considering nature protected zones on land and underwater, as well as existing cultural landscapes, the zones are extended to encompass all heritage and cultural values. The purpose is to not lose the links among physical remains, in order to conserve the whole connection among buildings and sites to save the impression of unity coastal cultural area. Delineating coastal cultural middle ground that encompasses the maximum aspects of coastal cultural heritage will promote a tourism that is directed on maritime heritage; activities such as traditional shipbuilding and restoration can be improved; traditional fishing can be showcased as a part of

tourism attraction along with seafood markets; and in combination with intangible heritage such as Ostend at Anchor Festival, the whole area can express its long tradition of maritime activities from past to present in a stronger way. Maritime heritage trail can be set in place in order to guide tourists. This also brings more attention to the historical buildings and sites that might have been marginalized and are in danger of abandonment and demolition (e.g. Beliard). The two sides of the harbor are connected by ferry at the moment that can also be used for visitors transfer from one side to the other.

Although, at this stage no particular economic and social data were used for formation of the presented scenario, the importance of many of these sites as a part of social values such as memories of WWs, mariners memorials, etc. and economic values such as promoting traditional fishing and seafood, production/restoration of ships and also the contribution of different activities (e.g. water-related festival) to the economy have been briefly highlighted.

Fig. 3.25: A hypothetical scenario for Ostend Coastal Cultural Middle Ground



Shipwrecks

Hypothetical zone and buffer zones of cultural sites, including zones with concentration of cultural sites and landscapes.

Hypothetical coastal cultural middle ground.

Architectural relics based on Geoportal onroerenderfgoed

Fig. 3.26: Final hypothetical scenario for Ostend Coastal Cultural Middle Ground

Shipwrecks

Hypothetical zone and buffer zones of cultural sites, including zones with concentration of cultural sites and landscapes.

Hypothetical coastal cultural middle ground.

Architectural relics based on Geoportal onroerenderfgoed

In the second step, informative programs, workshops and websites can be used to attract public attention to such a plan (One option is to use *Overlegplatform kustwacht/beleidsorgaan kustwacht*). These actions can be helpful in different ways. People can provide more information about sites and places that might have been overlooked in these plans; the social values of heritage can be assessed through interviews and observation of people's attitudes; and finally, if the plans gets enough attention from the public, justification of holistically protecting and managing coastal cultural heritage in this area will have a stronger support.

In addition, the role of stakeholders in supporting coastal cultural middle ground is crucial. From the experiences of nature protection (Cliquet et al, 2007), it can be learned that protection of large areas with restricted rules arises opposition of many stakeholders. Although the protection of heritage is important, the aim of the coastal cultural middle ground is not to create a dead heritage zone. The ultimate goal is to allow for the traditional and local activities, such as fishing and boat building, to continue, however with awareness of existing coastal cultural heritage. Some restriction in activities such as fishing and trawling around the shipwreck will be recommended. Control on development in the shoreline and in the vicinity of historical building and cultural landscape is necessary in order to prevent damages such as destruction of historical maritime related sites and buildings (e.g. Beliard).

For delineating and regulating such an area, which covers sea and land, both the Flemish and Federal Governments should be on board because, as mentioned before, the Federal government is competent for the sea and the Flemish Government has competency of land. Several authorities need to be on board to make decisions for protecting and regulating Ostend coastal cultural middle ground such as Harbour authorities, Town authorities, Flanders Heritage agency, Agency for Nature (ANB), *Afdeling kust* (MDK), and Federal State for the Sea Territory. However, creating regulation to provide legal support for this area is out of the scope of the present research, and hopefully will be conducted by legal experts after finalizing the extent of Ostend Coastal Cultural Middle Ground. Within the decree of 2013 that gives possibilities to the Flemish Government to create areas of heritage theme, there are potentials to define boundaries for heritage assets that are related to each other, and encompass maritime and coastal significances. However, the coastal cultural middle-ground covers sea as well, which is not the competency of the Flemish Government. Therefore, the present research suggests exploring the possibilities of creating an act to protect coastal cultural middle ground in the Belgian coastal areas. Learning from the National Marine Sanctuaries Act (USA), the Marine Act 2013 (Ireland) and similar legal tools, this research suggest creating Coastal Cultural Middle Ground Act for the Belgium Part of the North Sea. The aim of this act would not be only to define the boundaries of a protected zone for coastal cultural heritage, but also to bring different level of authorities and sectors together to acknowledge the value of coastal cultural heritage as a component of the coastal areas. Since the coast is now regulated through regions, for Ostend area, one option is to use an amendment of the Special Act of 8 August 1980 on the reform of institutions. According to this amendment it is possible for the Federal government to transfer certain competences to the level of the Communities and Regions. An example of use of such amendment can be seen in the past fishery at sea (Somers & Maes, 2011). In addition to this amendment, it is also possible for the Federal Government and the Flemish Government, to conclude a collaboration agreement on certain topics under article 92 bis §1 of the 1980 reform law (Deweirdt, 2006).[27] Learning from nature protection with the same complexity for protection of natural resources on land and in the sea (Cliquet et al 2004; Cliquet 2001), (e.g. protection of nature in the west coast and Heist), the coastal cultural middle ground can be regulated by the two relevant authorities: Federal and Flemish, through a unified strategy for management. Although the experiences from natural resources management showed some complications in unifying management, it could be considered as an option, if other options are limited or not feasible at present.

In addition, it is also possible to benefit from several existing protection and management tools, such as the ones for nature and culture together, to create a more robust protection strategy for sustainable preservation of the natural-cultural coastal environment in different parts of the Belgian coast.

[27] In 2004 such an agreement was made on underwater cultural heritage, however, since not all legal requirements were fulfilled, it remained an informal agreement.

Chapter 4: Conclusion and future visions

Conclusions

The concept of integrated marine/terrestrial protected areas could meet the needs of integration at the land sea interface along significant stretches of coast. To do so, it is crucial to establish an overall system of ICZM, underpinned by statute, which secures the full integration at the land sea interface and provides the framework within which managers of protected areas can secure integration at a local level. The marine landscapes/seascapes of national importance, including any integrated marine/terrestrial area, that are designated should have statutory management plans that are a formal part of the MSP process.

The study on the present Belgian legal system in regard to underwater and coastal cultural heritage, as well as approaches towards coastal resources management in general, was presented. It was concluded that not only the separation of land and sea approaches can cause complications in management of coastal cultural heritage, but also the separation of regulatory systems which exist through various federal, regional and local authorities for different areas.

This study highlighted the necessity of a new approach through understanding the Belgium natural, social, economic and political situation, recognizing the values of heritage on land and under water, as well as in the transitional area between these two. Taking into account any of the existing concepts such as ICZM, ecological approaches, ecosystem services, or marine spatial planning, all follow the same goal of an integrative approach including different factors and dimensions in the management of natural resources. Therefore, in order to include cultural heritage in a holistic management plan which could compete or level with natural resources, we need a kind of similar approach.

The major focus of this research and the case study have been used to test a methodology for integrating coastal cultural heritage in MSP and holistic coastal management plans, rather than on the resulting plan. This methodology provided guidance while developing a vision for the future of coastal cultural heritage. The case of Ostend briefly incorporated the existing data and demonstrated a scenario for integrated evaluation and coastal cultural middle ground. Although there is no national ICZM in place for Belgium, it was suggested that if the proposed guidelines were to be adopted by all coastal municipalities, a more harmonized system for management of coastal cultural heritage could be achieved. Therefore, in the end, these plans will be unified and a more integrated management strategy will be realized.

In line with one of the objectives of Belgian MSP 2014 which highlights a strong respect for the maritime landscape (seascape) and the underwater heritage of the BPNS, a strategic plan for coastal cultural heritage and integrating it into MSP can benefit heritage preservation and the management of the coastal areas in an integrative way. For this matter, an exemplary coastal cultural middle-ground for Ostend was presented.

Therefore, this research suggests that Belgium apply the system and tools that are provided through this study. The suggested integrative evaluation tool and coastal cultural middle ground highlight the multi-faceted values of heritage in the coastal areas of Belgium. Belgian coastal cultural heritage can be valorized as a resource and incorporated into the marine spatial planning and integrated coastal zone management. This will guarantee proper attention and maximum preservation of heritage values in regards to other resources and ongoing developmental activities in the Belgian Part of the North Sea.

4.1. General conclusions

The present research resulted in models and guidelines for upgrading and adjusting the integrated coastal management scheme, with the aim of including cultural heritage as a resource in it. This research proposes that for a more appropriate management of coastal cultural heritage, a broader justification of values is necessary. This justification promotes developing policies for inclusion of coastal cultural heritage in holistic coastal management plans. Therefore, out of two general trends of heritage approach and integrated approach for management of coastal cultural heritage, the latter is considered the most effective for sustainable preservation and management of coastal cultural heritage. Integrated approach for management of coastal resources in general, and for management of coastal cultural heritage in particular has the advantages of bringing a variety of disciplines together which results in more cooperation among sectors, enhancement of knowledge and promotes the management of all resources in a balanced way in order to achieve sustainable development goals.

Acknowledging the similarities between natural resources and cultural resources, this study relied on learning from natural resources experiences and adapting social theories for re-evaluating and re-defining coastal cultural heritage. Combined application of integrated complexity theory, social-cultural memory and theory of middle-ground proved to offer a powerful system for evaluation and defining coastal cultural heritage.

The results from literature review and reviewing different projects revealed the multi-faceted problems of coastal areas and their resources management regarding cultural heritage. It was noted that the concept of integrated coastal management, which seems to have potential, is nothing new; however, applying it to cultural heritage of the coastlines is a theory that has been discussed only over the last decade. In the literature the growing interest on integrating cultural heritage of coastlines into holistic coastal management schemes and policies is noticed. However, the ways cultural heritage assets are defined and evaluated in these schemes are not clear yet. Learnt from natural resources management experiences, there is a need to design a flexible but inclusive method of defining, interpreting and evaluating resources. In addition, there should be a policy to support such decisions.

It has become evident that protecting natural resources and integrating cultural heritage preservation into coastal management plans is a way to resolve the competition among different resources. The Integrated Coastal Zone Management (ICZM) concept and the Integrative Complexity model, with its four dimensions (natural, social, economic and political), offer some solution to this problem. Therefore, the ICZM concept, along with Marine Strategic Planning (MSP) as a tool, and the dimensions involved in the Integrative Complexity model were identified to be effective in managing coastal cultural heritage and to include coastal heritage into integrated management schemes.

The problem regarding holistic management of coastal cultural resources was tackled, and as a result the eight principles for integrating coastal cultural heritage in ICZM were developed. Then, an integrative evaluation methodology based on integrative complexity model was developed. Although, the essentiality of heritage values was stressed, it was noted that external control groups have extensive impact on management of cultural resources. Therefore, integrative complexity theory was adopted to introduce economic, natural, social and political dimensions for the management of coastal resources.

Integrated complexity theory, which is the origin of interdisciplinary and integrated approaches, revealed that several dimensions are critical in better evaluation of coastal cultural heritage as a resource within holistic coastal management plans. Although the level of complexity still can be expanded, through this study culture was added to the former model that had been developed for natural resources. Implementation of such model, however, needs more collaborative actions among conflicting groups of experts, stakeholders and different levels of regulatory authorities and the legal system. Acknowledging such conflicts, the theory of middle-ground was adapted. The aim was not only to mediate encounters among the mentioned groups, but also to determine an area of cultural values in the coastal areas for adaption of a harmonized management strategy. Therefore, the elements that can delineate such area were studied.

Finally, a methodology to form coastal cultural middle ground as a tool to encompass the most viable cultural resources was developed. Connections and links were identified as defining elements. This study stated that there are two types of connections and links that can be used for delineating the coastal cultural

area. One is the physical links and connections that exist among remains of cultural heritage sites, archaeological sites, their natural-cultural context, etc. The other is the links that people have with the cultural heritage in coastal areas. These links can be studied through social-cultural memories that define people's sense of place and identity. Therefore, the intangible links and connections, in addition to physical ones, are the elements that are suggested for use in delineating the coastal cultural heritage area which is called coastal cultural middle-ground by this research. Coastal cultural middle-ground plays an important role in marine spatial planning for including coastal cultural heritage in integrated coastal zone management.

These two tools—evaluation system and the zoning tool— offer an innovative, harmonized and, at the same time, flexible approach. They can be adapted, adjusted and upgraded for instances with different socio-economic, environmental and political conditions.

This study tried to bridge disciplines such as social, economic, natural sciences and politics to investigate a specific frontier situation as it is emerged in the coastal areas between the sea and the land, and to explore the possibilities through which this frontier as a middle ground can be defined and regulated for the benefit of people and the advancement of protection of cultural heritage underwater and on land. Formation of a coastal cultural middle-ground helps to connect both sides—sea and land cultural remains—and provide a harmonized area for inclusion in MSP and better integrated management of the coastal areas.

4.2. Conclusions from the case study

The integrated evaluation tool and coastal cultural middle ground model were tested for the Belgium coastal area, and were examined specifically for the Ostend area. With respect to the integrated evaluation tool and its integrated dimensions, the existing knowledge about the Belgian coastal area was briefly presented. The study showed that there is a considerable amount of data available from different fields for each dimension. However, since the data was not specifically collected for the purpose of coastal cultural heritage management, there are many gaps in in our knowledge and data. Therefore, it was suggested that in order to have an integrated evaluation of coastal cultural heritage, different expertise are needed. Data needs to be collected based on the requirements of each field, with the aim of creating a common ground between heritage values and other fields. This research suggested that this data needs to be evaluated through adjusted social, ecological and economic method of evaluation to assess the market and not-market values of different resources for the benefit and wellbeing of people.

Pertaining to the coastal cultural middle-ground, it is concluded that it is not practical to allocate specific zones for archaeological activities since archaeological remains can be found anywhere on land and underwater. However, for protection of known coastal cultural heritage, it is necessary to define zones and/or spots of heritage protection. Due to the dominance of developmental activities, economic benefit of industrial progresses, and small coastal domain and conflicting interests, it is difficult to justify the importance of allocating exclusive areas for heritage protection in the Belgian coastal area. Even so, it was shown that a combination of different methods and justifying the values of heritage associated with other resources' values can help to define zones for the protection of coastal cultural heritage.

In respect to the natural dimension, combined natural-cultural values can be used to delineate protection zones. There is some data available on shipwrecks which were the target of ecological studies for nature preservation. Similar studies targeting natural and cultural heritage protection need to be promoted. In regards to social values, concerning links and connections that people maintain with their heritage in forms of place attachment, identity and cultural memory, not much data is available in this regard for the Belgian coastal area. Therefore, it is recommended to conduct socio-cultural studies on the coastal cultural heritage in Belgium. Due to the complicated political system in Belgium, the analysis confirmed that separation of land and sea management strategies is detrimental to coastal cultural heritage protection and exclude cultural heritage from ICZM. Therefore, looking into possibilities of regulating the coastal cultural middle-ground, as a unified entity, needs to be explored by law experts.

The major focus of this research and the case study have been to develop a methodology for integrating coastal cultural heritage into MSP and holistic coastal management plans, rather than on the resulting plan. This methodology provides guidance while developing a vision for the future of coastal cultural heritage. Due to the fact that there is no national integrated coastal management in place for Belgium, it is expected that through following the proposed guidelines by all coastal municipalities, a more harmonized system for

management of coastal cultural heritage will be achieved. Therefore, in the end, these plans will be unified and a more integrated management strategy will be realized.

4.3. Future visions

Much work still remains to be done because of the relatively recent acknowledgement of the presence and significance of archaeological features in coastal zones, the special dynamic condition of the coastal areas, and the existence of numerous conflicting interests. As a result, this study saw it necessary to apply interdisciplinary and integrated approaches since not all the concerns about management of coastal cultural heritage can be addressed through one or two specific disciplines. Although the present study showed the necessity of crossing traditional boundaries between academic disciplines or schools of thought, and several areas were touched, new needs for stronger and closer collaboration amongst different disciplines and the cultural heritage field exist.

One study cannot cover all disciplines in detail, and the aim here was to provide basic guidelines for such an approach, not to deal with all aspects in detail. Although, this research highlighted points that are of concerns from a cultural heritage point of view in relation to the several involved dimensions, concerns from other fields should be addressed through experts in those fields. Therefore, joint collaborations between each two dimensions of culture and other dimensions need to be designed. At first, conflict is expected, but convergence and reaching a common ground is possible to be achieved. This research opens new ideas for such interdisciplinary researches.

At the integrated level, we need to look at each sector to see how they deal with coastal cultural heritage. An integrative approach aims at developing attributes that are manufactured from values and value orientations of different sectors, but in conjunction to each other. Although holistic approach might seem impossible and affected by politics, cooperation may prove to be fruitful.

As a result of this study, the author, personally, has been invited to join a couple of interdisciplinary projects for the management of coastal cultural heritage. A collaborative proposal is under progress for an integrated approach and for including underwater cultural heritage in Marine Spatial Planning. The goal is that by tapping into the innovative potential of clusters across the borders for smart specialization and innovation, frameworks and best practice for the sustainable management of UCH assets will be developed. This project will be collaboration between Belgium and UK. In addition to this project, the author is already engaged with NOAA (National Oceanic and Atmospheric Administration, USA) as a fellow researcher. The objective of the project is defining coastal cultural heritage assets, the ones that are valuable for local communities, in order to explore ways to bring socio-economic benefit to people.

The author's vision for the future is that by application of the models and methods, suggested through this research, more interdisciplinary projects will be developed, aiming at not only sustainable management of coastal cultural heritage for the sake of heritage, but also for the wellbeing of local communities, benefit of people, and future generations. Establishing framework for the inclusion of coastal cultural heritage as a resource in integrated coastal management, can promote sustainable growth of the blue economy, green tourism, appropriate climate change resilience and enhancement of conservation of coastal cultural heritage and societal values therein.

Bibliography

Abbott, K. W., & Snidal, D., 2000, Hard and soft law in international governance. International organization, 54(03), 421-456.

Aberg, A., & Lewis, C. (Eds.), 2000, The rising archaeology and coastal landscape, Oxbow Books, Oxford UK.

Adelman, J., & Aron, S., 1999, From Borderlands to Borders: Empires, Nation-States, and the Peoples in between in North American History, The American Historical Review, 104(3), 814. doi:10.2307/2650990

Aiello, A., Canora, F., Pasquariello, G., & Spilotro, G., 2013, Shoreline variations and coastal dynamics: A space–time data analysis of the Jonian littoral, Italy. *Estuarine, Coastal And Shelf Science*, *129*, 124-135. doi:10.1016/j.ecss.2013.06.012.

AIMA, 1994, Australian Institute for Maritime Archaeology (AIMA) Inc. and the Australian Cultural Development Office Canberra, Guidelines for the Management of Australian Shipwrecks.

Ajbulatov, N.A., & Mihajlichenko Yu.G., 2000, Development of scientific-legal provision of the Russian Federation Law "On coastal management": Scientific Report / Oceanographic Society, Moscow, 2000, 206 pp.

Akan, T., 1996, Archaeological Heritage Management for Conservation and Development, Case Study: Phaselis. METU.

Alappat, L., Vink, A., Tsukamoto, S., & Frechen, M., 2010, Establishing the Late Pleistocene–Holocene sedimentation boundary in the southern North Sea using OSL dating of shallow continental shelf sediments. Proceedings Of The Geologists' Association, 121(1), 43-54. doi:10.1016/j.pgeola.2009.12.006.

Alvarez, E. Z., 1999, Spain, In Dromgoole, S. (Ed.), Legal protection of underwater cultural heritage: National and international perspectives, (143-154). London, UK: Kluwer Law International. , 146.

Ankera, H. T., Nellemannb, V., & Sverdrup-Jensenc, S., 2004, Coastal zone management in Denmark: ways and means for further integration, Ocean & Coastal Management 47, pp. 495–513.

Antrop, M., 2005, Why landscapes of the past are important for the future, Landscape and Urban Planning, Volume 70, Issues 1–2, 15 January, pp. 21–34.

Antrop, M., 1997, The concept of traditional landscapes as a base for landscape evaluation and planning. The example of Flanders Region. Landscape and Urban Planning 38: 105–117.

Antrop, M., 1989, Het landschape meervoudig bekeken, Monografie Stichting Leefmilieu 30, DNB/Uitgeverij Pelckmans, Kapellen

Anzidei, M., Antonioli, F., Benini, A., Lambeck, K., Sivan, D., Serpelloni, E., & Stocchi, P., 2011, Sea level change and vertical land movements since the last two millennia along the coasts of southwestern Turkey and Israel. Quaternary International 232:13-20.

Armstrong, J., 2004, The Role of Short-Sea, Coastal and Riverine Traffic in Economic Development since 1750, In: Finamore (Ed.), Maritime History as World History, 115-116.

Arthurton, R., & Korateng, K., 2006, Coastal and marine environments, Section 2 Environmental state and trends: 20-years retrospectives, UNEP 2006 publication-Africa Environment Outlook 2-Our Environment.

Ausness, R., 1986, Water rights, the public trust doctrine, and the protection of instream uses. U. Ill. L. Rev., 407.

Australia Historic shipwreck Act 1976, Accessible at: http://www.comlaw.gov.au/Series/C2004A01619 (Last accessed 13 Jan. 2015).

Baeker, G., 2002, Measures and Indicators in Local Cultural Development, Municipal Cultural Planning Project, Toronto: EUCLID.

Baig, A., 2002, The politics of cultural significance, Institute de Cultural, Macau SAR.

Bailey, G., Sakellariou, D., & members of the SPLASHCOS network, 2012, SPLASHCOS: Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf, Antiquity Volume 086 Issue 334 December.

Bailey G. N., 2011, Continental Shelf Archaeology: where next?, Submerged Prehistory, pp: 311-31.

Bailey, G.N., & Flemming, N., 2008, Archaeology of the continental shelf: marine resources, submerged landscapes and underwater archaeology. *Quaternary Science Reviews* 27, 2153–65.

Balens, N., Vails, X., Reyns, J., Verwaest, T., & Gysens, S. (N.D.), Coastal flooding risk at the city of Oostende.

Bammer, G., O'Connell, D., Roughley, A., & Syme, G., 2005, Integration Research for Natural Resource Management in Australia: An Introduction to New Challenges for Research Practice, Journal of Research Practice, Vol. 1:2.

Bass, G., 2011, The Development of Maritime Archaeology, in The Oxford Handbook of Maritime Archaeology, Alexis Catsambis, Ben Ford, and Donny L. Hamilton, eds. (Oxford: Oxford University Press): 3-22.

Bayman, J. M., 2010, The Precarious "Middle Ground": Exchange and Reconfiguration of Social Identity in the Hawaiian Kingdom, in: Trade and Exchange: Archaeological Studies from History and Prehistory.

Bazelmans, J.G.A., 2006, To what end? For what purpose? The national archaeological research agenda (NOaA) and quality management in Dutch archaeology, Nationale Onderzoeksagenda Archeologie (versie/version 1.0). Accessible at: http://www.noaa.nl/content/hst01/h1.uk1.htm (Last accessed 25 Sept. 2013).

Becker, G.S., 1964, Human Capital, New York: Columbia University Press.
Belgium MSP Brochure, 2014, The brochure of A Marine Spatial Plan for the Belgian Part of the North Sea. Something is moving at the sea…, A marine spatial plan for the Belgian part of the North Sea, Federal Public Service, Health, Food Chain Safety and Environment. Accessible at:
A Marine Spatial Plan for the Belgian Part of the North Sea.pdf (pdf, 5.08 MB) (Last accessed: 18 Jan. 2014)
Belgium MSP Analysis, 2011, Maritime Spatial Planning (MSP) in Belgium Analysis of the period 2000-2011, Accessible at: http://www.cscope.eu/_files/results/activity_1/belgium/Maritime%20Spatial%20Planning%20in%20Belgium%20-%20Analysis%20of%20the%20period%202000-2011.pdf (Last accessed: 18 Jan. 2014).
Belpaeme, K. (Ed.), 2011, 10 jaar Duurzaam Kustbeheer, Oostende, België, 20 september 2011: referatenbundel van de studiedag. Coördinatiepunt Duurzaam Kustbeheer: Oostende.
Belpaeme, K., Konings, P. & Vanhooren, S. (Ed.), 2011, De kustatlas Vlaanderen/België 2. Coördinatiepunt Duurzaam Kustbeheer: Oostende.
Bennett, J. & Blamey, R., 2001, The Choice Modelling Approach to Environmental Valuation, Edward Elgar Publishing.
Bicket, A., & Gardiner, J., 2011, Submerged Prehistory: Research in Context, Marine Aggregate Levy Sustainability Fund (MALSF) Science Monograph Series: No. 5, MEPF reference: MEPF 10/P150.
Blaug, M., 1987, Classical economics, The New Palgrave Dictionary of Economics, v. 1, pp. 414–45.
BLAST WP6 members, 2012, ICZM Status around the North Sea, The Interreg IVB North Sea Region Programme. Accessible at: www.blast-project.eu
Bogaert, D., & Maes, F., (Eds.), 2008, Who Rules the Coast? Policy Processes in Belgian MPAs and Beach Spatial Planning, Antwerp, MAKLU, 187 p.
Bone, K. B., 1997, The New York Waterfront: Evolution and buildings culture of the port and harbor. New York : Monacelli Press.
Bourdieu, P., 1984, Distinction, A social critique of the judgment of taste, Nice, R. (Trn.), Harvard
Boyd, J., & Banzhaf, S., 2006, What are ecosystem services? The need for standardized environmental accounting units. Discussion Paper 06 02. Washington, D. C.: Resources for the Future.
Breen, C. & Lane, P., 2004, Archaeological approach to East Africa's changing seascape, World Archaeology, 35(3):469—489.
Breen, C., & Lane, P., 2003, Archaeological Approaches to East Africa's Changing Seascapes, World Archaeology, Vol. 35, No. 3, Dec.
Breen, A., & Rigby, D., 1994. Waterfronts: Cities Reclaim their Edge, McGraw- Hill, New York
Brewer, Jr., W. C., 1974, Concept of State and Local Relations under the CZMA, The. Wm. and Mary L. Rev., 16, 717.
Breyne, P., Belpaeme, K., Lescrauwaet, A. K., Mees, J., & Seys, J., 2007, West-Vlaanderen door de zee gedreven": Rede door Paul Breyne, Gouverneur van West-Vlaanderen uitgesproken in de provincieraad van 2 oktober 2007. Provincie West-Vlaanderen: Brugge. 77 pp.
Brown, G., & Raymond, C. (2007). The relationship between place attachment and landscape values: Toward mapping place attachment. *Applied Geography*, *27*(2), 89-111. doi:10.1016/j.apgeog.2006.11.002.
Brown, E., 1996, Protection of the Underwater Cultural Heritage. Draft principles and guidelines for implementation of Article 303 of the United Nations Convention on the Law of the Sea, 1982, 20 Marine Policy 325, 329–30.
Brückner, H., 1998, Coastal research and geoarchaeology in the Mediterranean region, D.H Kelletat (Ed.), German Geographical Coastal Research, The Last Decade, Institut für Wissenschaftliche Zusammenarbeit, Tübingen pp. 35–57.
Bruun, P., 1983, Review of conditions for uses of the Bruun rule of erosion, Coast Eng. 7:77–89.
Bruun P., 1962, Sea-level rise as a cause of shoreline erosion, Journal of Waterways Harbor Division 88:117–130.
Callegari, F., & Vallega, A., 2002, Coastal cultural heritage: a management tool, Journal of Cultural Heritage 3:227–236.
Campbell, H., 2000, Sustainable Development – Can the vision be realized?, Planning Theory & Practice, 1(2), 259–284.
Carceles-Breis, G., 1992, Towards a framework of socio-cultural indicators for the development process, UNESCO.
Carreno, M. A., & Peru ICOMOS, 2006, Buffer Zones as a Tool for Protecting World Heritage Sites: The Case of the Heritage Routes. In ICOMOS Symposium, November, pp. 28-29.
Cau, L., 1999, Environmental perception and planning: the case of Plymouth's waterfront, in: B. Hoyle (Ed.), Cityports, Coastal Zones and Regional Change, Wiley, Chichester, 61–82.
Christensen, N. L., Bartuska, A. M., Brown, J. H., Carpenter, S., D'Antonio, C., Francis, R., & Woodmansee, R. G., 1996, The report of the Ecological Society of America committee on the scientific basis for ecosystem management. Ecological applications, 6(3), 665-691.
Cicin-Sain, B., Bernal, P., Vandeweerd, V., Belfiore, S. & Goldstein, K., 2002, A Guide to Oceans, Coasts, and Islands at the World Summit on Sustainable Development, Center for the Study of Marine Policy, Delaware
Cicin-Sain, B., & Knecht, R.W. 1998, Chapter 2. Definition of integrated coastal management and fundamental concepts, integrated coastal and ocean: concepts and practices
Cicin-Sain, B., 1993, Sustainable Development and Integrated Coastal Management, Ocean & Coastal Management 21; pp.11-43
Cleere, H. L., 2012, Archaeological Heritage Management in the Modern World, Unwin Hyman Ltd. London
Cleere, H., 1989, Introduction: the Rationale of Archaeological Heritage Management. In: H. Cleere (Ed.), Archaeological Heritage Management in the Modern World (pp. 1- 19). London: Unwin Hyman Ltd.

Cliquet, A., D. Bogaert, D. De Waen & F. Maes, 2007, The designation of Marine Protected Areas in Belgium: From government to governance?, Proceedings MARE Conferentie People and the Sea IV. Who owns the Coast, Amsterdam, 5-7 juli 2007.

Cliquet, A., Maes, F., & Schrijvers, J., 2004, Towards Integration and Participation in Coastal Zone Decision Making for Belgium. In: D. Green (Ed.), Delivering Sustainable Coasts: Connecting Science and Policy, Littoral 2004, Aberdeen, September 2004, Proceedings Volume 1. Cambridge Publications. Pp.205-210.

Cliquet, A., 2001, Coastal Zone Management in Belgium. Revue juridique de l'environnement, numero spécial, Aménagement et gestion intégrée des zones côtières: 85-106.

Coad, L., Campbell, A., Miles, L., & Humphries, K., 2008, The costs and benefits of protected areas for local livelihoods: a review of the current literature. UNEP World Conservation Monitoring Centre, Cambridge, UK.

CoE, 2012, Council of Europe (CoE), September 2012, Guidelines on Cultural Heritage, Technical Tools for Heritage Conservation and Management. Accessible at: http://www.coe.int/t/dg4/cultureheritage/cooperation/kosovo/Publications/Guidelines-ENG.pdf (Last accessed 4 March 2013)

CoE, 1999, Committee for the Activities of the Council of Europe in the Field of Biological and Landscape Diversity, European Code of Conduct, for Coastal Zones, Geneva, 19 April 1999, http://www.coastalguide.org/code/cc.pdf (Accessed: 2 Oct. 2013)

Coles, B.J., 2000, Doggerland: the cultural dynamics of a shifting coastline. In: Pye, K. & Allen, S.R.L., (eds.) Coastal and Estuarine Environments: Sedimentology, Geomorphology and Geoarchaeology, 393-401. Geological Society Special Publication No. 175. The Geological Society, London.

Coles, B.J. ,1999, Doggerland's loss and the Neolithic. In: B. Coles, J. Coles and M. Schon Jorgensen (eds.) Bog Bodies, Sacred Sites and Wetland Archaeology, 51-57. WARP Occasional Paper 12. Exeter.

Coles, B.J., 1998, Doggerland: a speculative survey. Proceedings of the Prehistoric Society 64, 45-81.

Colette, A., 2007, Case studies on climate change and world heritage. Paris: UNESCO

COM(2013): "Directive of the European Parliament and of the Council, establishing a framework for maritime spatial planning and integrated coastal management", Brussels, 12.3.2013, COM(2013) 133 final.

COM(2013) 133 final 2013/0074 (COD): Proposal for a Directive of the European Parliament and of the Council, establishing a framework for maritime spatial planning and integrated coastal management, Brussels, 12.3.2013. Accessible at: http://ec.europa.eu/environment/iczm/pdf/Proposal_en.pdf

COM/2007/0308 final – Communication from the Commission – Report to the European Parliament and the Council: an evaluation of Integrated Coastal Zone Management (ICZM) in Europe, COM/2007/0308 final; 2007.

COM(2007)308: The evaluation of the EU ICZM Recommendation in 2007.

COM/2000/547, (EC, 2000), Communication from the Commission to the Council and the European Parliament on Integrated Coastal Zone Management: a Strategy for Europe.

Committee on Coastal Erosion Zone Management, Water Science and Technology Board, 1990, Marine Board, Managing Coastal Erosion.

Commonwealth of Australia, 2006, National Cooperative Approach to Integrated Coastal Zone Management, Framework and Implementation Plan.

Connerton, P., 1989, How societies remember. Cambridge [England]: Cambridge University Press.

Costanza, R., 2010, What is ecological economics?, The Yale Insight, Accessible at: http://insights.som.yale.edu/insights/what-ecological-economics

Coudenys, H., Barbery, S., Depestel, N., Traen, S., Vandermeulen, A., & Pirlet, H., 2013, Social and economic environment. In: Lescrauwaet, A.K., Pirlet, H., Verleye, T., Mees, J., Herman, R. (Eds.), Compendium for Coast and Sea 2013: integrating knowledge on the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. Oostende, Belgium, p. 197-208.

Cronin, T.M., Dwyer, G.S., Kamiya, T., Schwede, S., & Willard D.A., 2003, Medieval Warm Period, Little Ice Age and 20th century temperature variability from Chesapeake Bay, Global and Planetary Change 36: 17–29

Cronin, T.M, Willard, D., Karlsen, A., Ishman, S., Verardo, S., McGeehin, J., Kerhin, R., Holmes, C., Colman, & S., Zimmerman, A., 2000, Climatic variability in the eastern United States over the past millennium from Chesapeake Bay sediments, Geology; January; v. 28; no. 1; p. 3–6.

Cooney, G., 2010, Seeing Land from the Sea, World Archaeology, Vol. 35, No. 3, Seascapes, December, pp. 323-32.

Coquillette, D. R., 2013, Federal Rules of Civil Procedure, Rule 1, Scope and Purpose (Vol. 1). Moore's Federal Practice-Civil

Cosgrove, D., 2003, Landscape: ecology and semiosis, H. Palang, G. Fry (Eds.), Landscape Interfaces. Cultural Heritage in Changing Landscapes, Kluwer Academic Publishers, Dordrecht, pp. 15–20.

Cristinelli, G. (Ed.), 2002, The Krakow Charter 2000. Principles for the conservation and restoration of built heritage, Marsilio, Venice, 182.

Cummins, V., O Mahony, C., & Connolly, N., 2010, Review Of Integrated Coastal Zone Management & Principals Of Best Practice, Coastal and Marine Resources Centre, Environmental Research Institute, University College Cork, Ireland; New Zealand Government, New Zealand Coastal Policy Statement: http://www.heritagecouncil.ie/fileadmin/user_upload/Publications/Marine/coastal_zone_review.pdf

Cummins, V., Ballinger, R., O Mahony, C., Dodds, W. & Smith H., 2004(a), Coastal Communities Network. Interreg IIIA Final Report.

Cummins, V., O Mahony, C., & Connolly, 2004(b), N.2, Review of Integrated Coastal Zone Management & Principals of Best Practice, Prepared for the Heritage Council by the Coastal and Marine Resources Centre.

Daily, G.C., Polansky,S., Goldstein,J., Kareiva,P.M.,Mooney,H.A., & Pejchar,L., 2009, Ecosystem services in decision making: time to deliver. Frontiers in Ecology and the Environment 7 (1), 21–28.

Danovaro, R., Gambi, C., Mazzola A. & Mirto S., 2002, Influence of artificial reefs on the surrounding in fauna: analysis of meiofauna. ICES Journal of Marine Science, 59: 356-362.

De Baerdemaeker, M., Vastmans, F., Vandekerckhove, B., Buyst, E., & Lievevrouw, P., 2011, De sociaal-economische impact van het onroerend erfgoed(beleid) in Vlaanderen. SumResearch: Brussel.

De Clercq, M., Zurita, O. H., Chademeinos, V., & Missiaen, T. 2014, OOSTENDE & IJSER VALLEY SEISMIC CAMPAIGN, IWT SBO PROJECT 120003 "SEARCH".

Deeben, J., Hallewas,, D. P., & Maarleveld, T., 2002, Predictive modelling in Archaeological Heritage Management, Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek, 45.

DEFRA (Department for Environment, Food and Rural Affairs, 2007. A sea change. A Marine Bill White Paper. In: Presented to parliament by the secretary of state for environment, food and rural affairs by command of Her Majesty. London, March.

DEFRA (Department for Environment, Food and Rural Affairs), 2006, 'Shoreline Management Plan Guidance'. Volume 1: Aims and Requirements and Volume 2: Procedures, London.De Kust, 2013, Trendrapport KiTS Kust 2007-2012. Westtoer apb: Brugge. 151 pp.

Delgado, J., 1997, Encyclopedia of Underwater and Maritime Archaeology, British Museum Press, London.

Deweirdt, M., 2006, "Maritime archaeological heritage legislation in Flanders/Belgium (Wetgeving in verband met het maritiem archeologisch erfgoed in Vlaanderen/België), in Pieters, M. et al. (Ed.) (2006). Colloquium: To sea or not to sea - 2nd international colloquium on maritime and fluvial archaeology in the southern North Sea area, Brugge (Belgium), 21-23 September 2006: book of abstracts (Colloquium: Ter zee of niet ter zee - 2de internationaal colloquium over maritieme en fluviale archeologie in het zuidelijke Noordzeegebied, Brugge (België), 21-23 september 2006: book of abstracts. VLIZ Special Publication, 32: pp. 59-61, 62-64.

Deweirdt, M. (n.d.) Maritime Archaeological Heritage Legislation in Flanders/Belgium. Accessible at: http://www.vliz.be/imisdocs/publications/103197.pdf

De Silva, K. M., 1995, Volume 2 of History of Ceylon, History of Ceylon: History of Sri Lanka. Peradeniya: Ceylon University Press. p. 56.

Douvere, F., 2010, Marine Spatial Planning, concepts, current practice and linkages to other management approaches, Doctoral thesis.

Douvere, F. & Maes, F., 2010, The contribution of marine spatial planning to implementing integrated coastal zone management, in Green D. (ed.), Coastal Zone Management, London, Thomas Telford Limited, 13-30.

Douvere, F., & Ehler, C. N., 2009, New perspectives on sea use management: Initial findings from European experience with marine spatial planning. Journal of environmental management, 90(1), 77-88.

Douvere, F., 2008, The importance of marine spatial planning in advancing ecosystem-based sea use management, Marine Policy, Volume 32, Issue 5, September, Pages 762–771.

Douvere, F., Maes, F., Vanhulle, A., & Schrijvers, J., 2007, The Role of Marine Spatial Planning in Sea Use Management. The Belgian Case. Marine Policy, 31(2), 182-191.

Draye, A.M., 2006, Buffer Zones in International Conventions, A First Approach. The World heritage Convention and the Buffer Zone ICOMOS Symposium, Nov.

Driver, M. J., & Streufert, S., 1969, Laboratory Studies of Experimental Organizations, *Administrative Science Quarterly*, Vol. 14, No. 2, (Jun., 1969), pp. 272-285.

Dromgoole, S. 2013. *Underwater Cultural heritage and International Law,* (Cambridge University Press).

Dromgoole, S., 2006, Legal protection for the underwater cultural heritage: The immediate challenge and methods for response. In K. Fu, J.N. Moore, M. h. Nordquisit, and M. H. (eds.), recent development in the law of the sea and China, (456-482) the Netherlands: Martinus Nijhoff Publishers.

Duxbury, N., & Jeannotte, M. S., 2010, Culture, sustainability and communities: Exploring the myths. In Esitelmä pidetty: 6th International Conference on Cultural Policy Research (Vol. 24, No. 27.8).

Economie, 2014, Sand and gravel extraction in the Belgian part of the North Sea, Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDkQFjAE&url=http%3A%2F%2Feconomie.fgov.be%2Fen%2Fbinaries%2FSand_and_gravel_extraction_tcm327-248269.pdf&ei=qm0iVauPD8HSaMfJgYgB&usg=AFQjCNHKZB6NE7jswI3uMS0rk8F4pEhBtw&sig2=huVQiAHHlCmP2VIXEYOI5w&bvm=bv.89947451,d.d2s

EEA 2010a, The European environment: state and outlook 2010, Adapting to climate change, European Environment Agency, Publications Office of the European Union: Luxembourg. ISBN 978-92-9213-159-3, Accessible at: hdl.handle.net/10.2800/58998 (Last accessed: 13 Feb. 2015)

EEA, 2010b, Mapping the impacts of natural hazards and technological accidents in Europe: an overview of the last decade. *EEA Technical Report*, 13/2010. European Environment Agency (EEA): Copenhagen. ISBN 978-92-9213-168-5. 144 pp. dx.doi.org/10.2800/62638 Part of: EEA Technical Report. European Environment Agency (EEA): Copenhagen. ISSN 1725-2237.

Ehler, C., & Douvere, F., 2009, Marine spatial planning: A step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides (pdf, 9.14 MB), No. 53, IOCAM Dosier No. 6, Paris, UNESCO.

Ehler, C., & Douvere, F., 2007, Visions for a Sea Change. Report of the First International Workshop on Marine Spatial Planning. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 48, IOCAM Dossier (pdf, 3.01 MB) No. 4. Paris, UNESCO.

Enemark, J., 2005, The Wadden Sea protection and management scheme—toward an integrated coastal management approach?, Ocean and Coastal Management 48, pp. 996-1015.

Engelbrektsson, N., 2008, Tendencies towards a shift in attitude to cultural heritage—a survey. In: The International Seminar on Cultural Heritage: Use, maintenance and Long-term Development, University of Gothenburg and Chalmers University of Technology.

English Heritage, 2012: Historic Environment, English Heritage Guidance, 2012. Accessible at: http://www.helm.org.uk/managing-and-protecting/coastal-and-marine-heritage/ (Last accessed: 13 Feb. 2015)

English Heritage, 2008, Conservation Principles: Policy and Guidance for the Sustainable Management of the Historic Environment. London: English Heritage.

English Heritage, 2006: Shoreline Management Plan Review and the Historic Environment: English Heritage Guidance. Accessible at: http://www.helm.org.uk/guidance-library/shoreline-management-plan-review-and-historic-environment/ (Last accessed: 13 Feb. 2015)

EU ICZM Demonstration Programme and EU ELOISE Program, 1999, Project leader joint meeting, Meeting Report, Brussels .

EU Committee, 1999: Committee for the activities of the Council of Europe in the field of biological and landscape diversity, CO-DBP, 3nd meeting, Geneva, 19 April 1999, Document established by the Secretariat General, Direction of Environment and Local Authorities. Accessible at: http://www.coastalguide.org/code/cc.pdf

European Commission, 1999, Towards a European Integrated Coastal Zone Management (ICZM) Strategy: General Principles and Policy Options, A reflection paper. Accessible at: http://ec.europa.eu/environment/iczm/pdf/vol1.pdf

FAO, 1998, Corporate Document Repository Integrated coastal area management and agriculture, forestry and fisheries. , Issues perspectives, policy and planning process for Integrated Coastal Area Management, Small Island Developing States, 1998.

Farnum, J., Hall, T., & Kruger, L., 2005, Sense of place in natural resource recreation and tourism: An evaluation and assessment of research findings. USDA Forest Service. General Technical Report PNW-GTR-880.

FARO Convention, 2005. Accessible at: http://www.coe.int/t/dg4/cultureheritage/heritage/Identities/default_en.asp (Last visited 15 Jan. 2015)

Feilden, B.M., 1984, Challenge to heritage preservation in industrially developed countries, In : Why preserve the past? The challenge to our cultural heritage, Conference on Cultural Preservation, p: 41-49.

Ferrari, B., & Adams, J., 1990, Biogenic modifications of marine sediments and their influence on archaeological material. International Journal of Nautical Archaeology, 19(2), 139-151.

Finamore, D., 2004, (Maritime) History: Salting the Discourse, In Finamore, ed., Maritime History as World History, (Gainesville: University Press of Florida)

Firth, A., 2006, Marine Aggregates and Prehistory, in: Grenier, Nutley, D., and Cochran, I. (Eds.), Underwater Cultural Heritage at Risk: Managing Natural and Human Impacts, ICOMOS, Heritage at Risk Special Edition.

Fisher, B., Turner, R. K., & Morling, P., 2009, Defining and classifying ecosystem services for decision making. Ecological Economics 68: 643–653.

Flatman, J., 2009, conserving marine cultural heritage: Threats, risks and future priorities, Conservationa dn Management of Archaeological Sites, 11(1):5-8.

Flatman, J., 2003, Cultural biographies, cognitive landscapes abd dirty old bits of boat: 'theory' in maritime archaeology, InternationalJournal of Nautical Archaeology, 32(2):143—157.

Flemming, N.C., & Webb, C.O., 1986, Tectonic and eustatic coastal changes during the last 10,000 years derived from archaeological data. Zeitschrift für Geomorphologie, N.F. (Suppl. 62), 1-29.

Forbes, J., 1968, Frontier in American history and the role of the frontier historian. Ethnohistory, 15(2), 203–235.

Ford, B. (Ed.), 2011a, Introduction, The archaeology of maritime landscapes, Springer, pp: 1-9.

Ford, B., 2011b, The Shoreline as a Bridge, Not a Boundary: Cognitive Maritime Landscapes of Lake Ontario, in: Ford, B., (Ed.), *The archaeology of maritime landscapes*. New York: Springer.

Forrest, C. (Ed.), 2010, International Law and the Protection of Cultural Heritage, p. 240, New York.

Frost, R., 2004, Underwater Cultural Heritage Protection, 23 AUSTL. Y.B. INT'L L. 25, 25.

Garbutt, A., 2005, Restoration of intertidal habitats by the managed realignment of coastal defences, UK. In: Proceedings 'Dunes and Estuaries 2005': International Conference on nature restoration practices in European coastal habitats on 19-23 September 2005. Edited by Herrier, J.-L., Mees, J., Salman, A., Seys, J., Van Nieuwenhuyse, H. and Dobbelaere, I., Koksijde (Belgium).pp. 547-555.

Ghazoul, J., 2007, Recognizing the Complexities of Ecosystem Management and the Ecosystem Service Concept, GAIA - Ecological Perspectives for Science and Society, Volume 16, Number 3, September, pp. 215-221(7).

Gibbs, M., 2006, CH. 6: Maritime Archaeology at the Land-Sea Interface. In: Staniforth, M., & Nash, M. (Eds.), Maritime Archaeology, Australian Approaches, pp. 69-81.
Giove, S., Rosato, P. & Breil, M., 2009, A Multicriteria Approach for the Evaluation of the Sustainability of Re-Use of Historic Buildings in Venice, Venice: University Ca' Foscari.
Global Master Plan, 2012, PALMBOUT Urban Landscapes. Accessible at: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCIQFjAA&url=http%3A%2F%2Fwww.oostendewerft.be%2Fuplfile%2Fglobaal%2520masterplan%2520oosteroever.pdf&ei=b6s_VeStNMTfsAStvYGwAw&usg=AFQjCNH01Iy6l8R3st5WdAhCBWetblnzRg&sig2=ph1Hh8lVxP10GHTqYalNNw&bvm=bv.91665533,d.cWc
Gordon, D.L.A., 1996, Planning, design and managing change in urban waterfront redevelopment, Town Planning Review 67:261–290.
Gosden, C., 2004, Archaeology and Colonialism: Cultural Contact from 5000 BC to the Present, p.4, Cambridge, UK.
Gowdy, J., & Erickson, J. D., 2005, The approach of ecological economics. Cambridge Journal of economics, 29(2), 207-222.
Graham, B., Ashworth, G., & Tunbridge, J., 2000, A geography of heritage. London: Arnold.
Graumann, C.F., 2002.The phenomenological approach to people–environment studies. In: Bechtel, R. B., Churchman, A. (Eds.), Handbook of Environmental Psychology. John Wileyand Sons, New York.
Green, S. W., & Perlman, S. M., 1985, The archaeology of frontiers and boundaries. Orlando: Academic.
Greenfeld, L., 1997, The political significance of culture, 4 Brown J. World Aff. 187, Vol. IV: 1.
Griffith, D. & Mirabilio S., 2012, Raising Awareness of Commercial Fishing with Quality Seafood: Best Marketing Practices in South Atlantic Fishing Communities, Survey & Related Findings from the Study: Assessing and Developing Best Practices in Seafood Marketing and Consumption.
Guba, E.G., & Lincoln, Y.S., 1989, Fourth generation evaluation. Newbury Park, CA: Sage.
Guerin, U., 2013, Links between the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage and the UNESCO Convention on the Protection of the Underwater Cultural Heritage, (Unpublished: UNESCO internal material)
Guerin, U., NA, Links between the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage and the UNESCO Convention on the Protection of the Underwater Cultural Heritage, Internal UNESCO Draft.
Gysens, S., De Rouck, J., Trouw, K., Bolle, A., & Willems, M., 2011, Integrated coastal and maritime plan for Oostende—Design of soft and hard coastal protection measures during the EIA procedures, Coastal Engineering Proceedings, 1(32), management-37.
Hall, C. M., 2000, Integrated Heritage Management: Dealing with Principles, Conflict, Trust and Reconciling Stakeholder Differences, Conference Proceedings Heritage Economics Challenges for heritage conservation and sustainable development in the 21st Century 4 July, Australian National University.
Harrison, R., 2010, Understanding the Politics of Heritage. Manchester University Press, Manchester.
Hattendorf, J., 1994, Ubi Sumus, in Hattendorf, J. (Ed.), Ubi Sumus? The State of Naval and Maritime History Newport, RI: Naval War College Press.
Hawkins, C., 2011, Finding blame for environmental outcomes. Doctoral dissertation. Amherst, Mass.: University of Massachusetts Amherst.
Holdaway, E., 2010, Coastal and Marine Working Group, Making the Connection between Land and Sea, place of coastal protected landscapes in the marine environment, UK. Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.europarc.org%2Fdownload%2F1244.pdf&ei=M9i4VKO2CfKM7AbahYHgDg&usg=AFQjCNEc0Muf_mS6WsXr_CdQSGhEM4CDMA&sig2=q9EFF7vlH8v1Yci0hyBDnQ&bvm=bv.83829542,d.ZGU (Last accessed: 13 Feb. 2015)
Holloway, L., & Hubbard, P., 2001, People and Place: The Extraordinary Geographies of Everyday Life, Pearson Education Limited.
Hopkins, T. S., & Bailley, D., 2013, The Role of Science in the Transition to Sustainability: the Systems Approach Framework for Integrated Coastal Zone Management, In: Moksness, E., Dahl, E., Stottrup, J. (eds.): Global Challenges in Integrated Coastal Zone Management.
Hopkins, T. S., Bailly, D., Elmgren, R., Glegg, G., Sandberg, A., & Støttrup, J. G., 2012, A systems approach framework for the transition to sustainable development: potential value based on coastal experiments. Ecology and Society 17(3): 39.
Hostens, K., Pecceu, E., & Maes, F., 2013, A decade of marine spatial planning in Belgium, A journey towards integrated management, Mesma Final Event, 8-10 October, Lisbon.
Howard, A. J., 2012, Managing global heritage in the face of future climate change: the importance of understanding geological and geomorphological processes and hazards, International Journal of Heritage Studies, DOI:10.1080/13527258.2012.681680, pp. 1-27.
Howard, P.J., 2011, An introduction to landscape, Burligton: Ashgate.
ICOMOS, 2011, Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, A publication of the International Council on Monuments and Sites, January.
ICOMOS, 1996, Charter on the Protection and Management of Underwater Cultural Heritage
International Convention for the Prevention of Pollution from Ships (MARPOL), 1973, Accessible at: http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-%28MARPOL%29.aspx (Access 31 March 2015)

International Maritime Organization (IMO), 2005, Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas. Documentation. Accessible at: http://library.arcticportal.org/1708/ (Access 15 Jan. 2015)

Ijzereef, G. F., 1999, The reconstruction of sites in the archaeological theme park ARCHEON in the Netherlands, In: The constructed past, experimental archaeology, education and public, Stone, P.G. & Planel, P. (Eds.), pp. 171—180, London, New York.

Jacobson, E., 2012, Industrial landscape preservation: An Expanded Approach to Protect the Working Small Town, Master thesis, University of Washington.

Jaenen, M., 2008, Safeguarding the spirit of an historic interior on the basis of the 'Nara Grid', In: The 16th ICOMOS General Assembly and International Symposium: 'Finding the spirit of place—between the tangible and intangible--, 29 Sept-4 Oct. Quebec, Canada.

Jeffery, W. F., 2006, Historic Shipwrecks legislation. In: Staniforth, M., and Nash, M. (Eds.), Maritime Archaeology: Australian Approach, (123-135). New York, NY: Springer/Kluwer/Plenum Press.

JNAPC (The Joint Nautical Archaeology Policy Committee), 2006, Promoting an integrated approach to management of the coastal zone (ICZM) in England A consultation document of the Department for Environment, Food and Rural Affairs.

Johnson, R. W., 1990, Oil and the public trust doctrine in Washington. U. Puget Sound L. Rev., 14, 671.

Jones, A., 1998, Issues in waterfront regeneration: more sobering thoughts-a UK perspective." Planning Practice and Research 13.4: 433-442.

Jones-Walters, L., 2008, Biodiversity in multifunctional landscapes. Journal for Nature Conservation 16: 117–119.

Kaltenborn, B.P., 1998, Effects of sense of place on responses to environmental impacts. Appl. Geogr.; 18:169–189.

Kerber, J. E., 1994, Introduction. In: Kerber, J. E. (Ed.), Cultural Resource Management: Archaeological Research, Preservation Planning, and Public Education in the Northeastern United States (pp. 1- 14). London: Bergin&Carvey.

Khakzad, S., 2014a, The necessity of a common language for coastal and underwater cultural heritage, Journal of Anthropology and Archaeology, Vol. 2, No. 1, pp. 17-31.

Khakzad, S., 2014b, Underwater Cultural Heritage Sites on the Way to World Heritage: To Ratify the 2001 Convention or not to Ratify. *Journal of Anthropology and Archaeology, 2* (1), 1-16.

Khakzad, S., 2012, Fisher's Cultural Heritage: A brief study on the tangible and intangible cultural heritage of fishers in Carteret County, Sub-report of: Griffith, D. and Mirabilio S., 2012, Raising Awareness of Commercial Fishing with Quality Seafood: Best Marketing Practices in South Atlantic Fishing Communities, Survey & Related Findings from the Study: Assessing and Developing Best Practices in Seafood Marketing and Consumption.

Khakzad, S., 2008, Conservation and Presentation of Underwater Cultural Heritage to the Public; Case studies: The current projects in Belgium, (Unpublished master thesis, Promoter K. Van Balen, available at Arenberg Library)

Knecht, R. W., 1979, Coastal zone management: The first five years and beyond, Coastal Zone Management Journal, Volume 6, Issue 4.

Kennedy, J.J. & Thomas. J.W., 1995. Managing natural resources as social value. In: A New Century for Natural Resource Management, edited by R. L. Knight and S. F. Bates, pp. 311-321. Washington, DC: Island Press.

Krakow Charter on the principles of the conservation and restoration of built heritage, 2000.

Lambeck, K., & Purcell, A., 2005, Sea-level change in the Mediterranean Sea since the LGM: model predictions for tectonically stable areas. Quaternary Science Reviews 24, 1969-1988.

Lambeck, K., Anzidei, M., Antonioli, F., Benini, A., & Esposito, E., 2004, Sea level in Roman time in the Central Mediterranean and implications for modern sea level rise. Earth and Planetary Science Letters 224, 563-575.

LAMOT, 2009, Heritage care through active citizenship, LAMOT Congress and heritage Center, European conference on civil society organizations active in the field of heritage, General report.

Lavalle, C., Gomes, C.R., Baranzelli, C., & Batista e Silva, F., 2011, Coastal Zones, Policy alternatives impacts on European Coastal Zones 2000 – 2050.

Lazarus, R. J., 1985, Changing conceptions of property and sovereignty in natural resources: Questioning the public tsrust doctrine. Iowa L. Rev., 71, 631.

Lebbe, L., Van Meir N., & Viaene P., 2008, Potential implications of Sea Level Rise for Belgium, Journal of Coastal research vol. 24 (2) p. 358-366, West palm beach, Florida.

Leser, H., 1976, Landschaftsökologie. Stuttgart: Ulmer. 432 p.

Lewis, D., 1994, We, the navigators: The Ancient Art of Landfinding in the Pacific. 2nd ed. University of Hawaii Press, Honolulu, HI.

Li, R., Liu, J. K., & Felus, Y., 2001, Spatial modeling and analysis for shoreline change detection and coastal erosion monitoring. Marine Geodesy, 24(1), 1-12.

Lightfoot, K., & Martinez, A., 1995, Frontiers and boundaries in archaeological perspective. Annual Review of Anthropology, 24, 471–492.

Lipe, W., 1984, Value and meaning in cultural resources, Chapter 1, In: Cleere, H. (Ed.), Approaches to the archaeological heritage, Cambridge University Press.

LGA (Local Government Association), 2002, On the edge- the coastal strategy. A report prepared by the Local Government Association Special Interest Group on Coastal Issues. London: LGA.

Maarleveld, T. J., Guérin, U., & Egger, B., 2013, Manual for Activities Directed at Underwater Cultural Heritage: Guidelines to the Annex of the UNESCO 2001 Convention, UNESCO.

Maarleveled T. J, 2012, The maritime paradox: does international heritage exist?, International Journal of Heritage Studies, 18:4, pp. 418-431.
Maarleveld, T., 2009, Maritime archaeology—Status and identity?, In: Muller U., S. Kleingartner and Huber, F. (Eds.). Zwischen Nord- und Ostee 1997-2007 Zehn Jahre Arbeitsgruppe fur maritime und limnische Archaologie (AMLA) in Schlewig-Holstein. Bonn, Dr. Rudolf Habelt GmbH, pp. 51-62.
Maarleveld, T., 1998, Underwater heritage management: cultural and legislative perspective, In: Maarleveled, T. (Ed.), Archaeological heritage management in Dutch waters: exploratory studies, Scheepsarcheologie V.
MACHU, 2008, Managing Cultural Heritage Underwater: a maritime research project funded by the European Union Culture 2000 Programme, Nr. 1. Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.machuproject.eu%2Fdocumenten%2FMACHU_report_1.pdf&ei=eo23VLyDGYq3Ua2DgbgB&usg=AFQjCNG5LxMLShFkD7VRXiROQwL8jCuacA&sig2=rUReNoJ0_xeYx9yt8WxPpA&bvm=bv.83640239,d.d24
MACHU, 2009, Managing Cultural Heritage Underwater: a maritime research project funded by the European Union Culture 2000 Programme, Nr. 2. Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.machuproject.eu%2Fdocumenten%2FMACHU_report_2.pdf&ei=w4y3VOb-DYvtUorxgpAM&usg=AFQjCNGR4muTIC7k1xTb_J8JCZ3WD6umoA&sig2=ymIky5NJrl82R8-9yf6VRw&bvm=bv.83640239,d.d24
MACHU, 2010, Managing Cultural Heritage Underwater: a maritime research project funded by the European Union Culture 2000 Programme, Final Report Nr. 3. Accessible at: http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2010/01/01/machu-report-nr-3-final-report-managing-cultural-heritage-underwater-a-maritime-research-project-funded-by-the-european-union-culture-2000-programme.html
MacManamon, F. P., & Hatton, A., 2000, Introduction: Considering Cultural Resource Management in Modern Society, In: McManamon, P. and Hatton, A. (Eds.), Cultural Resource Management in Contemporary Society (pp. 1- 19) London and New York: Routledge.
Maelfait, H. Belpaeme, K., & Lescrauwaet, A. K., 2013, Integrated coastal zone management, in: Lescrauwaet, A.K. et al. (Eds.), Compendium for Coast and Sea 2013: integrating knowledge on the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. pp. 251-260.
Maelfait, H., Debergh, H., Lescrauwaet, A.K., & Belpaeme, K. (Eds.), 2012, Het Kustkompas: indicatoren als wegwijzers voor een duurzaam kustbeheer. Coördinatiepunt Duurzaam Kustbeheer: Oostende. 80 pp
Maes, F., Vanhulle, A., & Lescrauwaet, A.K., 2013, Marine Spatial Planning. In: Lescrauwaet, A.K., Pirlet, H., Verleye, T., Mees, J., Herman, R. (Eds.), Compendium for Coast and Sea 2013: integrating knowledge on the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. Oostende, Belgium, p. 261-273.
Maes, F., 2008, The International Legal Framework for Marine Spatial Planning. Marine Policy, 32(5), 797-810.
Maes, F., De Batist, M., Van Lancker, V., Leroy, D. & Vincx, M., 2005, Towards a Spatial Structure Plan for Sustainable Management of the Sea: Mixed actions - Final report: SPSD II (MA/02/006). Belgian Science Policy: Brussel. XIII, 384 + maps (2 volumes) pp.
Mallefet, J., Zintzen, V., Massin, C., Norro, A., Vincx, M., De Maersschalck, V., Steyaert, M., Degraer, S., & Cattrijsse, A., 2008, Belgian shipwreck: hotspots for marine biodiversity (BEWREMABI). Final Scientific Report. Belgian Science Policy, 155pp. Accessible at: http://www.belspo.be/belspo/organisation/publ/pub_ostc/EV/rappEV42_en.pdf (Last accessed: 20 March 2014)
Manders, M. (Ed.), 2011, Guidelines for predicting decay by shipworm in the Baltic Sea.
Manders, M., 2009, Managing Cultural Heritage Underwater from the Dutch Perspective (MACHU project 2006-2009, IKUWA3: Beyond Boundaries, the 3rd International Congress on Underwater Archaeology Proceeding, Edited by: John Henderson.
Marine Protected Areas, 2011, Recommendations for Integrated Management Using a Cultural Landscape Approach in the National MPA System, Federal Advisory Committee, November . Accessible at: www.mpa.gov/pdf/helpful-resources/mpafac_rec_cultural_landscape_12_11.pdf
Marine Protection, Research, and Sanctuaries Act of 1972, Section 302 (16 U.S.C. 1433), Accessible at: http://el.erdc.usace.army.mil/emrrp/emris/emrishelp5/marine_protection_research_and_sanctuaries_act_legal_matters.htm (Last accessed: 20 Dec. 2014)
Mason, R., 2002, Assessing Values in Conservation Planning: Methodological Issues and Choices, Assessing the Values of Cultural Heritage, Research Report, The Getty Conservation Institute, Los Angeles.
Massin, Cl., Norro, A., & Mallefet, J., 2002, Biodiversity of a wreck from the Belgian Continental Shelf: monitoring using scientific diving: preliminary results. Bull. Kon. Belg. Inst. Natuurwet. Biologie 72: 67-72.
McManus, P., 1999, Archaeological parks: what are they?. *AI*, *3*(0). doi:10.5334/ai.v3i0.185.
Mazzanti, M., 2002, Cultural heritage as multi-dimensional, multi-value and multi-attribute economic good: toward a new framework for economic analysis and valuation, Journal of Socio-Economics, Volume 31, Issue 5, Pages 529–558.
Migliorino, L., 1982, "Submarine Antiquities and the Law of the Sea," Marine Policy Reports 4.
MIRA. 2011, Milieurapport Vlaanderen – Achtergronddocument Klimaatverandering. Vlaamse Milieumaatschappij [Flanders environmental report], MIRA research report 'Ready for what is coming? About the introduction of

climate adaptation policy in Flanders' available on: http://www.milieurapport.be/en/publications/research-reports/ and http://www.milieurapport.be (Retrieved on April 2015)
MIRA, 2009, Flanders environment report 2009, Environment Outlook 2030.
Mitasova, H., Overton, M.F., Recalde, J.J., Bernstein, D.J., & Freeman, C.W., 2009, Raster-Based Analysis of Coastal Terrain Dynamics from Multitemporal Lidar Data. Journal of Coastal Research: Volume 25, Issue 2: pp. 507 – 514.
McKenna, J., Cooper, J. A. G., & O'Hagan, A. M., 2009, Coastal erosion management and the European principles of ICZM: local versus strategic perspectives. Journal of Coastal Conservation, 13(2-3), 165-173.
McNiven, I. J., 2003, Saltwater People: spritscapes, maritime rituals and the archaeology of Australian indigenous seascapes, World Archaeology, 35(3): 329-349.
McVey, J., & Erlandson, J., 2012, As the world warms: rising seas, coastal archaeology, and the erosion of maritime history, Coast Conservation, 16:137–142 DOI 10.1007/s11852-010-0104-5.
Mitchell, N., Rossler, M. & Tricaud, P.M., (Eds.), 2009, World Heritage Cultural Landscape. A handbook for conservation and management. World Heritage Papers 26, Paris: UNESCO.
Moreira, F., Queiroz, A. I., & Aronson, J., 2006, Restoration principles applied to cultural landscapes. Journal for Nature Conservation 14: 217–224.
Mörth, U., 2004, Soft law in governance and regulation. Cheltenham, UK: E. Elgar.
Muckleroy, K., 1980, Archaeology under water: an atlas of the world's submerged sites. McGraw-Hill.
Muckelroy, K., 1978, Maritime Archaeology (New studies in Archaeology).
Murphy, P., Thackray, D., & Wilson, E., 2009, Coastal heritage and climate change in England: assessing threats and priorities. Conservation and Management of Archaeological Sites, 11 (1), 9–15.
Murray, T., 2004, The Archaeology of Contact in Settler Societies, Cambridge, UK.
Nafiziger, J., 2006, The protection of the underwater cultural heritage, National perspectives in light of the UNESCO Convention 2001, Edited by Sarah Dromgoole, Volume 55.
Nandelstädt, T., 2008, IKZM-Oder Berichte 44 (2008), Guiding the coast, Development of guidelines for integrated coastal zone management in Germany, Diploma Thesis in Landscape Planning Technical University Berlin; Germany.
National Ocean Policy of Australia, 1998, Accessible at: http://iocunesco.org/index.php?option=com_content&view=article&id=362&Itemid=100036 (Last accessed: 13 Jan. 2015)
National Park Service, 2006(a), Management policies 2006, By United States.: http://www.nps.gov/policy/mp2006.pdf (Access 15 Jan. 2015)
National park service 2006(b), Management policies 2006, U.S. Department of the Interior, pp. 61-63.
Natural England, 2012, An Approach to Seascape Character Assessment © Natural England 2012.
Natural England, 2010, Natural England's Position on All Landscapes Matter.
Naum, M., 2010, Re-emerging frontiers: Postcolonial theory and historical archaeology of the borderlands. Journal of Archaeological Method and Theory, 17(2), 101-131.
Nixon, D., 1994, Marine and coastal law. Westport, Conn.: Praeger.
NOAA, 2009, Introduction to Economics for Coastal Managers, Coastal Service, National Oceanic and Atmospheric Administration (NOAA).
Nofdp, 2006, Spatial planning in the context of nature-oriented flood damage prevention, The spatial planning system of Belgium, INTERREG III B Programme
Nora, P., 1996, 'The Era of Commemoration', Pierre Nora & L. Kritzman (Eds.) Realms of Memory: The construction of the French Past Vol. 3. New York: Columbia University Press, 609–637.
Nora, P., 1989, Between Memory and History: Les Lieux de Mémoire, Representations 26, 7–25.
Northern Ireland Department of Environment, 2006, An Integrated Coastal Zone Management Strategy for Northern Ireland UK, 2006 – 2026. Accessible at: http://www.doeni.gov.uk/iczm_document-2.pdf
ODPM, 2004, Government Response to ODPM Housing, Planning Local Government and the Regions Committee Report on the Role of Historic Buildings in Urban Regeneration. ODPM (Cm 6420, HMSO).
O'Hagan, A., & Ballinger, R., 2009, Coastal governance in North West Europe: An assessment of approaches to the European stocktake. Marine Policy, 33(6), 912-922. doi:10.1016/j.marpol.2009.04.009.
Olsen, S., Tobey, J., & Kerr, M., 1998, A Common Framework for Learning from ICZM Experience. Ocean and Coastal Management 37(2): 155-174.
Orbaslı, A., 2000, Tourists in Historic Towns, Urban Conservation and Heritage Management. New York: E & FN Spon.
OSPAR, 2009, Assessment of the impact of coastal defence structures, OSPAR Commission.
OSPAR, 2002, Ann Govarets and Brigitte Lauwerts (Eds.), OSPAR Commission Secretariat, Assessment of the impact of coastal defense structures.
O'Sullivan, A. & Breen, C., 2007, Maritime Ireland: An archaeology of coastal communities, Tempus, Gloucestershire, UK.
Oxley, I., 1998, The Investigation of the Factors That Affect the Preservation of Underwater Archaeological Sites, In: Babits, L. and Van Tiburg, H. (Eds.), Maritime Archaeology, pp. 523-529.
Palma, P., 2005, Monitoring of shipwreck sites. International Journal of Nautical Archaeology, 34(2), 323-331.
Parker, B.J, 2006, Archaeology toward an Understanding of Borderland Processes, American Antiquity, Vol. 71, No. 1 (Jan.), pp. 77-100.
Parks Canada, 2005, Parks Canada Guidelines for the Management of Archaeological Resources

Patricio, T., Van Balen, K., & De Jonge, K., (Eds.), 2006, Conservation in changing societies, Heritage and development / Conservation et sociétés en transformation, Patrimoine et développement. (.). Leuven: Raymond Lemaire International Center for Conservation, K.U.Leuven.

Peacock, A., 1978, Preserving the past: An international economic dilemma, Journal of Cultural Economics, 2:2, University College – Buckingham.

Pearson, M., 2007, Climate change and its impacts on Australia's cultural heritage, A paper for the Australia ICOMOS Extreme Heritage Conference: World Heritage Centre: 53, 65ff—extrapolated by the author for the Australian context.

Perry, J., 2011, World heritage hotspots: a global model identifies the 16 natural heritage properties on the world heritage list most at risk form climate change. International Journal of Heritage Studies, 17 (5), 426–441.

Pickard, R., 2002, European Cultural Heritage: A review of policies and practice, Council of Europe, Part 3- The archaeological heritage.

Pieters, M., 2014, The processes and strategies employed in Belgium, In: Henderson, G., & Viduka, A. (Eds.), Towards Ratification: Papers from the 2013 AIMA Conference Workshop, Australasian Institute for Maritime Archaeology Special Publication No. 17.

Pieters, M., Strubbe, B., Van Dijck, M., & Pirlet, H., 2013, Maritime and coastal heritage. In: Lescrauwaet, A.K., Pirlet, H., Verleye, T., Mees, J., Herman, R. (Eds.), Compendium for Coast and Sea 2013: integrating knowledge on the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. Oostende, Belgium, p. 187-196.

Pieters, M., 2006, Les épaves, un voyage dans le temps: mythe archéologique ou réalité. Journée d'étude: les épaves, éternelles ou perdues à jamais, 20/06/2006, Ostende.

Pieters, M., 2003, The material environment of Walraversijde and other late medieval fishing communities along the Flemish coast" Pages 27–31, In: Pieters M, Verhaeghe, F., Gevaert, G., Mees, J., and Seys, J. (Eds.), Colloquium: Fishery, trade and piracy: fishermen and fishermen's settlements in and around the North Sea area in the Middle Ages and later, Museum Walraversijde, VLIZ Special Publication 1.

Pinder, D., 2003, Seaport decline and cultural heritage sustainability issues in the UK coastal zone, Journal of Cultural Heritage 4:35–47.

Pinder, D., & Vallega, A., 2003, Coastal cultural heritage and sustainable development: introduction, Journal of Cultural Heritage 4, pp. 3–4.

Plets, G. Plets, R. & Annaert, R., 2013, Belgian Archaeologists Abroad : From antiquarians to interdisciplinary research, in Van der Linde, S. J., European Archaeology Abroad: Global settings, Comparative Perspectives, 67-83.

Plieninger, T., Mainou, J.M.Y., & Konold, W., 2004, Land manager attitudes toward management, regeneration, and conservation of Spanish holm oak savannas, Landscape and Urnban Planning 66: 185-198.

Pollard, J., 1995, Inscribing space: formal deposition at the later Neolithic monument of Woodhenge, Wiltshire, Proceeding of the Prehistoric Society, 61: 137-56.

Post, J. C. & Lundin, C.G. (Eds.), 1996, Guidelines for Integrated Coastal Zone Management, Ch. 3, Guidelines for Development of ICZM Programs.

Prott, L. V. & Srong, I. 1999, Background Materials on the Protection of the Underwater Cultural heritage, UNESCO, Nautical Archaeology Society.

Ramsar Convention on Wetlands, 1971, Accessible at: http://www.ramsar.org/ (Retrieved 31 March 2015)

Ransley, J., 2011, Maritime communities and traditions, In: Catsambis, A., Ford, B., and Hamilton, D. (Eds.). Oxford Handbook of Maritime Archaeology, Oxford University Press, New York, NY.

Redford, K. H., & Adams, W. M., 2009, Payment for ecosystem services and the challenge of saving nature. Conservation Biology 23(4), 785-787.

Reed, M., Courtney, P., Urquhart, J., and Ross, N., 2013, Beyond fish as commodities: Understanding the socio-cultural role of inshore fisheries in England. Marine Policy, 37, 62-68.

Reineking, B., Secretariat, C. W. S., & Wilhelmshaven, F. R. G., 2002, The Wadden Sea designated as a PSSA. Wadden Sea Newsletter, 2, 10-12.

Reise, K., Baptist, M., Burbridge, P., Dankers, N., Fischer, L., Flemming, B., Oost, A.P., & Smit, C., 2010, The Wadden Sea – A Universally Outstanding Tidal Wetland. Wadden Sea Ecosystem No. 29. Common Wadden Sea Secretariat, Wilhelmshaven, Germany, page 7 – 24.

Renting, H., Marsden, T., & Banks, J., 2003, Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environ Plan A; 35:393–411.

Riley, R., 1999, A model-based approach to unraveling naval defence heritage: supply- and demand-side issues in Portsmouth's coastal zone Ocean & Coastal Management 42:891-908

Rizzo, I., & Mignosa, A. (Eds.), 2013, Handbook on the Economics of Cultural Heritage, pp. 567-568, UK

Roberts, P. & Trow, S., 2002, Taking to the Water: English Heritage's Initial Policy for The Management of Maritime Archaeology in England, English Heritage 2002.

Rona, D., 1988, Environmental permits. New York: Van Nostrand Reinhold.

Røpke, I., 2004, The early history of modern ecological economics. Ecological Economics 50(3-4): 293-314.

Rosenberg, A.A., & McLeod, K.L., 2005, Implementing ecosystem based approaches to management for the conservation of ecosystem services. Mar Ecol–Prog Ser. 300: 270–74.

Rössler, M., 2006, World Heritage cultural landscapes: A UNESCO flagship programme 1992–2006. Landscape Research 31: 333–353.
SBO 120003: 'Archaeological Heritage in the North Sea. Development of an efficient assessment methodology and approach towards a sustainable management policy and legal framework in Belgium'/Archeologisch Erfgoed in de Noordzee. Ontwikkeling van een efficiente evaluatiemethodologie en voorstellen tot een duurzaam beheer in België., accepted July 2012, 2013-2016 (Website: http://www.sea-arch.be/nl).
Scriven, M., 1991, Evaluation Thesaurus. Newbury Park: Sage.
Sabbioni, C., Cassar, M., Brimblecombe, P., Tilblad, J., Kozloweski, R., Drdacky, M., & Arino, X., 2006, Global climate change impact on built heritage and cultural landscapes. In Heritage, Weathering and Conservation: Proceedings of the International Conference on Heritage, Weathering and Conservation (HWC-2006), 21–24 June 2006, Madrid (pp. 395-401).
Santoro, F., Lescrauwaet, A.K., Taylor, J., & Breton, F. (Eds.), 2014, Integrated Regional Assessments in support of ICZM in the Mediterranean and Black Sea Basins. Paris, Intergovernmental Oceanographic Commission of UNESCO, 84 pp. (IOC Technical Series, 111; IOC/2014/TS/111.)
Scarre, C. 2002, Coast and cosmos: the Neolithic monuments of northern Brittany, in Scarre, C. (Ed.), Monuments and Landscape in Atlantic Europe, London: Routledge.
Scottish Executive Central Research Unit, 2001, A Coastal Management Trust for Scotland – A Concept Development and Feasibility Study. The Stationary Office, Edinburgh.
Scott-Ireton, D.A., 2006, Florida's Underwater Archaeological Preserves: Preservation through Education, Underwater Cultural Heritage at Risk, pp. 5-7.
Shelton, D. (Ed.), 2000, The role of non-binding norms in the international legal system, In: Commitment and compliance, Oxford [England]: Oxford University Press.
Sheriff, C., 1996, The Artificial River: The Erie Canal and the Paradox of Progress, 1817-1862 (New York: Hill and Wang)
Shipman, B., & Stojanovicb, T., 2007, Facts, Fictions, and Failures of Integrated Coastal Zone Management in Europe, Coastal Management, Volume 35, Issue 2-3.
Smith, H.D., Maes, F., Stojanovic, T.A., & Ballinger, R.C., 2010, The Integration of land and marine spatial planning, Journal of Coastal Conservation: Planning and Management (DOI/10.1007/S11852-010-0098Z)
Somers, E. & Maes, F., 2011, "The Law Applicable on the Continental Shelf and in the Exclusive Economic Zone: The Belgian Perspective", Ocean Yearbook, 250 (249).
Sorensen, J., 1993, The International Proliferation of Integrated Coastal Zone Management Efforts. Ocean and Coastal Management 21 (129-148).
Sorensen, J.C., & McCreary, S.T, 1990, Institutional Arrangements for Managing Coastal Resources and Environments, US National Park Service, Washington, DC.
Spain Ministry of Culture, 2009, Green Paper, National Plan for the Protection of Underwater Cultural Heritage.
Spirek J. D., & Scott-Ireton, D.A., 2003, Submerged Cultural Resource Management: Preserving and Interpreting Our Maritime Heritage (The Springer Series in Underwater Archaeology), P. 24.
Srivastava, A., Niu, X., Di, K., & Li, R., 2005, Shoreline modeling and erosion prediction. In Proceedings of the ASPRS Annual Conference (pp. 7-11)
Staab, S., & Studer, R., 2009, Handbook on ontologies, Berlin ; Springer 2009.
Staniforth, M., 2009, International approaches to underwater cultural heritage, Chapter 1, in: Maritime law issues, challenges and implications, Editor: Jack Harris.
Staniforth, M., & Nash, M., 2008, Maritime Archaeology: Australian Approaches, Springer.
Stewart, D., 2011, The Archaeology of Maritime Landscapes, Preface, Edited by Ben Ford.
Suedfeld, P., Tetlock, P. E., & Streufert, S., 1992, Conceptual/integrative complexity. In C. P. Smith, J. W. Atkinson, D. C. McClelland, &J. Veroff (Eds.), Motivation and personality: Handbook of thematic content analysis. New York: Cambridge University Press.
Sun, H.Y., Ma S.D., Hou B.R., Zhang, J.L., Huang G.Q. & Zhu X.R., 2003, Mathematical analysis of long term fouling corrosion in sea water. Corrosion Engineering, Science and Technology, 38: 223-227.
Taveira-Pinto, F., 2004, The practice of coastal zone management in Portugal. J Coast Conserv, 10(1), 147. doi:10.1652/1400-0350(2004)010[0147:tpoczm]2.0.co;2.
Teltock, P.E., 1989, Structure and function in political belief system. In: Pratkanis, A.R., Breckler, S.J., and Greenwald, A.G. (Eds.), Attitude structure and function. Hillsdale, NJ: Erlbaum.
Tengberg, A., Fredholm, S., Eliasson, I., Knez, I., Saltzman, K., & Wetterberg, O., 2012, Cultural ecosystem services provided by landscapes: Assessment of heritage values and identity, Ecosystem Services 2, 14–26.
The Baltic Sea, 2010, Historic Ships Exhibition. Accessible at: http://mg.kpd.lt/users/www/uploaded/BalticShips_1-12_exhibition_2010.pdf (Last visited: 13 Feb. 2015)
The Baltic Sea, 2007, Harbor Exhibition. Accessible at: http://mg.kpd.lt/users/www/uploaded/BalticHarbours_exhibition2007.pdf (Last visited: 13 Feb. 2015)
The Burra Charter, 1999, The Australia ICOMOS charter for the conservation of places of cultural significance.
The Hangzhou Declaration, 2013, Placing Culture at the Heart of Sustainable Development Policies, Adopted in Hangzhou, People's Republic of China, on 17 May.
The Millennium Ecosystem Assessment, 2005. Ecosystems and human well-being: Synthesis. Washington, D. C.: Island Press Accessible at: http://www.millenniumassessment.org/en/index.html (visited 15 Jan. 2015)

The Nara Document on Authenticity, 1994, Accessible at: http://whc.unesco.org/archive/nara94.htm (visited 15 Jan. 2015)
Throsby, D., 2010, The economics of cultural policy, Cambridge, UK: Cambridge University Press.
Throsby, C.D., 2005, On the sustainability of cultural capital. No. 0510. Sydney: Macquarie University, Department of Economics.
Throsby, D., 2002, Cultural Capital and Sustainability Concepts in the Economics of Cultural Heritage, Assessing the Values of Cultural Heritage, de la Torre, M. (ed.), Los Angeles: The Getty Conservation Institute.
Throsby, C.D., 2001, Economics and Culture, Cambridge University Press, NY.
Throsby, C.D., 1999, Cultural capital, Journal of Cultural Economics, 23, 3–12.
Triandis, H.C., 1994, Culture and Social Behavior .McGraw-Hill, New York.
UNCED, 1992, Agenda 21, Paragraphs 17.123–17.124. Accessible at: https://sustainabledevelopment.un.org/index.php?page=view&nr=23&type=400 (Last accessed: 13 Jan. 2015)
UNCLOS, 1982: http://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm (Last accessed: 13 Jan. 2015
UNEP, 1995, United Nations Environment Programme, Guidelines for Integrated Management of Coastal and Marine Areas—with Special Reference to the Mediterranean Basin, UNEP Regional Seas Reports and Studies, No. 161, PAP/RAC (MAP-UNEP), Split.
UNESCO, 2008, Policy Document on the Impact of Climate Change on World Heritage Properties.
UNESCO, 2006/2007, The World Heritage Convention and the Buffer Zone, Heritage at Risk, pp. 183-185.
UNESCO, 2001, Convention on the protection of underwater cultural heritage, Paris, 2 November, Accessible at: http://unesdoc.unesco.org/images/0012/001260/126065e.pdf (Last access: 13 Jan. 2014)
UNESCO, 2003, Convention for the Safeguarding of Intangible Cultural Heritage, Accessible at: http://www.unesco.org/culture/ich/index.php?lg=en&pg=00006 (Last access: 13 Jan. 2014)
UNESCO, 1998, World Culture Report. UNESCO, Paris referring to "World Culture Report: Culture, Creativity and Markets."
UNESCO, 1972, Convention Concerning the Protection of the World Cultural and Natural Heritage.
UNESCO, N.D., Towards a UNESCO culture and development indicators suite, Working document prepared by the UNESCO Secretariat based on expert contributions. Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.unesco.org%2Ffileadmin%2FMULTIMEDIA%2FHQ%2FCLT%2Fcreativity%2Fpdf%2Fculture_and_development_indicators%2FDimension%25201%2520Economy.pdf&ei=pw25VNWaENbmatm3gIgO&usg=AFQjCNErLPll4S-TcCEra-_9GeX-8bXoJg&sig2=j9bD4erbOiM8-5sNNqmxVA&bvm=bv.83829542,d.d2s (Last access: 13 Jan. 2014)
Urquhart, J., & Acott, T., 2012, Constructing 'The Stade': Fishers' and non-fishers' identity and place attachment in Hastings, south-east England. Mar. Policy. Accessible at: http://dx.doi.org/10.1016/j.marpol.2012.04.004 (Last access: 13 Jan. 2014)
US Commission, 1969, Report of the Commission on Marine Science, Engineering and Resources, Our nation and the Sea—A Plan for National Action.
Vallega, A., 2003, The coastal cultural heritage facing coastal management, Journal of Cultural Heritage, Volume 4, Issue 1, Pages 5–24, January.
Vallega A., 2001, Urban waterfront facing integrated coastal management, Ocean and Coastal Management, Vol. 44, 5-6, pp. 379-410.
Valetta, 1992, European Convention on the Protection of the Archaeological Heritage (Revised).Explanatory Report.
Van Acker, M., 2011, From flux to frame, the infrastructure project as a vehicle of territorial imagination and an instrument of urbanization in Belgium since the early 19th century, Doctoral dissertation, KU Leuven, Department of Architecture, Urbanism and Planning.
Vande Lanotte, J., 2013, Voorontwerp van Marien Ruimtelijk Plan, Bijlagen bij het voorontwerp van Koninklijk Besluit tot vaststelling van het marien ruimtelijk plan, Jan.)
Vanden Abeele, P., Vanhulle, A., & GAUFRE team members, 2005, A Flood of Space, Towards a Spatial Structure Plan for Sustainable Management of the Sea, The GAUFRE report. Accessible at: http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CC4QFjAC&url=http%3A%2F%2Fwww.belspo.be%2Fbelspo%2Forganisation%2Fpubl%2Fpub_ostc%2FMA%2FGaufre%2FGaufre_en.pdf&ei=FQMhVaPHNsPLaNrxgpgO&usg=AFQjCNG2SwtTQAZ-Nu70gjh6B9liaIJXYw&sig2=_LHAvnS2KBKAIJHw8nE0iQ&bvm=bv.89947451,d.d2s
Van den Eynde, D., 2011, Sediment fluxes in the Belgian coastal zone & influence of global change scenarios on siltation of fair channels [PPT Presentation], in: QUEST4D Symposium, 2011: Human footprint on the floor. Keys from the past. Doors to the future, 2nd September 2011, Brussels. pp. 1-22.
Van den Eynde, D., De Smet, L., De Sutter, R., Francken, F., Maes, F., Ozer, J., Polet, H., Ponsar, S., Van der Biest, K., Vanderperren, E., Verwaest, T., Volckaert, A. & Willekens, M., 2009, Evaluation of climate change impacts and adaptation responses for marine activities CLIMAR: final report phase 1, Belgian Science Policy: Brussel. 81 pp. Accessible at: http://www.belspo.be/belspo/fedra/proj.asp?l=en&COD=SD/NS/01A (Last access: 13 Jan. 2014)
Van den Eynde D., De Sutter R., Maes F., Verwaest T. & van Bockstaele E., 2008. Evaluation of climate change impacts and adaptation responses for marine activities: climar. Summary report Phase 1 of the climar project for Belgian Federal Science Policy Office.
Van der Linde, S. J., 2013, European Archaeology Abroad : Global settings, Comparative Perspectives, P.226.

Van Haelst, S., Pieters,M., & Demerre, I., 2014, Aggregate extraction versus archaeological heritage: how to reach a win-win?, In: Lies De Mol and Helga Vandenreyken, 'Which future for the sand extraction in the Belgian part of the North Sea?, Study Day, Belgium Pier – Blankenberge.

Van Haelst, S., Pieters, M., & Demerre, I., 2013, Survey conducted by the Flemish Heritage institute, Verantwoordelijke partner: Onroerend Erfgoed (FHA)

Varmer, O., 2014, Underwater Cultural Heritage Law Study, U.S. Department of the Interior, Bureau of Ocean Energy Management.

Varmer, O., & Blanco, C., 1999, United States of America. In S. Dromgoole, (Ed.), Legal protection of the underwater cultural heritage: National and international perspective, (205-221), London, UK: Kluwer Law International.

Veloso-Gomes, F., & Taveira-Pinto, F., 2003, Source Portuguese Coastal Zones and the New Coastal Management Plans, , Journal of Coastal Conservation, Vol. 9, No. 1, Towards Integrated Coastal Management, with a Special Emphasis on the Mediterranean Sea, pp. 25-34.

Veloso-Gomes, F., Barroco, A., Pereira, A.R., Reis, C.S., Calado, H., Ferreira, J.G., Da Conceição Freitas, M., & Biscoito, M., 2008, Basis for a National Strategy for Integrated Coastal Zone Management—in Portugal, Journal of Coastal Conservation, Vol. 12, No. 1, Coastal Management Strategies, Apr., pp. 3-9.

Verwaest, T., Dan, S., Reyns, J., Meire, E., Mertens, T., & Gysens, S., 2012, Coastal Flooding Risk and Adaptation to Climate Cahnge in Belgium, Int. Conf. Coastal. Eng., 1(33).doi:10.9753/icce.v33.posters.23.

Vienna Convention on the Law of Treaties, 1969. Accessible at: http://www.oas.org/legal/english/docs/Vienna%20Convention%20Treaties.htm

VLIZ (Vlaams Instituut voor de Zee), 2011, Zeespiegelstijging: moeten we vrezen voor natte voeten?, in: (2011). De Grote Rede 30. De Grote Rede: Nieuws over onze Kust en Zee, 30: pp. 3-9.

Von Truetzschler, W., 2005, The evolution of "cultural heritage" in international law, In: 15th ICOMOS General Assembly and International Symposium: 'Monuments and sites in their setting - conserving cultural heritage in changing townscapes and landscapes', 17 – 21 oct 2005, Xi'an, China.

Wanner, H., Beer, J., Butikofer, J., Crowley, T.J., Cubasch, U., Fluckiger, J., Goosse, H., Grosjean, M., Joos, F., O. Kaplan, J., Kuttel, M., Muller S.A., Prentice, I.C., Solomina, O., Stocker, T.F., Tarasov, P., Wagner, M., & Widmann, M., 2008, Mid- to Late Holocene climate change: an overview, Quaternary Science Reviews 27: 1791–1828.

Webster, R. & Beckett, P., 1970, Terrain classification and evaluation using air photography: a review of recent work at Oxfor. Photogrammetria, 26, 51-75.

Westerdahl, C., 2011, Maritime Cultural Landscape, In Oxford Handbook of Maritime Archaeology, Catsambis, A., Ford., B., and Hamilton, D. (Eds.), Oxford University Press, New York, NY.

Westerdahl, C., 2006, The relationship between land roads and sea routes in past—some reflections, Deutsches Schiffahrtsarchiv, 29:59-114.

Westerdahl, C., 2003, Maritime culture in an Island lake? In Maritime Heritage, Berbbia, C.A., and Gambin, T. (Eds.), WIT Press, Southampton, UK.

Westerdahl, C., 1997, The Stone Age landscape of coastal Southeast Sweden at the Neolithic Transition, In the Built Environment of Coastal Areas During the Stone Age, Krol, D. (Ed.), pp. 87-97, The Archaeological Museum in Gda sk. Poland.

Westerdahl, C., 1992, The maritime cultural landscape, The International Journal of Nautical Archaeology 21.1: 5-14.

Westerdahl, C., 1978, Marinarkeologisk inventering med utgdngspunkt frdn eft norrlandrkr exempel. C-uppsats, arkeologi. Unpublished graduation thesis, 103 pp., University of Stockholm.

White, R., 1991, The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815 (Studies in North American Indian History, (p. XXVI).

Wilkinson, C.F., 1980, The Public Trust in Public Land Law, 14 UC DAVIS L. REV. 269 (extending public trust doctrine principles traditionally rooted in waters to federal public lands).

Willems, W.J.H., 2009, Laws, Language and Learning: Managing Archaeological Heritage Resources in Europe, Cultural Heritage Management, A global perspective, Edited by: Messenger Phyllis, Smith Georg, pp: 212-242.

Willems, W.J.H. & Brandt, R.W., 2004, Dutch Archaeology Quality Standard, Den Haag.

Wolff, W. J., Bakker, J. P., Laursen, K., & Reise, K., 2010, The Wadden Sea Quality Status Report-Synthesis Report 2010. The Wadden Sea 2010. Common Wadden Sea Secretariat (CWSS); Trilateral Monitoring and Assessment Group: Wilhelmshaven. (Wadden Sea Ecosystem; 29/editors, Harald Marencic and Jaap de Vlas), 25.

Wu, T., & Petriello, M.A., 2011. Culture and biodiversity losses linked. Letters to Science 331, 30.

Xepapadeas, A., 2008, Ecological economics, The New Palgrave Dictionary of Economics 2nd Edition. Palgrave MacMillan.

Zintzen, V., Massin, C., Norro, A., & Mallefet, J., 2006, Epifaunal inventory of two shipwrecks from the Belgian Continental Shelf. Hydrobiologia, 555(1), 207-219.

(2002/413/EC), A European Parliament and Council Recommendation concerning the implementation of Integrated Coastal Zone Management in Europe was adopted on 30 May 2002. Accessible at: http://ec.europa.eu/environment/iczm/rec_imp.htm (Last access: 13 Jan. 2015)

Consulted websites

Assembly.coe.int,. (2015). *Council of Europe Parliamentary Assembly*. Retrieved 3 April 2015, from http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta78/EREC848.htm#1

Belspo.be,. (2015). *FEDRA - Research project*. Retrieved 3 April 2015, from http://www.belspo.be/belspo/fedra/proj.asp?l=en&COD=SD/NS/01A

Cefas.defra.gov.uk,. (2015). *Projects*. Retrieved 28 January 2015, from http://www.cefas.defra.gov.uk/alsf/projects.aspx

Coastalatlas.be,. (2015). *Environment and nature | The Coastal Atlas online*. Retrieved 2 February 2015, from http://www.coastalatlas.be/en/themes/sustainability/duurzaamheidsindicatoren/verbetering-van-het-milieu-en-de-natuur/

Coastalatlas.be,. (2015a). *The European framework and priorities for Belgium | The Coastal Atlas online*. Retrieved 28 January 2015, from http://www.coastalatlas.be/en/themes/policy-administration/duurzaam-kustzonebeheer/prioriteiten-voor-belgie/

Coastalatlas.be,. (2015b). *Material maritime heritage | The Coastal Atlas online*. Retrieved 28 January 2015, from http://www.coastalatlas.be/en/themes/heritage-culture/materieel-maritiem-erfgoed/

Coastalatlas.be,. (2015c). *The Coastal Atlas online | Interactive map*. Retrieved 28 January 2015, from http://www.coastalatlas.be/map/?lan=en&theme_id=28

Compendiumkustenzee.be,. (2015a). *Introduction | Compendium Coast and Sea*. Retrieved 28 January 2015, from http://www.compendiumkustenzee.be/en/introduction-11

Compendiumkustenzee.be,. (2015b). *Movable and intangible heritage | Compendium Coast and Sea*. Retrieved 2 February 2015, from http://www.compendiumkustenzee.be/en/movable-and-intangible-heritage#footnote_1_in_text

Compendiumkustenzee.be,. (2015c). *Architectural heritage along the coast | Compendium Coast and Sea*. Retrieved 2 February 2015, from http://www.compendiumkustenzee.be/en/architectural-heritage-along-coast

Conventions.coe.int,. (2015). Retrieved 2 February 2015, from http://conventions.coe.int/Treaty/Commun/ChercheSig.asp?NT=143&CM=1&DF=&CL=ENG

Council for Independent Archaeology,. (2015). *English Heritage position statement - Council for Independent Archaeology*. Retrieved 2 February 2015, from http://www.independents.org.uk/the-valletta-report/english-heritage-position-statement

Cscope.eu,. (2015a). *C-SCOPE | Stakeholder Engagement*. Retrieved 28 January 2015, from http://www.cscope.eu/en/project-activities/achieving-commitment/stakeholder-engagement/

Cscope.eu,. (2015b). *C-SCOPE | Project partners*. Retrieved 28 January 2015, from http://www.cscope.eu/en/about-c-scope/project-partners/

Culturalheritageagency.nl,. (2015). *Maritime heritage | Rijksdienst voor het Cultureel Erfgoed*. Retrieved 28 January 2015, from http://www.culturalheritageagency.nl/en/maritime-heritage

Doeni.gov.uk,. (2015). *Strangford Lough Marine Conservation Zone (MCZ) | Department of the Environment Northern Ireland*. Retrieved 13 April 2015, from http://www.doeni.gov.uk/index/protect_the_environment/water/marine-home/marine_nature_conservation/marine_priority_habitats_and_species/marine_protected_areas/marine-conservation-zones/strangford-mcz.htm

Ec.europa.eu,. (2015). *Coastal Zone Policy - Environment - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/environment/iczm/home.htm

Ec.europa.eu,. (2015a). *Maritime spatial planning - Maritime Affairs - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning/index_en.htm

Ec.europa.eu,. (2015b). *Publications - Environment - Research & Innovation - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/research/environment/index_en.cfm?pg=publications&tab=all

Ec.europa.eu,. (2015c). *Natura 2000 network - Environment - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/environment/nature/natura2000/

Ec.europa.eu,. (2015d). *Coastal Zone Policy - Environment - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/environment/iczm/projects.htm

Ec.europa.eu,. (2015e). *Coastal Zone Policy - Environment - European Commission*. Retrieved 28 January 2015, from http://ec.europa.eu/environment/iczm/home.htm

Ejustice.just.fgov.be,. (2015a). *LOI - WET*. Retrieved 10 April 2015, from http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=nl&la=N&cn=2003090930&table_name=wet

Ejustice.just.fgov.be,. (2015b). *LOI - WET*. Retrieved 10 April 2015, from http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl?language=nl&caller=list&cn=1999012033&la=n&fromtab=wet&sql=dt=%27wet%27&tri=dd+as+rank&rech=1&numero=1

Encyclopedia Britannica,. (2014). *classical economics*. Retrieved 13 February 2015, from http://www.britannica.com/EBchecked/topic/120200/classical-economics

English-heritage.org.uk,. (2015a). *English Heritage Home Page | English Heritage*. Retrieved 28 January 2015, from http://www.english-heritage.org.uk/

English-heritage.org.uk,. (2015b). *Marine Aggregate Dredging and the Historic Environment (2003) | English Heritage*. Retrieved 28 January 2015, from https://www.english-heritage.org.uk/publications/marine-aggregate-dredging-and-the-historic-environment-2003/

English-heritage.org.uk,. (2015c). *Aggregates Levy Sustainability Fund | English Heritage*. Retrieved 28 January 2015, from http://www.english-heritage.org.uk/professional/research/coastal-and-maritime/aslf-marine/

English-heritage.org.uk,. (2015d). *Rapid Coastal Zone Assessment Surveys (RCZAS) | English Heritage*. Retrieved 28 January 2015, from http://www.english-heritage.org.uk/professional/advice/advice-by-topic/marine-planning/shoreline-management-plans/rapid-coastal-zone-assessments

English-heritage.org.uk,. (201e5). *Historic Environment Record | English Heritage*. Retrieved 28 January 2015, from http://www.english-heritage.org.uk/professional/advice/our-planning-role/greater-london-archaeology-advisory-service/sites-and-monuments-record/

Eur-lex.europa.eu,. (2015). *L_2014257EN.01013501.xml*. Retrieved 13 February 2015, from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0089&from=EN

EUROPA., (2015). *EUROPA*. Retrieved 28 January 2015, from http://ec.europa.eu/environment/iczm/evaluation/iczm_national_reporting_belgium.htm

Faronet.be,. (2015). *FARO. Flemish interface centre for cultural heritage | FARO. Vlaams steunpunt voor cultureel erfgoed vzw*. Retrieved 2 February 2015, from http://www.faronet.be/en/faro-flemish-interface-centre-cultural-heritage

Flheritage.com,. (2015). *Underwater Preserves - Division of Historical Resources - Florida Department of State*. Retrieved 28 January 2015, from http://www.flheritage.com/archaeology/underwater/preserves/

Geo.onroerenderfgoed.be,. (2015). *Geoportaal | Onroerend Erfgoed*. Retrieved 2 February 2015, from https://geo.onroerenderfgoed.be

Gov.uk,. (2014). *Marine planning in England - GOV.UK*. Retrieved 3 April 2015, from https://www.gov.uk/government/collections/marine-planning-in-england

Gpo.gov,. (2015). *36 CFR 60.4 - Criteria for evaluation.*. Retrieved 28 January 2015, from http://www.gpo.gov/fdsys/granule/CFR-2012-title36-vol1/CFR-2012-title36-vol1-sec60-4/content-detail.html

Group, N. (2015). *NOAA Office for Coastal Management | About the Center*. *Coast.noaa.gov*. Retrieved 13 April 2015, from http://coast.noaa.gov/czm/act/?redirect=301ocm

HELM, (2013). Retrieved 28 January 2015, from http://www.helm.org.uk/managing-and-protecting/coastal-and-marine-heritage/

Health.belgium.be,. (2015). *seaspatialplan*. Retrieved 28 January 2015, from http://www.health.belgium.be/eportal/Environment/Environmentalrigh/Environmentalrights/PublicConsultations/seaspatialplan/index.htm#.U7Ugw7HlnB8

Imdc.be,. (2015). | *IMDC*. Retrieved 12 February 2015, from http://www.imdc.be/projects/masterplan-flanders-coastal-safety

Imo.org,. (2015a). *IMO | About IMO*. Retrieved 28 January 2015, from http://www.imo.org/About/Pages/Default.aspx

Imo.org,. (2015b). *IMO | Particularly Sensitive Sea Areas*. Retrieved 28 January 2015, from http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx

Imo.org,. (2015c). *Particularly Sensitive Sea Areas (PSSA)*. Retrieved 28 January 2015, from http://www.imo.org/blast/mainframe.asp?topic_id=1357#A927

Interreg4a-2mers.eu,. (2015). *2 Mers Seas Zeeën*. Retrieved 28 January 2015, from http://www.interreg4a-2mers.eu/programme/key-information/en

Iucn.org,. (2015). *IUCN - Home*. Retrieved 30 March 2015, from http://www.iucn.org/

Kustcodex.be,. (2015). *Juridische Codex Kustzone*. Retrieved 2 February 2015, from http://www.kustcodex.be/kustcodex-consult/consultatieLink?index=85&appLang=nl

Machuproject.eu,. (2015). *MACHU project*. Retrieved 28 January 2015, from http://www.machuproject.eu/index.html

Marbef.org,. (2015a). *Some definitions of Integrated Coastal Zone Management (ICZM) - Marine Biodiversity Wiki*. Retrieved 28 January 2015, from http://www.marbef.org/wiki/Some_definitions_of_Integrated_Coastal_Zone_Management_%28ICZM%29

Marbef.org,. (2015b). *Analysis of the ICZM process in Belgium - Marine Biodiversity Wiki*. Retrieved 28 January 2015, from http://www.marbef.org/wiki/Analysis_of_the_ICZM_process_in_Belgium

Maritieme-archeologie.be,. (2015). *maritieme archeologie*. Retrieved 2 February 2015, from http://www.maritieme-archeologie.be

Marius Mačiūnas,. (2015a). *Monitoring Group*. *Mg.kpd.lt*. Retrieved 28 January 2015, from http://mg.kpda.lt/LT.html

Marius Mačiūnas,. (2015b). *Monitoring Group*. *Mg.kpd.lt*. Retrieved 28 January 2015, from http://mg.kpd.lt/LT/68/MG-VISION.htm

Millenniumassessment.org,. (2015). *Millennium Ecosystem Assessment*. Retrieved 10 February 2015, from http://www.millenniumassessment.org/en/Synthesis.html

Moss.nba.fi,. (2015). *MoSS*. Retrieved 28 January 2015, from http://moss.nba.fi/

Mossproject.com,. (2015). *moss project*. Retrieved 28 January 2015, from http://www.mossproject.com/

Mumm.ac.be,. (2015a). *BMM | Belgische deel van de Noordzee*. Retrieved 2 February 2015, from http://www.mumm.ac.be/NL/NorthSea/geography.php

Mumm.ac.be,. (2015b). *MUMM | Operational models*. Retrieved 2 February 2015, from http://www.mumm.ac.be/EN/Models/Operational/index.php

Mumm.ac.be,. (2015c). *MUMM | BMM | UGMM*. Retrieved 28 January 2015, from http://www.mumm.ac.be/EN/News/item.php?ID=18

NOaA., (2015). Retrieved 28 January 2015, from http://www.noaa.nl/content/hst01/h1.uk1.htm

Nps.gov,. (2015). *Management - Biscayne National Park (U.S. National Park Service)*. Retrieved 28 January 2015, from http://www.nps.gov/bisc/parkmgmt/index.htm

Nps.gov,. (2015a). *U.S. National Park Service - Experience Your America*. Retrieved 28 January 2015, from http://www.nps.gov/index.htm

Nps.gov,. (2015b). *Why Preserve Shipwrecks--Florida Shipwrecks: 300 Years of Maritime History: A National Register of Historic Places Travel Itinerary*. Retrieved 30 March 2015, from http://www.nps.gov/nr/travel/flshipwrecks/whypreserve.htm

Nyulawglobal.org,. (2015). *GlobaLex - Research Guide to Belgian Law*. Retrieved 2 February 2015, from http://www.nyulawglobal.org/globalex/belgium.htm

Oceanexplorer.noaa.gov,. (2015). *Why do we study shipwrecks?*. Retrieved 30 March 2015, from http://oceanexplorer.noaa.gov/facts/whyshipwrecks.html

Oudenaarde.be,. (2015). *City of Oudenaarde - Ename*. Retrieved 31 March 2015, from http://www.oudenaarde.be/en/visitors/what-tosee/Picturesque_villages/Ename/

Pc.gc.ca,. (2012). *Parks Canada - Archaeology - Reference Material*. Retrieved 28 January 2015, from http://www.pc.gc.ca/progs/arch/page5/doc2.aspx

Pc.gc.ca,. (2015b). *Parks Canada - Home*. Retrieved 28 January 2015, from http://www.pc.gc.ca/eng/index.aspx

Sanctuaries.noaa.gov,. (2015). *National Marine Sanctuaries Act and Legislation*. Retrieved 3 April 2015, from http://sanctuaries.noaa.gov/about/legislation/welcome.html

Sea-arch.be,. (2015). *Archeologisch Erfgoed in de Noordzee*. Retrieved 28 January 2015, from http://www.sea-arch.be/en/content/news

Splashcos.org,. (2015). *Welcome | splashcos.org*. Retrieved 28 January 2015, from http://www.splashcos.org/

Suscod.eu,. (2015). *ICZM principles*. Retrieved 28 January 2015, from http://www.suscod.eu/Pages/Suscod/ICZMPrinciples.aspx

UK National Historic Shipwrecks,. (2015). Retrieved 28 January 2015, from http://www.nationalhistoricships.org.uk/)

Unep.org,. (2015). *Urban Environment Unit, UNEP*. Retrieved 28 January 2015, from http://www.unep.org/urban_environment/issues/coastal_zones.asp

Unesco.org,. (2015a). *Tangible Cultural Heritage | United Nations Educational, Scientific and Cultural Organization*. Retrieved 28 January 2015, from http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage/

Unesco.org,. (2015b). *Legal provision for integrated coastal zone management*. Retrieved 11 February 2015, from http://www.unesco.org/csi/act/russia/legalpro5.htm

UNESCO, (2015c). *UNESCO.* Retrieved 28 January 2015, from http://www.unesco-ioc-marinesp.be/marine_spatial_planning_msp

Unesco-ioc-marinesp.be,. (2015a). *Belgium - UNESCO - IOC - Marine Spatial Management*. Retrieved 28 January 2015, from http://www.unesco-ioc-marinesp.be/spatial_management_practice/belgium

Unesco-ioc-marinesp.be,. (2015b). *United Kingdom - UNESCO - IOC - Marine Spatial Management*. Retrieved 3 April 2015, from http://www.unesco-ioc-marinesp.be/msp_around_the_world/united_kingdom

Unrisd.org,. (2015). *The Social and Environmental Impact of National Parks and Protected Areas in Developing Countries | Environment, Sustainable Development and Social Change | Research | UNRISD*. Retrieved 28 January 2015, from http://www.unrisd.org/80256B3C005BB128/(httpProjects)/7869DF0E32C18C5B80256B64003936FC?OpenDocument#sthash.Hly9zT6G.dpuf

Un.org,. (2015). *United Nations Resources for Speakers on Global Issues - Home*. Retrieved 8 May 2015, from http://www.un.org/en/globalissues/briefingpapers/childlabour/intlconvs.shtml

Vlaamsehydrografie.be,. (2015). *Vlaamse hydrografie*. Retrieved 12 February 2015, from http://www.vlaamsehydrografie.be/wrakkendatabank.htm

Vliz.be,. (2015a). *Some definitions of Integrated Coastal Zone Management (ICZM) - Kust Wiki*. Retrieved 28 January 2015, from http://www.vliz.be/wiki/Some_definitions_of_Integrated_Coastal_Zone_Management_%28ICZM%29

Vliz.be,. (2015b). *BEWREMABI - Belgian shipwrecks: hotspots for Marine Biodiversity*. Retrieved 28 January 2015, from http://www.vliz.be/projects/bewremabi/description.php

Watererfgoed.be,. (2015). *Watererfgoed Vlaanderen*. Retrieved 31 March 2015, from http://www.watererfgoed.be/

Wise-rtd.info,. (2015). *Simulating the Socio-Economic Impacts of Integrated Coastal Zone Management Mechanisms | wise-rtd.info*. Retrieved 2 February 2015, from http://www.wise-rtd.info/en/info/simulating-socio-economic-impacts-integrated-coastal-zone-management-mechanisms

Wrecksite.eu,. (2015). *WRECKSITE*. Retrieved 2 February 2015, from http://www.wrecksite.eu

Wvculture.org,. (2015). *Historic Preservation Laws & Codes*. Retrieved 28 January 2015, from http://www.wvculture.org/shpo/preslaws.html

Www2.psych.ubc.ca,. (2015). *Peter Suedfeld's Homepage - Complexity*. Retrieved 30 March 2015, from http://www2.psych.ubc.ca/~psuedfeld/index2.html

3b.nweurope.eu,. (2015). *PLANARCH II*. Retrieved 28 January 2015, from http://3b.nweurope.eu/page/projet.php?p=31&id=559