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Integrating the Protection of Marine Cultural Heritage into Marine Policy, for the Sustainable Development of the Ocean

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Abstract

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Although there is an increasing call for the integration of Marine Cultural Heritage (MCH) into international integrated management frameworks such as Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM), there are few examples of successful integration in practice. This thesis aims to build upon the understanding of MCH as a marine resource by conducting an interdisciplinary investigation of the role of MCH within integrated policy frameworks. In doing so, knowledge and methodologies are drawn upon from multiple fields, including cultural heritage management, environmental studies, law and policy, economics, and resource management. A similarly interdisciplinary research strategy is implemented, using both qualitative and quantitative methods.

Firstly, the issues associated with integrating heritage into environmental policies are introduced and a large-scale network analysis of the research gaps between disciplines is conducted. The results of this Section are developed into three research questions: (1) *How does the definition and associated conceptualisation of cultural heritage in integrated frameworks affect the practicality of its management? (2) What is the value of underwater heritage as part of the marine environment? (3) How can underwater heritage be integrated into marine resource management frameworks, and who is responsible for overseeing this process?*

Three case studies are used to address the above research questions: an analysis of the Millennium Ecosystem Assessment (MEA) provides novel evidence of the power of semantics in practice; a social valuation experiment exemplifies the interdependencies between heritage and the environment; and a comparative case study of the UK and Bulgaria explores the themes of definition, conceptualisation and valuation in integrated legislation in practice.

Throughout this work it is argued that a nominal inclusion of cultural services within integrated frameworks is of detriment to the successful management of both the cultural heritage and the environment. To address this, incentive is given for the inclusion of heritage within environmental frameworks. To facilitate integration in practice, valuable lessons are presented from two of the

earliest adopters of integrated cultural – natural marine management. Finally, the above information is used to develop proposals and recommendations across multiple levels of governance, including the EU Commission's MSP Methodology, the UNESCO Convention on the Protection of the Underwater Cultural Heritage, and the UK Government's recently developed Culture and Heritage Capital Framework.

As we enter the Decade of Ocean Science (2021-2030), it is essential that MCH is properly understood, protected, and integrated within international, regional, and national marine plans for the sustainable development of the ocean. As such, the findings of this work aim to provide a platform to better facilitate the management of MCH within marine management frameworks, for the benefit of the cultural heritage, the environment, and society.

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Research Thesis: Declaration of Authorship

Print name: Georgia Holly

Title of thesis: Integrating the Protection of Marine Cultural Heritage into Marine Policy, for the Sustainable Development of the Ocean

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature: ..... Date:

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Finally, thank you to my friends and family, who have supported and believed in me through years of imposter syndrome. This includes James, with whom I wrote the first and last words of this thesis.

Definitions and Abbreviations

CHM ..... Cultural Heritage Management

Cultural Heritage Management describes the practice of identifying, conserving, monitoring, restoring, and the general maintenance of cultural heritage.

CMA..... Centre for Maritime Archaeology (University of Southampton)

The centre for Maritime Archaeology at the University of Southampton is an academic research group which focusses on the promotion, practice, and research of maritime archaeology.

CUA ..... Centre for Underwater Archaeology (Bulgaria)

The Centre for Underwater Archaeology in Bulgaria is a state institute which acts as the national authority for the preservation of marine cultural heritage.

CV ..... Contingent Valuation

Contingent Valuation describes an economic method of estimating the value of a resource, based on human value parameters such as Willingness to Pay (WTP) or Willingness to Accept (WTA).

DCMS..... Department for Digital, Culture, Media and Sport

The Department for Digital, Culture, Media and Sport acts as an arm of the UK Government, for the governing of culture, sport, digital economies and media throughout the UK.

DPSWR ..... Driver-Pressure-State-Welfare-Response Cycle

The DPSWR is an analytical framework typically used to determine trade-offs between input parameters. The method is usually used to analyse environmental problems, and is used as part of the EU Marine Spatial Planning (MSP) methodology.

EEZ..... Exclusive Economic Zone

As defined by the 1982 United Nations Convention on the Law of the Sea, the Exclusive Economic Zone is an area of the sea in which sovereign states have special rights regarding their uses of marine resources and exploration.

ER ..... Environmental Resources

An environmental resource is a material, use, or information provided by the environment that is of use to society. Such resources include land, air, and water.

ES..... Ecosystem Services

Ecosystem services describe the various benefits provided to humans by environmental resources, such as food and fuel.

Definitions and Abbreviations

GEO ..... Global Environmental Outlook

The Global Environmental Outlook is a United Nations Environment Programme (UNEP) assessment which determines the state of the environment at a certain time. The information collected is largely aimed at policy makers, with the aim of creating more effective environmental policies globally. At time of writing, there have been six editions of the GEO between 1995 and 2019.

HFF ..... Honor Frost Foundation

The Honor Frost Foundation is a UK-based charity aimed at the promotion of maritime archaeological research, particularly in the Eastern Mediterranean. The foundation was founded in 2011 under the legacy of Honor Frost (1917-2010), who was an early pioneer in the field of maritime archaeology.

HMPA ..... Historic Marine Protected Area

Historic Marine Protected Areas represent a form of legal protection for 'marine historic assets' in Scottish territorial waters.

ICOMOS ..... International Council on Monuments and Sites

The International Council on Monuments and Sites is an international professional association based in Paris, which focusses on the conservation of places of cultural heritage globally.

ICZM ..... Integrated Coastal Zone Management

Integrated Coastal Zone Management is a coastal management process for the sustainable management of marine resources within coastal zones. The methodology includes all stages of coastal planning, including data collection, dissemination, and long-term monitoring.

IEA ..... Integrated Environmental Assessment

An Integrated Environmental Assessment describes a process for the identification and analysis of the various human uses of environmental resources, which over time dictate the overall state of the environment.

IOC ..... Intergovernmental Oceanographic Commission

The Intergovernmental Oceanographic Commission is a UNESCO body responsible for the promotion of ocean sciences and services globally. The IOC primarily aids governments in coastal and marine management issues, promoting the international sustainable development of the oceans.

IOC-CLT ..... Intergovernmental Oceanographic Commission – Culture

The IOC-CLT is a recently established committee between the IOC and the Cultural Conventions of UNESCO, which largely aims to develop and facilitate the role of MCH in the greater ocean sphere, particularly in the realm of Marine Spatial Planning.

IPBES ..... Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services

The Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services is an international organisation which aims to facilitate the development of science-based policy regarding issues in the protection of biodiversity and ecosystem services.

IPCC ..... Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change is a body of the UN which aims to provide policy-makers with regular global assessments and mitigation strategies for the impacts of climate change.

JNAPC ..... Joint Nautical Archaeology Policy Committee

The Joint Nautical Archaeology Policy Committee is a working group for MCH policy in the UK, founded by the National Maritime Museum, the Nautical Archaeology Society, the Council for British Archaeology and the Society for Nautical Research.

LDA ..... Latent Dirichlet Analysis

Latent Dirichlet Allocation (LDA) uses a probabilistic Bayesian model for collections of discrete data, such as text. Each item within the collection is modelled under a set of topics, which in turn is modelled within a set of topic probabilities. This method of text analysis provides a way of representing a document, or vast amounts of documents, succinctly, and categorised into themes and networks.

LOICZ ..... Land-Ocean interactions in the Coastal-Zone

Land-Ocean interactions in the Coastal-Zone was a project run by the International Geosphere and Biosphere Programme, aimed at researching and recording changes in the chemistry, physics, and biology of the coastal zone, and communicating this information into policy.

LOSC ..... Law of the Sea Convention

In general, the collection of international marine laws which govern state activities is often referred to as the ‘law of the seas’. The UN Convention on the Law of the Sea (UNCLOS) is the primary agreement dictating the conduct of coastal and maritime states. Three UNCLOS negotiations took place over a period of fifteen years, of which the final UNCLOS negotiations (UNCLOS III, 1973) was adopted in 1982, and is commonly referred to as the ‘LOSC’.

LSI..... Land Sea Interactions

Land-Sea Interactions is a term used in marine resource management frameworks such as Marine Spatial Planning. LSI describes the connections between the land and sea, primarily in the coastal zone, and can encompass physical, social, and technological processes.

MAB ..... UNESCO's Man and Biosphere Programme

The Man and Biosphere Programme is a UNESCO programme which aims to use natural and social sciences to research and improve the sustainability and effectiveness of the relationships between humans and the natural environment.

MEA ..... The Millennium Ecosystem Assessment

The Millennium Ecosystem Assessment is an international and interdisciplinary research effort called for by the UN Secretary-General Kofi Annan in 2000. The assessment works to determine the relationships between environmental resources and the populations which rely on them, with the aim of increasing the sustainability of ecosystem services.

MoD ..... Ministry of Defence

The Ministry of Defence is a department of the UK government which implements national defence policy. The MoD also acts as the headquarters of the British Armed Forces.

MPA ..... Marine Protected Area

Marine Protected Areas describe typically restrict human activities in certain defined ocean areas for the purposes of natural or cultural conservation. MPAs come in various forms, and are usually implemented and monitored by local governments.

MPS..... Marine Policy Statement

The Marine Policy Statement delivers a planning system for the sustainable management of decisions affecting the marine environment in the UK (first published in 2011, amended in 2020).

MSP..... Marine Spatial Planning

Marine Spatial Planning describes a process of coordinating ocean resources through the stakeholders that use them. The primary aim of MSP is to facilitate informed and coordinated plans and decisions regarding the sustainable use of the ocean.

NGO ..... Non-Governmental Organisation

An NGO is an organisation formed independently of government, and is typically non-profit.

NIAM..... National Institute of Archaeology with Museum (Bulgaria)

The National Institute of Archaeology with Museum is an archaeological museum and group which promotes and researches the cultural heritage of Bulgaria.

OPWALL.....Operation Wallacea

Operation Wallacea is an international biological field school.

QLSS .....Qualitative Scoring System

The QLSS is the qualitative methodology developed in Chapter seven to analyse questionnaire data.

QTSS .....Quantitative Scoring System

The QTSS is the quantitative methodology developed in Chapter seven to analyse questionnaire data.

SCUBA .....Self-Contained Underwater Breathing Apparatus

SCUBA is the breathing equipment divers use to move freely underwater, independent of surface air supply.

SDGs .....Sustainable Development Goals

The Sustainable Development Goals are made up of 17 global goals developed by the UN General Assembly. The goals span from Zero Hunger (Goal 2) to Climate Action (Goal 13), to life underwater (Goal 14), and aim to be achieved by 2030.

SLR.....Systematic Literature Review

A systematic literature review is a method used to concisely analyse large literature data sets. The methodology identifies and critically analyses select literature to answer specifically formulated research questions.

STAB .....Scientific and Technical Advisory Body (to the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage)

The STAB is a body of experts which provides advice to the Meeting of States Parties relating to the implementation of the 2001 Convention.

MCH .....Marine Cultural Heritage

Marine Cultural Heritage as defined in this thesis describes both tangible remains such as shipwrecks, ports, harbours, and cultural landscapes, and intangible aspects such as cultural practices, expressions, skills, and knowledge.

UN .....United Nations

The UN is an international, intergovernmental organisation with the aim to maintain peace, security, and cooperation between nations.

UNCLOS..... United Nations Conference on the Law of the Sea

The UN Convention on the Law of the Sea (UNCLOS) is the primary agreement dictating the conduct of coastal and maritime states by defining rights of states parties to territorial waters, and the seabed and its resources beyond national jurisdiction as 'the common heritage of mankind'.

UNEP ..... United Nations Environment Programme

The primary role of the United Nations Environment Programme is to coordinate the UN response to environmental issues. The authority hosts multiple programmes in climate, nature and sustainable development globally.

UNESCO ..... United Nations Educational, Scientific and Cultural Organisation

UNESCO is an agency of the UN which aims to coordinate peace, security, and sustainable development through education, the arts, science, and culture.

UNFPA..... United Nations Population Fund

The United Nations Population Fund is a UN agency which supports and promotes reproductive and maternal health worldwide.

WoS..... Web of Science

Web of Science is an online database of peer reviewed academic literature.

WTA ..... Willingness to Accept

Willingness to Accept is an economic measure which describes the minimum monetary amount an individual is willing to accept to sell a good or service.

WTP..... Willingness to Pay

Willingness to Pay is an economic measure which describes the maximum monetary amount that an individual would pay to receive a good or service.

Chapter 1 The Challenge of Integrating Marine Cultural Heritage into Marine Resource Management Frameworks

Part 1 Introduction

This research has been developed in the context of a policy vacuum regarding the integration of Marine Cultural Heritage (MCH) into the global governance of the ocean. Coherence between the management of the underwater heritage and the natural environment through integrated marine resource management frameworks such as Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) has been highlighted as a necessary component for the sustainable development of marine resources (Lago, *et al*., 2019; Grilli, *et al*., 2019; Papageorgiou, 2019): however, there are limited examples of this in practice. This research examines the theoretical and practical management of MCH on a global stage, and places onus on the necessity and importance of MCH for the sustainable development of the ocean. Critically, the importance of protecting MCH for society, the natural environment, and the economy are placed at the forefront of this work, and are disseminated into practical recommendations and proposals: for UNESCO's 2001 Convention on the Protection of the Underwater Cultural Heritage; for the European Commission for Marine Spatial Planning; and for the UK's Department for Digital, Culture, Media and Sport.

As we enter the next decade, it is clear that an ambitious change needs to be made to successfully reach UNESCO's Sustainable Development Goals for 2030 (SDGs) (IPCC, 2019). It is essential that both natural and cultural resources need to be integrated more clearly into long term sustainable development plans (Blue and Breen, 2019). Furthermore, the upcoming Decade of Ocean Science (2021-2030) has highlighted the immanency of Blue Growth and the integration of the ocean sciences. With the current trend towards integrated resource management in the ocean, it is imperative that MCH is assessed critically as a valuable resource. The findings of this work will inform management frameworks to better protect and prioritise natural and cultural marine resources in the future.

1.1 Research Aim and Objectives

This research will provide an interdisciplinary investigation of the role of MCH in integrated marine resource frameworks with the aim to bridge the gap between theory and practice by providing recommendations and proposals through multiple levels of governance (international, regional, and national).

Objectives:

1. To critically assess the current context of MCH within integrated marine resource frameworks and policy both within and outside of academia.
2. To determine what factors are limiting the successful management of MCH in integrated frameworks and policy, and use this to determine focussed research questions for the following Chapters.
3. To address the research questions raised in Objective (2) using examples across multiple levels of management, including international governance, regional frameworks and national legislation.
4. To implement the results of Objective (3) into practical recommendations and proposals across multiple levels of governance, including UNESCO's Convention on the Protection of the Underwater Cultural Heritage, the EU MSP Directive, and the UK Government's Culture and Heritage Capital Framework.

1.2 Research Strategy and Thesis Structure

Considering the breadth of fields and topics assessed throughout this work, the aims and objectives above have been used to develop an interdisciplinary research strategy using both qualitative (interviews, workshops, surveys and questionnaires) and quantitative methods (systematic context analysis, latent dirichlet analysis, bibliometrics). This mixed-method approach was chosen as a robust way to comparatively assess multiple different types of data, and to validify results more conclusively than would be achieved using a single method. This method is used to construct a set of targeted research questions, which are developed from the findings of Part One of this thesis, and are presented in Part 2. The following will map out the structure of the thesis by Chapter, covering the individual Chapter objectives and methodologies.

1.3 Part 1: Chapters 2-5

Introduction, Literature Reviews and Research Scope

Chapter 2: An Introduction to Resource Management

Considering the breadth of disciplines relevant to the integrated management of natural and cultural marine resources, it was deemed necessary to provide a comprehensive introduction to the field of resource management as a whole. As such, Chapter 2 provides a brief history of environmental and cultural resource policy with the aim of providing a wider context for the place of MCH, and the associated advancements in management proposed in this thesis. This Section will be referred to later in this work, but is intentionally summarised as to not present *a complete history* which can be found in the works of Dromgoole (2006, 2013) and Sand (2007).

Chapter 3: An Introduction to Integrated Policies and Management

After introducing the history and scope of natural and cultural resource management in Chapter 2, Chapter 3 introduces the context of MCH in integrated approaches to ocean management by assessing overlaps in issues, such as threats, principles, measuring and monitoring, and physical crossovers in space within inter-regional regimes and frameworks. In doing so, a spectrum of integrated governance mechanisms are critically assessed alongside the most recent academic consensus to exemplify the range of management techniques, their successes, and their failures. This Chapter begins by arguing the necessity of integrated MCH governance for sustainable development, followed by the extent, importance, and scope of MCH in integrated frameworks today. The Chapter is categorised into integrated policies such as Blue Growth and the Blue Economy, and integrated management methodologies, such as Integrated Coastal Zone Management (ICZM), Marine Protected Areas (MPAs), Historic Marine Protected Areas (H/MPAs), and Marine Spatial Planning (MSP).

Chapters 4 and 5: Qualitative and Quantitative Literature Reviews

After providing an analysis of the extent of heritage inclusion and management within integrated frameworks, a review of how cultural heritage is represented and conceptualised in interdisciplinary literature and research is carried out in Chapters 4 and 5. In Chapter 4, the various definitions and conceptualisations of heritage are outlined in 14 primary disciplines. In Chapter 5, research gaps and connections are identified to determine the extent of communication and capacity building between disciplines. To do this, the concept of cultural heritage in archaeology compared to the natural and physical environment, law and policy, and

economics is evaluated. Bibliometrics is used to determine the 'closest' and 'farthest' disciplines in terms of both shared themes and collaborative research effort. The extent of integration between the natural science and cultural heritage disciplines are tracked over time and modelled against UNESCO's Sustainable Development Goals, to determine if time sensitive environmental and heritage protection goals could be achieved at the current rates set out research. This aspect of the review indicates key areas for development to be prioritised in the following Chapters: the *Definition, Conceptualisation and Valuation* of heritage in integrated management frameworks.

1.4 Part 2: Chapters 6-9

Case studies assessing the primary research topics established in Part 1: Definition, Conceptualisation and Valuation

In Part 2, the themes of valuation, definition and conceptualisation are explored in three case studies. In Chapter 6, a critical analysis of the Millennium Ecosystem Assessment (MEA) is used to explore the influence of semantics in integrated management frameworks. Data collected with an international biological field school (*Operation Wallacea*) in Chapter 7 is used to assess the connections between the public valuation of heritage, the marine environment and education, and how these concepts may translate into policy. Finally, Chapters 8 and 9 present an extensive analysis of integrated regional law in the UK and Bulgaria, to determine how valuation, definition and conceptualisation can translate into integrated legislative frameworks. These case studies were selected to be included as they best represent the scope of integrated management in practice, and were relevant to the themes selected for further analysis in Part 1 of this thesis. Crucially, these examples represent the spread of integrated management methodologies: in international frameworks (Millennium Ecosystem Assessment), in practice (International Field School: *Operation Wallacea*), and in law and policy (UK and Bulgaria). These examples are examined to provide the scope for implementation across multiple levels of governance, and all three cases present novel findings regarding the themes of MCH valuation, definition, and conceptualisation, as part of the marine environment. The results of these Chapters are disseminated into practical recommendations and proposals in Part 3 of this thesis.

Chapter 6: Case Study: Marine Cultural Heritage in the Millennium Ecosystem Assessment

The Millennium Ecosystem Assessment (MEA) was the first international, integrated framework for the management of both natural and cultural resources. The assessment popularised the use of 'ecosystem services' in resource management, and its methodologies form the basis of most modern integrated frameworks. There have been multiple assessments of the successes and

failures of the MEA over the last two decades, particularly in terms of its management of cultural heritage as an ecosystem service. Chapter 6 provides a novel assessment of the MEA both in terms of focus, and methodology. Although the current consensus in literature is that there is a lack of true integration of cultural heritage within the framework, there have only been anecdotal attempts to determine which aspects of the MEA are lacking. Furthermore, there is no clear understanding of the stage at which the MEA is flawed: in its methodology, or in its implementation. Chapter 6 uses the results of the previous Chapters to form the methodology of this analysis, and assesses the influence of semantics on the management of cultural heritage within this integrated framework. Statistical analysis methods are used for the first time in a review of the MEA, using textual analysis of both the MEA methodology and its associated global reports to determine whether the conceptualisation and definition of cultural heritage as an ecosystem service is consistent between the framework, and its implementation. The findings of this Chapter are used to explore the implications of semantics in practice, and the connections between framework methodologies and implementation capacity. The information collected is used in Part 3 of this thesis: bridging the gap between theory and practice with integrated recommendations and proposals.

Chapter 7: Case Study: Lessons on MCH Awareness, Valuation, and Policy in a Biological Field School

Chapter 7 details the data collected on a field season in Dominica, the Caribbean, with the biological field-work charity Operation Wallacea. Data was collected while working as a reef-ecology lecturer for two months on the project. As part of this work, the author wrote and conducted a field-course on 'Marine Cultural Heritage as part of the Marine Environment' for the students taking part in the field school, and the local community. Before and after the course, students took part in a social valuation project, which aimed to value the perceived importance of heritage compared to the natural marine environment. 136 surveys and questionnaires were collected from students. The results shed light on awareness and understanding of MCH in young adults, and the perceived value of heritage and the marine environment before and after education. This was the first time that a course on heritage was included in an international biological field school, and provides a unique insight into how heritage is perceived by young adults. Furthermore, this study assessed the importance of MCH education not only for the sake of heritage protection, but for the overall protection of the marine environment, and provides evidence and incentive for further capacity building between MCH and the management of the natural marine environment.

Chapters 8 and 9: MCH Valuation, Definition and Conceptualisation in the National Legislation of the UK and Bulgaria

A comparative case study of the integrated management of MCH in the UK and Bulgaria is conducted in Chapters 8 and 9. The Bulgarian Black Sea is one of the only examples of long term integrated marine management in legislation and provides a novel example of integrated policy in practice through the practitioners that use it. Data was used from three consecutive seasons with the Black Sea Maritime Archaeology Project (2017-2019) in collaboration with the National Institute of Archaeology with Museum (NIAM), the Centre for Underwater Archaeology Sozopol (CUA) and The University of Southampton's Centre for Maritime Archaeology (CMA), to understand stakeholder and practitioner perspectives regarding which factors have facilitated and hindered the management of MCH as a marine resource in the Black Sea. Comparatively, the UK are considered a leader in the field of Maritime Archaeology, yet have been criticised for out-dated and inconsistent MCH legislation. Recently, the UK have made significant moves to integrate the protection of MCH as part of the marine environment in planning and development legislation, placing the country at the forefront of integrated ocean management. Multiple interviews with MCH practitioners and the diving community in the UK are used to investigate the extent and success of MCH integration with the marine environment, and are critically analysed alongside the Bulgarian case to provide an example of two alternative methods of integrated ocean management in legislation and policy. The themes of valuation, definition and conceptualisation are used as comparative tools to drive the analysis.

1.5 Part 3: Chapters 10 and 11

Dissemination: Bridging the gap between theory and practice

Chapter 10: The Management of MCH in Marine Spatial Planning (MSP) Frameworks, and the role of UNESCO's Convention on the Protection of the Underwater Cultural Heritage (2001 Convention)

An extensive study of the role of MCH in MSP aims to expand upon the limitations exposed in previous Chapters, and discuss ways in which these issues may be overcome in future MSP implementation. As a result of this work, a methodology is presented based upon the current EU MSP Implementation Methodology, and responsibilities are placed upon the 2001 Convention, structured as an extended response to the most recent 2001 Convention Evaluation (2019).

Chapter 11: Final Findings and Conclusions

Finally, Chapter 11 re-poses the research questions developed at the beginning of this thesis, and uses them as a tool to provide practical recommendations for the integration of MCH into integrated marine management frameworks. The results of each Chapter are put into relevant contexts, and final conclusions are disseminated into targeted, practical results aimed at multiple levels of MCH governance.

Appendix A: Proposal for the establishment of an 'integrated indicator' for the UK's Department for Digital, Culture, Media and Sport's (DCMS) recent 'Culture and Heritage Capital Framework'

The UK's DCMS has recently released a call for research regarding the proposed Culture and Heritage Capital Framework (DCMS, 2021), a management structure which aims to place an economic value on culture and heritage resources. Such structures already exist for physical capital, describing knowledge and skills provided by people within society (Becker, 1962), social capital, which represents networks and norms shared by society (Dinda, 2008), and natural capital, which describes the environmental and ecological processes which society rely on for development and well-being (Jones *et al*., 2016). This proposal has the potential to significantly impact cultural heritage management decision-making and best practice in the UK, placing culture and heritage on an equal and crucially, comparable footing to that of the Natural Capital Framework, for which the first UK Roadmap was released in 2012 (Office for National Statistics: UK Government, 2012).

The recommendations presented in this Section comment on the DCMS's Research Topic 6.3: *dealing with overlaps between natural capital and culture and heritage capital*. The results of this thesis are used to develop a proposal for an 'integrated indicator', which assesses the natural and cultural values of mixed sites that display both ecological and cultural importance; rather than separating these interconnected values to avoid 'double-counting', which is what is currently proposed (DCMS, *Research Topic 6.3*, 2021).

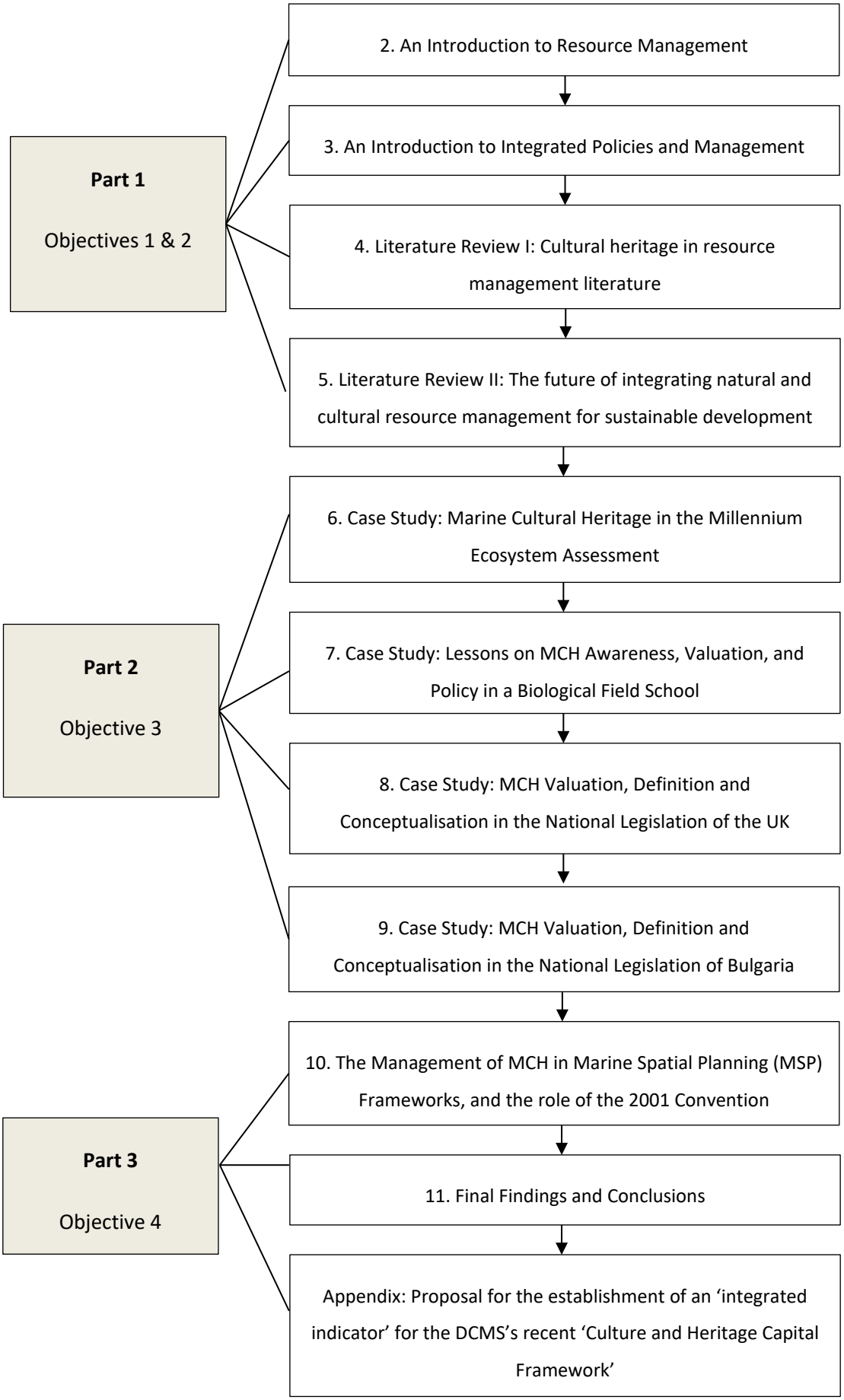


Figure 1: Summary of thesis structure

Chapter 2 An Introduction to Resource Management

2.1 A Brief History of Resource Management

Natural and cultural resources are fundamental sources of human well-being. Natural or environmental resources are derived from the environment and produce largely material and renewable benefits to humans, such as energy and food. Cultural resources are defined as all forms of social and humanitarian concepts, issues and heritage which provide largely non-material, non-renewable benefits to humans, such as identity, culture and well-being. Both resources are valued by their economic, social and cultural benefits to humans (Green, 2008; Mitchell, 2013).

The concept of 'resources' and 'resource management' in public policy was conceived as an answer to resource 'finiteness': the recognition that resources are limited. As such, most resource management frameworks are based upon finiteness as the main driver of protection and as a measure of effectiveness. The first developments of resource policy were based in environmental policy. As often as we see the concept of finiteness entangled with resource management we see 'resource' synonymised with 'natural environment', the roots and methodologies of which we may track from as early as ancient Greek systems, through to resource, environmental and urban management policies in the 21st Century (Bromley, 1991).

The case of Ancient Greek forest harvesting is the earliest example of the resource policy cycle which is represented throughout history: reactive policy implemented to combat the overexploitation of a resource (Sallares, 1991). This example represents the most fundamental cycle of classic resource management (Figure 2): timber was the principle material used for both construction and fuel, and as the city states of Ancient Greece developed the availability of timber decreased. Prices increased and devastating levels of inflation inundated late Antiquity, the effects of which have been discussed in academic literature from economics to archaeology (Hughes, 2013).

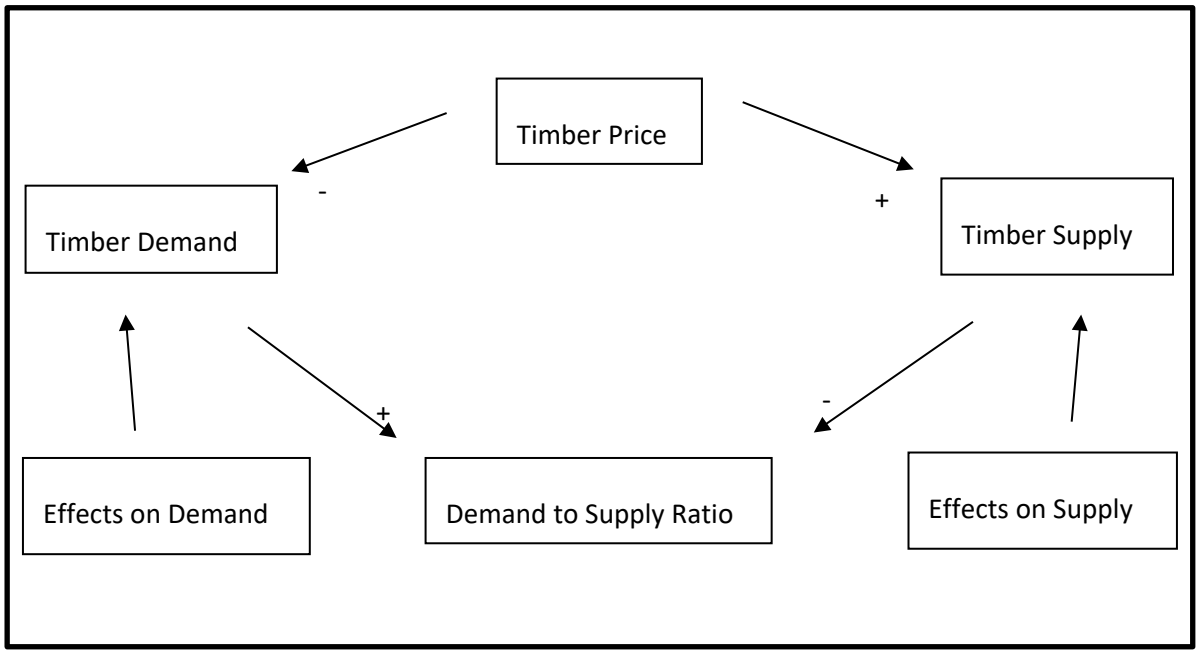


Figure 2: Resource Management Cycle

In feudal Europe, the development of resource policy was fuelled by social elite. Hunting, fishing and foresting areas were preserved for game and so became Europe's first protected areas. The environmental benefits of medieval hunting preserves are largely questioned, but their influence in modern resource policy are nonetheless extensive. The bases of these laws can still be seen in most forest management frameworks today (Hoffmann, 2014).

As the development of urban and subsequent industrial developments in the 17th-20th centuries advanced, urban management became a sub-section of resource management. Within this bracket Europe's first large-scale sewer system was implemented in the late 17th century in Paris, and sanitation and housing public policies were then mirrored throughout Europe under the umbrella term of resource management (Shulman, 2017). Urban management is still a large bracket of resource management today.

Up until the 19th century, resource policy was largely engaged in the tangible use of natural resources such as game or timber. Arguably, the first resource policy valued for public enjoyment was the U.S.'s Yellowstone National Park. Its adoption in 1872 coined the creation of a public 'pleasuring ground' and largely popularised *public* valuation and socio-environmental connections as a meaningful measure of importance and effectiveness (Rettie, 1996). Despite this, the 'public ground' was in many cases still only accessible to the elite, either through buying access or by residing within the surrounding area, an issue which is still relevant today (Keiter, 2013). Later, this method of valuation has also been referred to as 'cultural valuation' which has been used throughout literature and law often interchangeably with public valuation. This definition has often been confused with intangible and tangible heritage valuation, the various definitions and

misuse of 'culture' will be discussed in greater detail in Chapter 4. Nonetheless, public or cultural valuation has proven an effective and integral part of modern resource management, and is examined further in Chapter 7.

The next significant development in resource management policy was a reaction to the increasing concerns regarding the effects of pollutants (particularly agricultural) on human health (Winter, 1997). Various diseases caused by harmful chemicals in pesticides in the 1950s and 1960s resulted in the detailed regulation of chemicals used in agriculture internationally. Concerns expanded to the effects of pollutants on the natural environment and protective policies with specific regard for environmental resources spread throughout Europe, America and parts of Asia (Winter, 1997). Clean Water and Clean Air Acts such as these were among the first to detail maximum emissions and minimum environmental quality levels, which can be related directly to the frameworks for the sustainable development of environmental resources in the 21st century (Bulleit, 2000).

In 1971, UNESCO's Man and the Biosphere Program (MAB) aimed to explore the relationships between humans and the environment to increase environmental sustainability (UNESCO, 1971). This represents one of the first movements towards recognising the complex socio-environmental relationships and associated impacts of both natural and cultural resources. The programme's most recent strategy (2015-2025) places the MAB within the context of the Sustainable Development Goals (2030) (SDGs), and contains a set of actions for the effective implementation of the SDGs within the MAB programme (UNESCO, 2015c).

The concept of Sustainable Development in the 1980s represents a key shift in resource policy rationale. The aim of Sustainable Development is to grow industry and conserve resources for future generations, with the key moral that by conserving both direct and indirect industry, resource growth will become more successful. As this is based on the economic valuation of resources by industry, the responsibility of effective resource policy-making thus surpassed government and became the handle of private industry and NGOs. The popularity of bottom-up and grassroots management frameworks grew as part of this domain (Du Pisani, 2006).

A proliferation of resource management frameworks developed from the 1980s onwards, primarily conceived by both NGOs and government advisors, then adopted into policy and other legal instruments. The regional differences between integrated resource management frameworks are analysed in Chapter 3.

As Sustainable Development programmes became popular in the lead up to UNESCO's 2030 Agenda for Sustainable Development in 2015; as did the popularity of Ecosystem Services (ES) methodologies. In 2010, the Intergovernmental Science-Policy Platform for Biodiversity and

Ecosystem Services (IPBES) was put forward for consideration by states. The resolution was then adopted in 2012 and collaborated a year later with the United Nations Environment Programme (UNEP). The IPBES framework works with UNESCO to fully integrate environmental resources within themselves and with policy by creating a socio-ecological model outlining the complex interactions between the natural world and human societies (IPBES, 2019a).

2.1.1 Marine Resource Management

Marine resource management developed at a different rate to terrestrial resource management. Degradation of productive ocean ecosystems in the last two centuries (particularly the extensive over-exploitation of fish stocks) inspired the sectoral marine management approaches of the 20th century, the origins of which may be traced back to Feudal European fishing laws. Marine resource law and policy developed in reaction to two major conflicts: the overexploitation of ocean resources, and the tension between coastal nations' rights to resources (Aswani *et al.*, 2018).

Jurisdictional conflict began to affect the overexploitation of marine resources in 1945, when the US Government unilaterally extended jurisdiction over all natural resources on its continental shelf. This methodology set off a suit of similar acts, such as in Argentina in 1946 which claimed the surrounding intercontinental shelf and epicontinental sea. Chile, Peru and Ecuador followed in 1947 and 1950 by asserting sovereign rights over a 200-mile zone around their coastlines. Following WWII; Egypt, Ethiopia, Saudi Arabia, Libya, Venezuela and various Eastern European countries claimed a 12-mile territorial sea. Indonesia and the Philippines asserted right to dominion of the water surrounding the entirety of their coastlines and associated islands. In 1970, Canada asserted its right 100 miles from the shoreline. North Atlantic fishing rights were contested for between the UK and Iceland for many years, resulting in the UK conceding to a 200 nautical mile Icelandic exclusive fishery zone in 1976. Throughout this time, the North Sea was famously fought over by Britain, Denmark and Germany for its oil rich continental shelf (Long, 2007).

The United Nations Seabed Committee was established in 1967 to combat increasing conflict over the sovereignty of the seabed, alongside the Stockholm Conference on the Human Environment (Oda, 1972). The first steps of the committee were to apply a treaty against nuclear weapons on the seabed and to declare all marine resources beyond the limits of national jurisdiction were 'the common heritage of mankind'. International conflict regarding the use and ownership of marine resources led to a global call for a comprehensive treaty for the ocean, which was answered in the

Third United Nations Conference on the Law of the Sea (UNCLOS) in 1973 and was finally adopted as the United Nations Convention on the Law of the Sea (LOSC) in 1982.

In general, the collection of international marine laws which govern state activities is often referred to as the 'law of the seas' (separate to that of the UN Law of the Sea Convention). The UN Convention on the Law of the Sea (UNCLOS) is the primary agreement dictating the conduct of coastal and maritime states by defining rights of states parties to territorial waters, and the seabed and its resources beyond national jurisdiction as 'the common heritage of mankind'. The Convention obliges states to preserve ocean resources and cooperate with other states. Three UNCLOS negotiations took place over a period of fifteen years, of which the final UNCLOS negotiations (UNCLOS III, 1973) was adopted in 1982, and is commonly referred to as the 'LOSC'. The final Convention is argued to be the most complex and intricate agreement ever negotiated, and is one of the most fully subscribed (Zacharias and Ardron, 2020).

During the time in which the LOSC was being negotiated, various regional efforts were put in place to manage the coastal marine resources that had been declared within national jurisdiction. The fragmented nature of this early legislation was largely a result of reactive and supplementary policy making as the dependence of coastal communities on ocean ecosystems was increasingly being recognised and fought over (Dromgoole, 2006). The effectiveness of these methods was questioned towards the end of the century (Sorensen and McCreary, 1990) and a more interconnected proactive legislation system was suggested: Integrated Coastal Zone Management (ICZM).

ICZM accounted for the interdisciplinarity and complexity of ocean systems and used both human and physical systems to create a cohesive framework for managing the multifaceted relationships between resources and stakeholders. The evolution of ICZM was preluded with various coastal zone management acts (e.g. the Californian Coastal Management Act 1969 and the US Federal Coastal Zone Management Act 1972; later adopted into UK environmental terminology as 'Coastal Zone Management', and finally termed Integrated Coastal Zone Management in the early 1990s) which used incentive-based legislation to support the development of state management frameworks which utilised research, training, education and policing measures as tools for more effective management. These acts encouraged the development of various international coastal zone management programmes (Zacharias and Ardron, 2020).

Internationally, the effectiveness and methodologies of Coastal Acts were widely debated in literature (Fletcher and Potts, 2008). Conflict in the UNCLOS negotiations mirrored the initially slow adoption of coastal zone management methods outside of the US. In the UK, a landscape protection version of coastal zone management called 'heritage coasts' evolved as a reaction to

issues associated with public access to land (Carter, 1992; Fletcher *et al.*, 2014). This was later supported by the National Trust's Enterprise Neptune Programme which was a key figure in European coastal management development (Boniface, 1996). Forms of coastal zone management frameworks were adopted more rapidly throughout South-East Asia, the Mediterranean and South America.

Arguably, the defining moment in the evolution of marine resource management was the Sustainable Development initiative conceived in the United Nations (UN) World Commission on Environment and Development Report 'Our Common Future' (the Brundtland Report), and successfully promoted in the UN Conference on Environment and Development at Rio de Janeiro in 1992 (Grubb *et al.,* 2019). Agenda 21 provided an action plan for the sustainable development of ecological, economic, and social structures, and placed integrated coastal zone management at the centre of sustainable ocean management, in alignment with the LOSC. In this case, emphasis was put on the integration of ocean sectors and legislations for the effective protection of ocean resources, alongside the use of Environmental Impact Assessments, capacity-building, policing, long term monitoring and data management (Grubb *et al.,* 2019).

The Sustainable Development concept catalysed large-scale incorporation of ICZM methodologies internationally. Following the 1992 Earth Summit, the UN was one among many who provided international and regional guidelines and evaluations optimising the use of ICZM frameworks in line with the LOSC. The general guidelines for ICZM were adapted from reports from the World Bank (1993: The Noordwijk Guidelines for Coastal Zone Management), the United Nations Environment Programme (UNEP, 1995), the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP, 1996) (which coined ICZM), the Organisation for Economic Cooperation and Development (OECD, 1998), and the Worldwide Fund for Nature and International Union for Conservation of Nature (WWF and IUCN, 1998).

During the turn of the Century the EU developed a more generic environmental legislation which gave little specificity to the coast. As a branch of ICZM 'Land-Sea Interactions' (LSI) projects developed in Europe to understand the interconnectedness of ocean resources and humans, particularly through anthropological effects such as pollution from pesticide run-off or oil spills (Kidd, 2018). An example of this is the 'Land-Ocean Interactions in the Coastal Zone' (LOICZ) project established in 1993. Initially, the research scope of LOICZ was to understand the biophysical fluctuations of the coastal zone. More recently, the project has integrated social, political, and economic sciences to understand complex human relationships with ocean resources and has used this to produce data that has become key to ICZM frameworks.

The turn of the century in the UK was marked by debate between practitioners, government, NGOs and academics as to the proper handling of ICZM (Ballinger, 1999), which facilitated the EU Demonstration Program on ICZM (1996-1999) and a version of ICZM framework named the Integrated Coastal Zone Management Recommendation (2002). The ICZM Recommendation encouraged member states to incorporate ICZM type methodologies into their regional resource management frameworks (McKenna et al., 2008).

Potentially due to the conflict the ICZM Recommendation was born under, the academic consensus suggested the instrument was a weak movement towards an inevitable marine resource management framework, which did little to effectively protect European coastal zones (Burbridge and Humphrey, 2003). Several of the few states that adopted ICZM strategies as a result of the Recommendation since discarded them. The ICZM Protocol to the Barcelona Convention (2008) represents the first significant European shift towards adopting integrated marine resource management. In the UK, the implementation of ICZM has been complex due to the already intricate management of coastal areas around Britain. Each state has implemented a differing version of ICZM, on which the most recent analysis stated, 'a lack of strategic overarching national approach' (ICZM, 2019).

Marine Spatial Planning (MSP) first evolved in the early trials of ICZM in the 1970s and throughout the UNCLOS negotiations in the 1970s and 1980s, before developing into an individual field of global governance in 2006 when UNESCO held the first international MSP workshop. In 2009, MSP was adopted by a number of states as a result of the UNESCO/IOC report: Marine Spatial Planning: a step-by-step approach towards ecosystem-based management (de Vivero *et al.*, 2009). In 2014, the EU Marine Spatial Planning Directive became a key reference point for marine resource management in Europe.

MSP was developed to extend ICZM seawards and landwards and was presented as the missing link for integrated management from 'coastal watersheds to marine ecosystems' (Directive 2014/89/EU, 2014). As part of this, Ecosystem-Based management frameworks were incorporated into marine resource management strategies. The success of MSP in Europe is now extending to other parts of the world, as the UNESCO and European Commission (2017) continues to promote the use of MSP internationally. As a result of the successes with MSP, ICZM is often seen as a branch of MSP, rather than the other way around. LSI frameworks are a large influence of MSP, which focus largely on the relationships between bio-geochemical processes and socio-economic activities. Recently, there has been a movement towards understanding LSI from a more social perspective, which has been partly achieved by the integration of Ecosystem Services perspectives through Ecosystem Based Management (Kidd *et al.*, 2019).

2.1.2 Cultural Heritage Management

As defined by UNESCO, cultural heritage may include several categories. Intangible cultural heritage (e.g. traditions, rituals) and tangible cultural heritage; which may be moveable (such as paintings or manuscripts), or immoveable (such as monuments and archaeological sites). Furthermore, natural heritage may include sites with cultural aspects such as cultural landscapes, or geographical, physical, or biological formations (Kurin, 2004; Ahmad, 2006; Hoffman, 2006; Vecco, 2010; Labadi, 2013).

The definition of cultural heritage has been open to interpretation throughout history, exemplified in the vast definitions of 'cultural resources' in literature compared to 'biological resources' over time (Chapter 4). As such, heritage management has evolved over time alongside political, cultural and social identities and movements. For example, in Europe the display of cultural artefacts in museums developed from Cabinets of Curiosity, which became popular during the Renaissance onwards. Cabinets were the collections of private wealthy collectors showcasing rare and often exotic materials, made primarily to showcase to other similarly prominent individuals as a demonstration of socioeconomic status (Boëtsch and Blanchard, 2014). Eventually, many of these cabinets were opened to the public for a small fee - the first being an English cabinet called Tradescant's Ark in 1630 (Garwood, 2014). The private collection of antiquities is still maintained in various cultures, sparking debate around the ethics of heritage ownership. Various countries have created laws to prevent this, the most extreme of which declare private ownership illegal (Bateman *et al.,* 2001).

Historically, the fiscal prerogatives towards cultural heritage during the 16th and into the 17th centuries had been largely focussed on the conversion of gold and silver from antiquity into profit, such as was commonplace in the Americas by the Spanish Monarchy in the late 16th century (Kuutma, 2009). During the mid-1500s in England, the 'King's Antiquarian' John Leland carried out a variety of cultural heritage studies across England under King Henry VIII, and his extensive catalogues have provided the materials for subsequent antiquarians of English history. This marks the first European catalogued examples of the collection of antiquities for *cultural value* rather than monetary value and represents a growing sense of nationhood in this time-period (Parins, 2002).

The first official Statutory Act concerning the protection or ownership of cultural heritage was the *Swedish Royal Proclamation* of 1666, which declared all objects from antiquity as the property of the crown (Cleere, 2008). This was emulated throughout Europe in the following century, prompted either by the destructive methods of looters or as a method to enforce crown ownership in the name of state heritage protection.

The first British Act of protection for tangible cultural heritage was the *Ancient Monuments Protection Act* 1882 (Brown, 1905). Following this, protective heritage legislation spread throughout Europe, Asia, Africa and the Americas. This movement towards protection and preservation was a key moment in cultural heritage management history, but a lack of heritage practitioners rendered such legislation challenging to manage. Authorisation for fieldwork was limited to a few key figures with finite teams such as General Pitt Rivers in the UK, Worsaae in Denmark and Auguste Mariette in Egypt (Brown, 1905). Furthermore, most legislation at this time still used heritage ownership, and few states introduced policies with an awareness of public interest or academia.

The destruction of WWII acted as a catalyst for mass protection of cultural heritage. Consequently, the post war economic boom fuelled a significant advancement in cultural heritage management focussed on archaeological salvage. In 1954, *The Hague Convention on the Protection of Cultural Heritage in the Event of Armed Conflict* was created and largely accepted throughout Europe. As it was implemented as a reaction to the devastating effects of war, the management strategies were directed towards salvage and emergency excavations. This reactionary movement resulted in fast, large-scale protection of cultural heritage throughout Europe (Toman, 2017).

Controversially, to jurisdictionally define culture the 1954 Convention used the phrase 'Cultural Property' as a synonym for 'Cultural Heritage', allocating heritage to a certain party or 'owner'. In this context, the definition may be considered an efficient method to protect war torn heritage considering the vast material destruction this Act was aimed at. Unfortunately, this concept of cultural heritage was popularised around Europe and persisted with negative affect for several years later (Toman, 2017). Equally, the Act also included the definition of 'property of great importance to cultural heritage' (UNESCO, 1954) rather than of monetary value, introducing a recognition of *significance* to cultural law rather than economic value. This represents the first recognition of the temporal significance of passed-down culture included in fiscal law (Forrest, 2002).

The development of new highways, property development, mineral extraction, agribusinesses and natural resource exploitation in the 1960s and 1970s intensified the pressure on historic site protection. Alongside these advancements, an increase in affluence and a boom in cultural heritage tourism created new problems for heritage management, as metal detectors and underwater breathing apparatuses were available to the public and enabled large scale looting (Oxley and O'Regan, 2001).

The economic and technological developments of this time gave rise to a significant increase in the theft and exchange of archaeological materials from museums and archaeological sites. This incentivised the creation of the 1970 *UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property* (UNESCO, 1970). To date, the 1970 Convention has been ratified by 141 states to prohibit the transfer of archaeological material across borders throughout Europe (UNESCO 1970 Convention, 2021).

Throughout the 1960s and 1970s the degenerative impact of accelerated urban developments provoked the creation and ratification of various international legislative acts advised by UNEP. As a result, almost every European country enacted a new protective cultural heritage antiquities legislation. Furthermore, the 1972 *UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage* was the first document to use 'cultural heritage' as a collective term, rather than in association with 'cultural property'. This document solely focussed on 'immovable culture' but nonetheless popularised the collective definition of 'cultural heritage' for subsequent legal documents (UNESCO, 1972). Unfortunately, the definitions outlined in the 1954 Hague Convention still resonate with various cultural heritage laws today; the definitions of 'cultural heritage' and 'cultural property' are inconsistent and are often used interchangeably in legislation (Green, 2008).

Although few studies have looked at the effectiveness of the international heritage frameworks, the 1972 World Heritage Convention has received the most attention, largely considering it protects both the natural and cultural heritage (MacKintosh, 2018). Work investigating the effectiveness of the 1972 Convention has questioned the context of 'outstanding universal value' as a valuation tool for both natural and cultural heritage, and how this balances and weighs between natural and cultural sites. Furthermore, how this relates to the sovereignty and protective responsibilities of territorial states, particularly regarding the List of World Heritage in Danger is unclear and has led to a lack of responsibility placed on management and protection, and the overall role of the World Heritage Centre, and in turn, the associated World Heritage Fund (Francioni and Lenzerini, 2009).

In 2003, the role of intangible heritage as a human right and for sustainable development was recognised and protected as part of the 2003 *UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage* which built upon and linked the morals of the *Universal Declaration on Human Rights of 1948*, *the International Covenant on Economic, Social and Cultural Rights of 1966*, and the *International Covenant on Civil and Political Rights of 1966*. This Convention also specifically mentioned the 'deep-seated interdependence between the intangible cultural heritage and the tangible cultural and natural heritage' (Bonn *et al.,* 2016). The 2003 Convention

was then elaborated to develop the 2005 *Convention for the Protection and Promotion of the Diversity of Cultural Expressions*.

A decade after the *Convention for the Promotion of the Diversity of Cultural Expressions*, there was a key shift in UNESCO's Culture Sector. International funds, collaboration and integration was achieved through the creation of various new legal instruments dedicated to cultural heritage as damages to intangible and tangible cultural heritage in Africa and the Middle East incited the creation of the Heritage Emergency Fund, which drew together immovable cultural and natural heritage, movable cultural heritage, cultural repositories, Marine Cultural Heritage, intangible cultural heritage and the diversity of cultural goods, services and expressions by providing efficient humanitarian action to vulnerable sites. The Fund marks a significant movement in cultural heritage management by strengthening the ties between the Conventions and Member States to better protect heritage as a human right, in all forms.

To further encourage integration between Member States, Conventions and the practitioners tied to UNESCO's conventions, the 2015 *Recommendation concerning the Protection and Promotion of Museums and Collections* was adopted. The Recommendation was created as a tool to implement current principles from the bottom-up; an instrument that was long called for considering the last instrument for museums was adopted in 1960 (Mairesse, 2016).

Crucially, UNESCO's 2030 Agenda for Sustainable Development was adopted by all UN Member States in September 2015. Culture and heritage are threaded throughout most of the 14 Sustainable Development Goals (SDGs), with the aim to integrate key humanitarian issues such as quality education, sustainable cities, the environment, economic growth, sustainable consumption and production patterns, peaceful and inclusive societies, gender equality and food security (UNESCO, 2019b). Furthermore, the integration of cultural Conventions with the SDGs has acted as a catalyst for integrating the Conventions within themselves, and with scientific and natural Conventions.

In 2021 there are now nine acting UNESCO legal instruments dedicated to cultural heritage. Culture in Emergencies, World Heritage, Armed Conflict and Heritage, Illicit Trafficking of Cultural Property, Marine Cultural Heritage, Intangible Cultural Heritage, Diversity of Cultural Expressions and Museums are all represented.

2.1.3 Marine Cultural Heritage

Similarly to that of cultural heritage, Marine Cultural Heritage may encompass tangible and intangible, moveable and immoveable structures, cultures, beliefs, archaeological sites, and

seascapes. Although commonly synonymised with shipwrecks, MCH may also include prehistoric landscapes such as Doggerland (Gaffney et al., 2007), indigenous intangible heritage (Jeffery and Parthesius, 2013), sunken aircraft (Forrest, 2003), and submerged sites (Masters and Flemming, 1982). The UNESCO Convention on the Protection of the Underwater Cultural Heritage (hereby referred to as the 2001 Convention) defines MCH as:

> 'all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as: (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; and (iii) objects of prehistoric character.'
>
> *(UNESCO Convention on the Protection of the Underwater Cultural Heritage, Art.1*)

Marine Cultural Heritage management and the morals of historic underwater salvage have evolved alongside, and in some cases in parallel to the development of maritime archaeology as an academic discipline. The earlier roots of the discipline are often accredited to the antiquarian traditions of the 18th and 19th centuries. In particular, the brothers John, Charles and Anthony Deane, who developed helmet diving equipment for the salvage of shipwrecks, shifted their focus from salvers to maritime antiquarians after becoming interested in the historic, rather than the monetary value of the wrecks they were salvaging. The 19th and 20th centuries saw the discipline evolve further, with underwater excavation taking place for research, preservation and educational reasons, thus defining the modern preservationist morals recommended in international conventions such as the 2001 *Convention on the Protection of the Underwater Cultural Heritage* (Broadwater, 2002).

Although archaeological best practice works alongside such preservationist principles, the salvage of underwater heritage for profit continues to occur internationally. Although a network of global MCH governance is beginning to become a reality, there are still various cases of historic salvage that go against the international standards of archaeological excavation. Furthermore, issues with inter-regional cooperation, a standard theme in most modern MCH governance, continues to prove challenging (Martin, 2021).

In 1972, the *Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction* (the Sea-Bed Committee) established a legal regime for the seabed in which 'Archaeological and Historical Treasures' were included in the final remit. Shortly after, with much negotiation, MCH was integrated into *The United Nations Convention on the Law of the*

Sea (III) (1973); initially within the Deep Seabed regime, due to its integration into the Sea-Bed Committee's rhetoric only a year before. Later, it was recognised that MCH should be addressed within other zones such as the continental shelf and EEZ, resulting in two, separate regimes for the protection of MCH (Dromgoole, 2013).

The question as to if MCH should be protected as part of terrestrial archaeology or as a separate entity was first catalogued during the negotiations of the 1982 *United Nations Convention on the Law of the Sea* (UNCLOS). Consequently, in 1992 the *European Convention on the Protection of Archaeological Heritage* was revised to include underwater heritage within its margins (Council of Europe, 1992). This followed the European Council's rejection of the 1985 Draft *European Convention on the Protection of Marine Cultural Heritage,* and re-established the definition of MCH management as an extension of terrestrial cultural heritage management (Evans *et al.*, 2010).

The protection of MCH remains within the greater scope of the LOSC, however it is argued that the inclusion is nominal as the circumstances were a 'last minute compromise' between representatives from Greece and the US (Dromgoole, 2006). Described as 'low priority' in the UNCLOS (O'keefe, 2014), it's inclusion within the final negotiations in 1973-1982 largely failed to represent basic heritage principles. Much criticism surrounded various aspects of the agreement, in particular, the lack of a duty to report archaeological material, the 'general and vague' reference to 'all real significance' as a method for identifying MCH, the affordance for the protection of MCH beyond territorial limits - widely seen as an 'invitation to looting' as it encouraged unregulated recovery of MCH, and the absence of a body by which to regulate and administrate MCH management. As such, the implementation of MCH provisions (Art. 149 in Parts XI (The Area), and Art. 303 in XVI (General Provisions)) were left to individual states, which was deemed unpractical, and unlikely. Furthermore, wrecked ships and their cargos were specifically mentioned within the commentary as *not* included within the remits of the LOSC, and so in turn were not considered a natural resource (LOSC, Article 68, 1956). This statement had significant impact on the future of international MCH protection (Dromgoole, 2013).

Overall, the LOSC is viewed to be an incredibly successful international convention considering the scope and complexity of the issues it encompasses (Zacharias and Ardron, 2020). In answer to the limitations of the LOSC for the protection of the MCH, UNESCO's *Convention on the Protection of the Underwater Cultural Heritage* was adopted in 2001 and came into force in 2009. The convention built upon the principles of the ICOMOS Charter on the Protection and Management of the Marine Cultural Heritage (1995) and the UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (1970).

The treaty aims to 'ensure and strengthen the protection of Marine Cultural Heritage…for the benefit of humanity', with the principle that 'states parties shall cooperate in the protection of Marine Cultural Heritage' (Article 2.2). The main principles of the 2001 Convention are as follows:

1. Obligation to preserve Marine Cultural Heritage

   States parties are encouraged to preserve the MCH according to their individual capabilities. Scientific research and public access are key aspects of this principle.

2. *In Situ* preservation as a first option

   Although *in situ* preservation in its original position on the seafloor is preferred as a the first option before engaging with other activities, the recovery of artefacts is permitted for the purpose of significant contribution to preservation, protection, or research.

3. No commercial exploitation

   Commercial exploitation of heritage for financial gain is against the ethics of all heritage professionals. This does not relate to archaeological research or tourist access.

4. Training and information sharing

   States parties are encouraged to cooperate in exchanging information, capacity building and training in underwater archaeology. It is also expected that public awareness regarding the value and importance of MCH is promoted.

Main Principles of the 2001 Convention (Art. 1)

The 2001 Convention itself is subject to significant critique and although international ratification has increased over time, it remains fragmented (UNESCO IOS Evaluation Office, 2019). Maritime superpowers such as the UK and US continue to abstain from the convention, due to various reasons. Initial issues within the Convention itself included the definition of MCH: the lack of significance criterion is suggested to be exceedingly broad, and so unfeasible for most maritime states. Furthermore, questions as to the significance period of over 100 years old, and the definition of 'cultural, historical or archaeological character' has resulted in a large consensus of critics suggesting the 2001 Convention is too vague, and at best, over-inclusive (Dromgoole, 2006).

Recent investigations of the effectiveness of the 2001 Convention have determined that there is a low level of compliance across various factors, particularly regarding the state cooperation system (MacKintosh, 2018). The complexities of determining and protecting the multiple MCH values

between states and stakeholders (Martin, 2019), alongside a lack of regional capacities (MacKintosh, 2018), has been suggested as a significant factor limiting the international reach and legal effect of the Convention. Finally, ambiguities of Articles (9 and 10) within the Convention have been suggested to be interpretable in favour of coastal States, thus increasing territorialisation of the EEZ (MacKintosh, 2018). Overall, recent evaluations (external to the convention) have largely questioned the extent and reach of the international management of MCH as part of the global ocean, particularly regarding increasing threats from commercial development. Transnational approaches across multiple levels of governance (global-regional-national-local) are likely to enhance the protection of the MCH as part of the wider ocean (Martin, 2019). More comprehensive reviews of the LOSC, the 2001 Convention and the relationship between them can be found in the extensive works of O'keefe and Dromgoole. An assessment of the role of the 2001 Convention in integrated marine resource management is undertaken in Chapter 10.

2.2 Conclusions

This introduction has aimed to provide a broad context for the themes discussed in the following Chapters. The primary reasoning for the information included is to provide evidence for the interconnected development of both natural and cultural resource management, which will be further exemplified and discussed in Chapters 3, 4 and 5.

The following Chapter will build upon the history and context by providing an in-depth critical review of the current state of integrated marine frameworks, management, and policies, which govern both the natural environment and cultural heritage. An extensive review of integrated marine management such as this does not yet exist in literature, particularly regarding the inclusion and role of MCH within these frameworks. As such, the following Chapter will build upon the base provided in Chapter 2, to provide critical insights into the body of literature surrounding this field, juxtaposed with quantitative reviews of published data to exemplify the current extent of MCH inclusion within integrated marine management.

Chapter 3 An Introduction to Integrated Policies and Management Governing MCH

3.1 Introduction

Global MCH governance is more connected now than it has ever been before. Ratification of conventions such as the 2001 *Convention on the Protection of the Underwater Cultural Heritage* is increasing, and multiple integrated marine management frameworks are increasingly incorporating MCH into their scope (see Article 13(2) of the 2008 Protocol on Integrated Coastal Zone Management in the EU, and Trakadas *et al.,* 2019). Despite these developments, the overall ratification rate of the 2001 Convention remains relatively low (Gärtner and Obermann, 2020) and MCH continues to face multiple management challenges dictated by the unique characteristics of its nature. 20th century threats to the underwater heritage such as the commercial salvage of historic sites, looting, and vandalism are still prominent today, due to trans-boundary issues such as monitoring, regulation and policing (Martin, 2021). Offshore and coastal development continues to bring new challenges and conflicts to the management of MCH, including from industries such as fishing, farming and energy development (Evans et al., 2009). Furthermore, environmental issues such as changes in ocean temperatures, coastal erosion, sea-level rise, ocean acidification and changing weather patterns are affecting the degradation of MCH, and in doing so are changing the ways in which MCH is researched, managed and prioritised into the future (Harkin *et al.*, 2020).

Over the last decade, the sustainable development and management of the ocean has become an international priority. In 2012, UNESCO provided development goals and targets for the ocean in Sustainable Development Goal 14: Life Below Water; the first Ocean Conference since the Law of the Sea Negotiations occurred in 2017; and we have just entered the UN's Decade of Ocean Science (2021-2030). Crucially, as marine planning approaches are expanding past national and regional boundaries and are beginning to incorporate complex ecological, social, and economic sustainable development goals, the natural and cultural values which underpin these goals are developing within international policies and frameworks (UNESCO, 2015a).

Despite recent developments in integrated management, the complexities and connections between the natural and cultural environments are still under-researched and so remain underdeveloped in most legislation and policy regimes (Chapter 5). It is now well documented that cultural heritage is underrepresented as sector-based approaches move on from single-focussed solutions to integrated, multi-sectoral methodologies (Chan *et al*., 2012a; Chan *et al.*,

2012b; Kirchhoff, 2012, 2019; Hølleland *et al.*, 2017; Papageorgiou, 2018, 2019), and it is argued throughout this thesis that the socio-environmental benefits associated with the these complex interconnections will suffer as a result.

This Chapter provides an overview of the current state of global MCH governance in integrated management mechanisms. Section 3.2 begins by introducing the current context of MCH within global ocean governance, and argues the necessity for MCH within integrated ocean management. Section 3.3 provides a critical review of MCH in policies such as the UNEP Regional Seas Programme and policy mechanisms such as the Blue Economy and Blue Growth. Section 3.4 presents a review of the literature and an examination of MCH in management tools such as ICZM, MPAs, HMPAs and MSP. Although a pool of literature exists regarding the underrepresentation of MCH within various integrated marine management techniques (largely within Marine Spatial Planning or Ecosystem Services in general, as referenced above), there is currently no comparative review across the extent of international and regional integrated policy regimes. By providing a critical and novel review of the place of MCH across the scope of integrated methodologies, this Chapter aims to present the background, context and future questions associated with the frameworks which are expanded upon in the following Chapters.

3.2 The necessity for MCH representation in integrated ocean management

As discussed in Chapter 2, the 2001 *Convention on the Protection of the Underwater Cultural Heritage*, defines MCH as '*all traces of human existence having a cultural, historical, or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years'* (2001 Convention, Article 1). Although this definition does include shipwrecks, it also encompasses submerged landscapes, dwellings, ports, ruins, and artefacts. In many cases, coastal communities and their intangible cultures are included within this definition, due to their connection to bodies of water. MCH gives evidence of our human origins, the spread of populations, boat-building, trade, and war. It may give evidence to how ancient landscapes shaped communities and *visa-versa*, and how they may shape society into the future. Ultimately, MCH can provide testimony to how we as a species are connected to the water, and each other.

In the context of managing the world's oceans, however, the protection of the Marine Cultural Heritage may perhaps be seen as a niche cause. Compared to vast effects of human consumption on global fish stocks such as cod, herring and tuna - now 'commercially extinct', the threat of extinction for >33% of marine mammals, the vast amount of plastics and other pollutants found in

most marine species, the loss of +/-50% of our coral reefs since the 1870s and the rise in ocean temperature and acidity due to burning of fossil fuels (IPBES, 2019b); prioritising a resource which has no clear 'finiteness' remains hard to argue in the greater ocean sphere.

Yet the benefits of protecting, researching and sharing the MCH are not purely academic, nor purely for the small percentage of society which have the means to experience it first hand through scuba diving (Firth, 2015). Within the environment, cultural heritage can provide environmental refuge and habitats for commercially important fish species and coral reefs (Firth, 2018), and it is likely that engaging with MCH increases our adherence to protective ocean policies, both natural and cultural (Chapter 7). Over time, understanding how climate change and rising sea levels have impacted humans in the past can help us consider the connections between social development and the natural environment (Peev *et al*., 2020), and in turn how this may impact coastal and island nations in the future. Economically, investing in the protection of MCH has been shown to increase revenue to coastal communities and positively impact the Blue Economy (Papageorgiou, 2019; Manglis *et al,* 2020*)*. Socially, sharing human stories which encourage dialogue across regional boundaries can improve peace and prosperity between nations and engagement with these stories can improve health and wellbeing (Hafstein, 2018; Kelly *et al.*, 2021).

Although a small voice amongst many, the protection of MCH is increasingly internationally and regionally represented and recognised. In 2007, the International Union for Conservation of Nature (IUCN) and its *World Commission on Protected Areas Global Plan of Action* identified World Heritage as a key global strategic priority (IUCN, 2018). In 2013, THE IUCN published its first report on the Marine Natural Heritage and World Heritage List, creating a criteria for marine systems, an analysis of sites, and a road-map for addressing gaps (IUCN, 2013). The cultural components of MCH are also being recognised within regional policy frameworks such as the UK Marine Policy Statement (2011) which included 'Seascape', 'Cultural heritage' and 'CES' (cultural ecosystem services) (McKinley and Acott, 2019) and we are beginning to see the historic environment included within the marine environment in UK planning and development policy (Pater, 2020). Inter-regionally, MCH is beginning to be protected within integrated management frameworks such as MSP and ICZM. As a result, the benefits MCH may provide to society and the surrounding ocean are being further explored, and novel disciplines such as the 'Blue Humanities' and 'Blue Social Sciences' which integrate research from fields such as law, economics, political science, anthropology, geography, ecology and cultural heritage, are gaining traction[1]. It is argued

[1] When searching for the terms "Blue Humanities" or "Blue Social Sciences", 21 papers from 2019 onwards exist on WOS and Scopus. Searching this term on google yields 157,000,000 results (accessed June 2021),

throughout this thesis that by understanding, protecting, sharing, and integrating the management of our MCH in alignment with natural environment frameworks and policies we may enhance the protection of both the natural and cultural marine resources. A proposed result of further integrating the protection of MCH into multi-sectoral frameworks is that the services communities receive from the ocean will be enriched, and we may move closer towards achieving the UN's SDGs by 2030.

3.3 Integrated Policy

Where domestic or national 'law' is generally understood as standards and systems administered through court systems which dictate the functioning of society, and 'international law', although less distinct, is understood as established principles or norms organised between states; the meaning of 'policy' is not as well-defined. Generally, policy may be understood as 'a plan of action to influence or determine decisions, actions and other matters', set by organisations from a regional to international scale. In doing so, objectives, recommendations or procedures are usually agreed upon to address a particular issue or set of issues (Zacharias and Ardron, pg. 93, 2020).

Integrated policies (Section 3.3) are distinct from integrated management approaches (Section 3.4) as they are used to align various principles based on societal goals rather than as a tool to coordinate stakeholders from interconnecting sectors. An example of a policy approach to marine integration is the European Commission's Integrated Maritime Policy in 2007, aimed at protecting the ocean environment, and the following Blue Growth Strategy in 2012, which provided plans for the Blue Economy through job growth and development. An integrated management approach usually occurs in the form of a framework or plan, such as ICZM or MSP.

Considering this definition, assessing integrated MCH policy could encompass multiple approaches from a global to local scale. For the purposes of this Chapter, current regional-level policy approaches underneath the scale of international law and governance will be introduced. This will follow with an introduction to the complexities of managing MCH through recognised policy mechanisms such as Blue Growth and the Blue Economy, and finally integrated

with multiple examples of established groups and conferences such as the Centre for Maritime Research's *People and the Sea Conference* (running since 2001) and the Marine Social Sciences Network established in 2018, popular science books such as *Blue Mind* by Wallace Nichols and *Salt on your Tongue* by Charlotte Runcie, and recently established University modules, including *Blue Humanities: Studying the Sea*, at the University of Edinburgh.

management systems such as Integrated Coastal Zone Management (ICZM), Marine Protected Areas (MPAs), Historic Marine Protected Areas (HMPAs) and Marine Spatial Planning (MSP).

3.3.1 Regional Policies

Regional governance is defined separately to integrated governance, by the assumption that regional marine governance is primarily aimed at uniting states through multilateral or bilateral agreements over a particular cause or set of causes (such as marine pollution), whereas integrated marine management or integrated governance aims to combine the management of various resources into a united framework or system which accounts for the interconnections between the disciplines and stakeholders of the natural environment, and more recently, the natural and cultural heritage (Zacharias and Ardron, 2020). Although the arguments presented in this work are more relevant to the integration of disciplines than regions, the frameworks and methodologies which underpin *regional* governance and *integrated* governance often go hand in hand. For example, although the primary goal of the UNEP Regional Seas Programme is to unite regional goals for the sustainable development of the marine environment, a number of these goals work to facilitate cooperation between ocean stakeholders and resources (UNEP, 2016). On the other hand, Marine Spatial Planning, an integrated management framework designed to simultaneously meet the demands of multiple ocean sectors through inclusive, multi-disciplinary decision-making, has been implemented across regional boundaries to build capacities between nations (UNESCO-IOC, 2017). Although regional and integrated governance have evolved from differing priorities, they are both relevant and arguably necessary for each other.

Alongside the proliferation of international marine laws such as the LOSC in the late 20th century, various bilateral and multilateral agreements between neighbouring states addressing specific ocean issues were adopted, of which many are relevant to the management of MCH. The UNEP Regional Seas Programme was developed to address the degradation of coastal and marine areas, and is one of the first programmes to attempt region-based goals for the sustainable development of the ocean through international cooperation, and remains to be the most comprehensive regional marine programme to date (UNEP, 2016). The program includes both socio-economic and environmental targets addressed at 143 countries in 18 regional groups, usually through the adoption of a regional Convention, protocol or agreement (Zacharias and Ardron, 2020). Although the programme's relevance to the protection of MCH has been recognised within the most recent 2001 Convention Report (2019, pg. 11-12), few regions within the programme include MCH within their rhetoric (see below analysis). The Mediterranean, through the *Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean*, issues a responsibility to protect both the natural and cultural

heritage, and as such, the 2001 Convention has suggested that 'the 2001 Convention would be relevant to the Barcelona Convention…and therefore [should] be a region of cooperation for the future (UNESCO report, pg. 12, 2019).

The lack of inclusion of MCH within regional marine programmes is not unusual. Although the LOSC, the 2001 Convention, and most other environmental and cultural management conventions recommend the use of regional programmes and agreements for the effective management of natural and cultural marine resources (Rochette *et al.*, 2014; Grip, 2017; UNESCO Internal Oversight Evaluation Office, 2019) there are relatively few examples, and little literature on the topic (Martin, 2019).

On analysis of the 18 regional agreements within the UNEP Regional Seas Programme it appears that aside from the Barcelona Convention, there are only incidental actions for the protection of MCH. For example, in the Arctic region a key principle is to determine how '*social, environmental, and economic changes occurring in many arctic societies are affecting the culture and ways of life of people in the arctic, including notably, indigenous people*.' Goal 4 of the Arctic region acts '*to enhance the cultural well-being of Arctic inhabitants… [to] strengthen their capacity to adapt to changes in the Arctic marine environment*' (PAME, 2015). Although other examples do exist, most regions do not provide provisions for MCH[2]. As such, it may be the case that capacity building between the 2001 Convention should be extended to regions outside of the Mediterranean, using the Barcelona Convention as an example.

There are arguments both for and against the inclusion of UHC within the Programme. According to the 2001 Convention, considering UNCLOS specifically calls for the integrated management of both nature and culture as well as a precautionary approach towards policy-making for sustainable development and the protection of the ocean: '*governance of the marine environment should include all stakeholders and interests including MCH*'. Of the 93 inter and intra-UNESCO stakeholders interviewed for the 2019 2001 Convention Evaluation Report, most agreed the 2001 Convention is relevant to all processes at the UN involving the ocean, including the biological diversity of areas beyond national jurisdiction, climate change, the work on UN oceans, the Decade of Ocean Sciences and the Blue Economy (UNESCO IOS Evaluation Office, pg. 12, 2019).

Arguments against the inclusion of MCH into non-MCH specific regional marine agreements may be assumed from arguments against the inclusion of MCH into integrated management frameworks. The issue of nominal inclusion, by which cultural heritage is included by namesake

[2] Of the 18 regions assessed in this study, only two had provisions for MCH within their scope.

but otherwise disregarded, has been cited by Hølleland *et al.*, (2017) in relation to the provision of heritage within ecosystem service models (and is evaluated in depth regarding the inclusion of heritage in the Millennium Ecosystem Assessment in Chapter 6), and concerns as to the lack of expertise invested in the adequate management of heritage in place-based management systems such as MSP has been voiced by Papageorgiou (2018). By this argument, the inclusion of MCH in any non-MCH specific framework would run the risk of nominal inclusion, including that of the UNEP Regional Seas Programme, and it is therefore the responsibility of bodies such as the 2001 Convention to facilitate capacity building between natural and cultural resource practitioners to mitigate such risks, as is proposed in the most recent evaluation report (UNESCO, 2019).

A further argument may be assumed from various 20th century viewpoints regarding the relevance of cultural heritage and services to the natural environment and *visa-versa* (Kirchhoff, 2019). When discussing integrated management this point is now mostly out of favour considering the significant work done by various heritage practitioners and Conventions regarding the vast interconnections between natural and cultural heritage (for example, see the World Heritage Convention and Sustainable Development Policy (2015), the IUCN's Connecting Practices Project (2015) and the European Commission's Natural and Cultural Heritage in Europe Projects (2019)). When applying this argument to regional-level governance frameworks such as the Regional Seas Programme, it is true that a much smaller body of research exists regarding the connections between the protection of MCH and 21st century issues such as Climate Change, Ocean Pollution and Fisheries Management (see Chapters 4 and 5). Yet, when these themes are broadened to the societal issues which underpin them, the role and relevance of MCH is clearer (outlined by the Ocean Decade Heritage Network, shown in Table 1) (Trakadas *et al.*, 2019; Trakadas, 2020). A larger body of research on management interconnections such as these is yet to be built. Nonetheless, if we follow the standards of the precautionary principle cited within most ocean resource frameworks and agreements, MCH should be protected as part of the ocean environment unless significant research states otherwise.

Table 1: The contributions of MCH to the Ocean Decade, sourced from Trakadas et al., 2019 and Trakadas, 2020

Societal Objective	**Contribution of MCH**
A clean ocean where sources of pollution are identified and reduced or removed	'Cultural heritage can contribute to a clean ocean by enabling better understanding of the extent and risks of legacy pollution from shipwrecks, mining waste and land-based sources

	A clean ocean is also important for the long-term preservation of MCH'
A healthy and resilient ocean where marine ecosystems are understood, protected, restored, and managed	'Culture heritage is fundamental to understanding how many coastal and marine ecosystems achieved their present form, and to understanding the pressures upon them Cultural heritage can be an important component of marine ecosystems'
A productive ocean supporting sustainable food supply and a sustainable ocean economy	'Cultural heritage is a major contributor to the Blue Economy, especially through recreation and tourism; increasing productivity should enhance—not damage—irreplaceable cultural heritage'
A predicted ocean where society understands and can respond to changing ocean conditions	'Understanding "Ocean Past"—human interaction with the historic environment—is essential to understanding our ocean present and to forecasting change and its implications for human well-being and livelihoods'
A safe ocean where life and livelihoods are protected from ocean-related hazards	'Cultural heritage informs the understanding of coastal inhabitation and intervention in the past and present—including the impact of previous catastrophes—to identify risks, present examples of human adaptations, and to encourage resilience'
A transparent and accessible ocean with open and equitable access to data, information and technology and innovation.	'Information about cultural heritage is fascinating to the public and enables engagement with many topics of Ocean Literacy; information about cultural heritage is also essential to understanding the past, present and future of humanity's relationship with the seas and oceans'

An inspiring and engaging ocean where society understands and values the ocean in relation to human wellbeing and sustainable development	'Information about cultural heritage is fascinating to the public and enables engagement with many topics of Ocean Literacy.'

3.3.2 Blue Growth, and the Blue Economy

There is a limited, but recent pool of literature regarding the role of MCH in Blue Growth and the Blue Economy[3], primarily regarding the maritime heritage of the Mediterranean (see Argyropoulos and Stratigea, 2019; Papageorgiou, 2019; Manglis et al., 2019, 2020). The following will introduce the available literature, current projects, and challenges associated with MCH preservation and promotion in the world of Blue Growth and Economy[4].

The primary sectors which are most commonly referred to regarding MCH and the Blue Economy are tourism and 'creative industries' (Karro and Roio, 2019; Papageorgiou, 2019). When assessing the literature, it appears that most research which uses both 'Blue Economy' and 'Marine Cultural Heritage' as a keyword either discusses job generation through tourism, or the role of MCH within integrated ocean management applications (such as Marine Spatial Planning)[5]. Directly, these may be the clearest economic outputs of the MCH, yet further research remains to be done on the indirect economic benefits of MCH and their connections to the other marine sectors such as the work recently conducted by Trakadas *et al.*, (2019), and Henderson (2019) on the role of heritage in the Decade of Ocean Science and the Sustainable Development Goals.

Another re-occurring theme within the literature is a consensus regarding necessity for inclusion, yet concern for conflict between the basic morals of maritime archaeology and the economic

[3] In a review of 636 papers using the tag 'Blue Growth' or 'Blue Economy' on WOS, only 13 papers (2%) discussed the role of cultural heritage. Considering engaging MCH with the Blue Economy has been listed as a key goal within the most recent UNESCO 2001 Convention review, this is considered a low portion of the literature. Of this literature, most discussed the role of culture and cultural heritage briefly. When searching more specifically using all variations of MCH (exemplified in Chapter 4) and Blue Growth or Blue Economy, a similar yield was produced.

[4] Blue Growth differs from the Blue Economy in that it refers specifically to the planned development of ocean activities, whereas Blue Economy is a measure of development. These terms work together, and are used interchangeably in this section – as is done in the MCH literature.

[5] 8 of the 13 papers which specifically discussed MCH and the Blue Economy on WOS either discussed tourism or mentioned the Blue Economy briefly in relation to integrated management techniques such as MSP.

principles of Blue Growth (Papageorgiou, 2018). As a result, there are a number of articles discussing the 'safeguarding' of MCH in the Blue Economy (Argyropoulos and Stratigea, 2019; Karro and Roio, 2019), or the 'Stakes and Challenges' associated with applying Blue Growth standards to the established heritage principles currently managing the MCH (Papageorgiou, 2019). Despite the academic apprehension, there are plans for multiple capacity building and information sharing sessions between the 2001 Convention and various sectors of the Blue Growth initiative to establish a pathway for the ethical inclusion of MCH in the growing Blue Economy (UNESCO IOS Evaluation Office, 2019).

In terms of planning and development, the integration of MCH into policies such as Blue Growth and the Blue Economy has been likened to Rittel and Webber's 'wicked problem'[6] due to its conflicting principles of preservation and sustainable exploitation (Balint *et al.*, 2011; Argyropoulos and Stratigea, 2019). This theory becomes more apparent when applying the same standards commonly applied to other wicked problems, to the issues associated with MCH in the Blue Economy. It is commonly argued that the interdependent nature of wicked conflicts may be reduced by the collective action of a network-based cooperation system between stakeholders (Van Bueren *et al.*, 2003) and that an interdisciplinary understanding of the complexities between conflicting issues is essential for progress (Balint *et al.,* 2011). Globally significant wicked problems call for transboundary solutions and 'multi-levelled governance' such as that proposed by Varone *et al.*, (2013), which may also be likened to the issues and presented solutions for the global governance of MCH (Martin, 2019). These solutions are already being applied to MCH, although are in early stages. As these methods continue to develop, it may be the case that further economy focussed research is necessary to understand the extent to which MCH contributes to Blue Growth within these networks. As some prominent literature regarding MCH and the Blue Economy suggest that '*it [MCH] has very few direct or extractive uses of economic importance*' (Papageorgiou, 2019), or siphons the economic benefits down to '*tourism and creative industries*' (Karro and Roio, 2019); it may also be the case that the apprehension for applying Blue Growth approaches to MCH management in literature is a rather a result of the limited research on the extent of heritage capital past tourism.

[6] Rittel and Webber's Wicked Problem (1973) refers to a planning and policy problem which is often difficult or impossible to solve due to its contradictory dependencies. Usually, this is created by the differing perspectives of stakeholders, and solving the problem would require a significant change of mindset or behaviour of several different groups. Environmental issues such as climate change, social injustices such as homelessness and health issues such as pandemics and epidemics have all been considered as wicked problems.

A further issue is one of prioritisation. Considering cultural tourism is currently the primary method of economising heritage, it is not surprising that MCH is not afforded significant prioritisation compared to other more clearly profitable marine sectors. Cultural tourism is not a particularly popular financing platform at a European level, and so MCH is considered to provide a limited breadth within the greater Blue Economy (Karro and Roio, 2019). As Blue Growth continues to develop as a primary indicator for the sustainable development of the ocean, research into the practical application of the indirect economics of MCH is of imminent importance. A publication entitled Heritage and the Economy published by Historic England in 2019 stated '*The Total Economic Value of heritage is greater than the sum of all its parts'*, referring to the extensive and interconnected economic, cultural, social and environmental values provided by heritage. The report extended this analysis by suggesting that although we may have an understanding of the various values provided by heritage, '*in the absence of assigned market values, businesses, governments and individuals are likely to underinvest in heritage'*, placing onus on the development of inclusive economic indicators for the future of heritage in the UK (Historic England, pg. 50, 2019). This requirement has since been answered by the DCMS' Culture and Heritage Capital Framework, which is currently in development (DCMS, 2021).

3.4 Integrated Management Approaches

During the period that the 1982 LOSC stated, '*the problems of ocean space are closely interrelated and need to be considered as a whole'* (UN Convention on the Law of the Sea, 1982), there was an increasing call for an integrated approach for the 'global ocean'. Management programmes based on land-use management were sculpted for the ocean sector which aimed to unite stakeholders with basic socio-economic and environmental objectives through scenario modelling, to provide area-based management plans for sustainable development (Zacharias and Ardron, 2020). From these developments arose coastal zone management (ICZM) in the 1970s, marine protected areas (MPAs), and marine spatial planning (MSP).

As discussed briefly in Chapter 2, integrated marine management describes the tools, frameworks and specific approaches used to assist in multi-sectoral and inclusive marine decision-making. Such tools typically focus on the implementation of policies, forming the bridge between policy and practice (Cantasano, Pellicone and Letto, 2017). The following examples are ordered chronologically and are inherently linked through both their evolution and the policies which they are based on. Each methodology has been adapted to suit various spatial and temporal differences, use similar methodologies, and are complimentary. These approaches continue to shift and evolve as they are developed in new regions and gain access to technological improvements with regards to data collection, analysis and monitoring. Furthermore, as socio-

economic and environmental methodologies develop into the future it is likely that these methods will continue to adapt and change (Zacharias and Ardron, 2020). The following is an introduction to the basic principles of each approach and a brief analysis of the current role and extent of MCH management within the methodology.

3.4.1 Integrated Coastal Zone Management (ICZM)

The socio-economic, environmental, and cultural importance of the world's coastlines is immense. Around 40% of the world's population lives within 100km of the coast (a density similar to the population size of the world in 1950) (ResourceWatch, 2021) and 60% of the world's economic production is concentrated within this area (UN, 2017). Although the coast makes up only 4% of the earth's surface and 11% of the world's oceans, it accounts for 90% of the catch from fisheries; a resource which 3 billion people rely on as their main source of protein (UN, 2017). The cultural, historic, and prehistoric context of the coast is equally vast. The products of human relationships with the seas are often amalgamated in the coastlines, as a result of both human interactions and rising sea levels (Masters and Flemming, 1982). Technological developments of the last century have only recently given access to prehistoric landscapes and settlements, ports, buildings, shipwrecks and artefacts (McCarthy *et al.*, 2019). Submerged landscapes, materials and intangible aspects of coastal community traditions give evidence of human origins, migration, trade and cultures. Cultural information such as this is a relevant resource for sustainable development as it provides the socio-economic and socio-environmental context necessary for effective, community-centric policy making (Trakadas *et al.*, 2019). Ultimately, understanding and supporting cultural patterns and connections provides a platform for the development of human wellbeing, and the environmental issues which are inherently shaped by human cultures (UNESCO IOS Evaluation Office, 2019).

Considering the coastal oceans are so valuable, it is unsurprising that they are the most fished, farmed, developed, modified and exploited ocean environment. Agricultural run-off, port, harbour development, construction, river damming, fisheries, aquaculture and coastal tourism, among others, are significant sources of marine pollution threatening the stability of coastal systems. Anthropogenic impacts and their consequences are wholly well documented yet the extent of historic data remains limited, and so future projections must remain precautionary (Mentaschi *et al.*, 2018). Managing such an overcrowded environment relies upon cooperation between marine sectors, within multiple levels of government, across overlapping jurisdictions (UN, 2017). Various integrated policy responses have developed in order to manage these overlapping pressures, beginning with Coastal Zone Management (CZM) in the 1960s, in response to the failing sector-based management approaches previously in favour. Since the 1980s, CZM

has largely been referred to as integrated coastal zone management or ICZM (although other variants include coastal area management, integrated management and coastal resource management, depending on location). Since its development, over 95 nations have established an estimated 150 ICZM programmes globally (Zacharias and Ardron, 2020). The UNEP Regional Seas Programme has played a particularly significant role in harmonising disparate ICZM methods between states, alongside the Mediterranean ICZM Protocol (adopted 2008, entered into force 2011). The latter explicitly mandated transnational ICZM; becoming the first international legal instrument to do so by creating binding obligations which apply to administrative, economic and urban disciplines usually under national jurisdiction (UNEP, 2016)[7]. The base principles which are essential for its effectiveness have been summed up by Cicin-Sain et al., (1998), and Kay and Alder, (2017) (Box 1).

Box 1: Necessary principles for effective integrated marine management, adapted from Cicin-Sain et al., (2005) and Alder and Kay (2017)

- A multisectoral, integrated approach must be taken
- The approach must align with and integrate into development plans, environmental policies, fisheries policies and institutional programmes
- The approach must be active, participatory and adaptive
- Implementation of the approach must use and build upon the capacity and capabilities of the community
- The approach must consider the quality of life and cultures of local communities as well as environmental issues
- Self-reliant financing mechanisms must be established
- A long-term perspective must be established, using sustainable plans for future generations

[7] It may be argued that ICZM is more policy than management tool in nature, as it is essentially a set of principles which transcends governance (as government is usually one of four participants including the scientific community, the public community and the private sector) (Bremer and Glavovic, 2013). Nonetheless, as the philosophy of ICZM is inherently methodology-based it is described throughout this thesis as an integrated management approach, rather than a policy.

Initial evaluations of ICZM provided a cautious view of progress, and suggested that the capacities of governments to implement programmes was a greater barrier to development than funding or scientific progress (Sorensen, 1993; Turner, 1999; Billé, 2007). There have been multiple regional assessments of the implementation of ICZM strategies since, including a series of Member State Reports to the European Commission (from 2002-2006, and 2006-2010). In 2006, the European Review of Reports stated the uptake of ICZM to be a 'slow and long-term process' with 'limited indications of effective implementation mechanisms'. The document agreed with the academic consensus of the time, suggesting that varying regional interpretations of ICZM had led to confusion, and future recommendations encouraged '*more operational and better communicated*' guidelines (European Commission, 2006). The analysis of the member state reports between 2006-2010 similarly concluded that the future of ICZM in the EU continued to rely on '*more specific and concrete*' guidelines, with '*more precise tools and deliverables*' (European Commission, pg 144, 2011). This report formed the basis of the 'Proposal for a Directive', which would later establish the 'Framework for Marine Spatial Planning and Integrated Coastal Management' in 2013, which aimed to use MSP as a tool to further develop ICZM (European Commission, 2011).

There has not been an official global re-assessment of ICZM since 2010, perhaps because of the complexities and relationships between newer integrated management systems such as MSP rendering a review of ICZM management alone irrelevant. More recent literature reviewing integrated management of marine resources often focus on novel regional and local methodologies based upon the ICZM principles; suggesting the dominance of ICZM has dissipated naturally, as in line with its original principles (Box 1), into regional and local integrated management approaches. On assessment of 173 papers reviewing ICZM over the last decade, there has been an annual publishing decline of 17% per year. In 2021, The top three case study regions are European (Italy, Germany, Spain), followed by Australia, Portugal, China, Egypt, Romania, the UK and finally Brazil. The primary issues discussed are increasingly novel regional approaches to ICZM, followed by the relationships between ICZM and MSP, and finally assessing the impacts of ICZM on the primary target issues such as climate change adaptation, coastal erosion and sea-level rise.

Recent literature regarding the role of MCH in ICZM is increasingly calling for integrated solutions for the interconnected problems shared between natural and cultural heritage. In a case-study assessing the effects of coastal erosion on natural and cultural heritage sites off the coast of Italy, results evidenced that 50% and 21% of natural and cultural heritage sites, respectively, were increasingly becoming exposed to coastal erosion and other human impacts (Cantasano *et al.*, 2021). Studies of heritage sites in Morocco (who have only recently ratified the UN Integrated

Coastal Zone Management Protocol) have suggested that there is not enough base knowledge regarding human and natural impacts threatening the MCH, and connecting cultural and natural assets (Trakadas, 2020b). Further studies in Italian methods of ICZM suggest that although it is necessary to integrate the management of cultural heritage into coastal management, there remains a gap between the science and the policy (Cantasano *et al.*, 2017). In 2016, a study of Spanish ICZM questioned, 'Is socio-ecological culture really being taken into account to manage conflicts in the coastal zone?', in relation to the Mediterranean ICZM protocol which governs a multitude of European ICZM frameworks (Ariza *et al*., 2016). Prior to 2015, most other literature describes the lack of inclusion of cultural heritage within MCH, and acts as a call for capacity building between cultural and natural practitioners[8]. Although this literature pattern does suggest that MCH is increasingly being considered within ICZM frameworks, it may be the case that research into the practical application of heritage in ICZM may also be a barrier to progress, alongside government capacity and funding.

3.4.2 Marine Protected Areas (MPAs)

A rise in the call for closed areas in fisheries management and the use of sectioning special protected areas of cultural and historic significance in the 1950s and 1960s catalysed the necessity for a coordinated approach regarding the protection of coastal and marine areas through MPAs (Zacharias and Ardron, 2020). The first international articulation of a systematic approach to MPA management was developed at the IUCN's International Conference on Marine Parks and Protected Areas in 1975. This conference is generally understood as a turning point in the history of MPAs, the popularity of which was further projected by the IUCN/WWF/UNEP World Conservation Strategy in 1980 which marked protected areas as a fundamental aspect of modern conservation strategies (Allen, 1980).

MPAs are now an essential aspect of marine conservation. Many nations have committed to establish MPAs or similar national targets for protected areas over the last two decades. In 2002, the participants of the *Johannesburg World Summit on Sustainability Development* committed to establish various networks of MPAs by 2012 (La Viña *et al*., 2003). In 2004, the Convention on Biodiversity set a global MPA target of 10% coverage by 2012. In 2010, the Convention on the Biological Diversity's Strategy Plan for Biodiversity 2011-2020 states that 10% of coastal and marine areas should be protected through MPAs or similar protected areas by 2020 (Meehan *et al*., 2020). In 2014, the Worlds Parks Congress extended their recommendations regarding highly

[8] In an advanced search on WOS using tags related to ICZM and heritage, seven out of the ten papers published prior to 2015 were primarily focussed on a call for the inclusion of heritage in ICZM practices.

protected MPA coverage to 30% by 2030 (Woodley *et al.*, 2019). Although there are now an estimated 15,000 MPAs across 80 different nations, according to the Marine Protection Atlas, only 2.7% of the ocean is either fully or highly protected by MPAs in 2021, and these areas are primarily implemented within national jurisdictions. This estimation does fluctuate, depending on source; according to the World Database on Protected Areas and Protected Planet, 7.7% of the ocean is protected by MPAs. The more generous estimate is taken as a snapshot from self-reported MPA implementation data submitted by various nations. Most other estimations fall within this scale. Considering the long-reported issues associated with MPAs and paper-parks[9] it may be fairer to assume the more conservative value is the more accurate.

These estimations are primarily based on biodiversity and environment centric MPAs. The World Heritage Programme implements MPAs based on areas of Outstanding Universal Value, categorised into natural, cultural and mixed sites. Currently, there are 50 MPAs of this nature across 37 countries which protect areas based on various aspects of universal value, including unique biodiversity, singular ecosystems, unique geological processes or incomparable beauty. According to the World Heritage List's MPA Database, as of June 2021, 46 of the 50 sites are protected for natural value, 4 for mixed cultural and natural value, and none are protected for cultural value alone (UNESCO, 2021). It may be somewhat surprising that the World Heritage MPA Programme protects no marine sites for cultural value alone. When looking at the mixed sites, the cultural heritage aspect is primarily based on community dependence on the environment. Although the Convention and associated MPA rhetoric defines cultural heritage as '*monuments…groups of buildings…sites…with outstanding universal value from the point of view of history, art or science…or from an aesthetic, ethnological or anthropological point of view*' (World Heritage Convention, 1972), in practice, it currently appears to only be included as a measure of community value of an environment. This definition of heritage is common in ecosystem service management, in which cultural ecosystem services are primarily understood as the cultural benefits of the environment (Hølleland and Skrede, 2017).

3.4.3 Historic Marine Protected Areas (HMPAs)

One of the only examples of MCH-centric MPAs are Scotland's Historic Marine Protected Areas (HMPAs), designated under Section 67 of the Marine (Scotland) Act 2010, replacing Section 1 of the UK's Protection of Wrecks Act 1973. The HMPAs aim to protect 'marine historic assets', which are defined broadly as to include underwater structures such as vessels and aircraft, as well as

[9] Paper Parks are areas which are protected in theory or on paper yet are not sufficiently implemented, monitored, or recorded enough to assume they are in use (see Di Minin and Toivonen, 2015).

scattered remains, groups of artefacts on the seabed and submerged prehistoric landscapes (Historic Environment Scotland, pg. 7, 2019a). Similarly to an environmental MPA, planning permission and marine licences are necessary for activities within the HMPA, and it is a criminal offence to disturb or affect the protected asset in any way. To determine whether an asset is of national historic importance it has to meet certain criterion of cultural significance relating to its '*artistic, archaeological, architectural, historic, traditional, aesthetic, scientific, or social interest*' (Historic Environment Scotland, 2019a). The designation is flexible and considers changing cultural significance over time. In addition, cultural significance is considered under certain headings (Box 2) and must demonstrate one or more values to society (Box 3). The implication of the decision is also considered. If a site or place meets the criteria, it may not necessarily be appropriate to designate it (Historic Environment Scotland, 2019b).

Box 2: Scotland's Historic Marine Protected Areas: Assessing Cultural Significance Characteristics (adapted from Scotland's Historic Marine Protected Areas, Historic Environment Scotland (2019))

Intrinsic Characteristics:

Relating to how the physical remains of a site/place contribute to our knowledge of the past.

Contextual Characteristics:

The relationships between a site/place and its surrounding environment, and our knowledge of the past.

Associative Characteristics:

The relationships between a site/place and society, including the people, practices, traditions, events and historic and social movements.

Box 3: Scotland's Historic Marine Protected Areas: Assessing Cultural Significance Criterion (one or more) (adapted from Scotland's Historic Marine Protected Areas, Historic Environment Scotland (2019))

- The site/place must have the potential to make a significant contribution to our understanding/appreciation of the past either on its own or through extended research. This can be done as a single site/place, as a specific type of site/place, or as part of a group of related assets.
- It must maintain structural, decorative, technical or physical attributes which make a significant contribution to our understanding/appreciation of the past.
- When assessed in the context of the history and archaeology of Scotland, its seas and its place in the wider world, the site/place must be a particularly rare or representative example of a historic marine asset
- The site/place must make a significant contribution to the historic and wider marine environment. This could include relationships between historic assets or features in the surrounding area.
- The place/site must have associations with historic, traditional, social or artistic figures, events or movements that are of national importance.

Box 4: Scotland's Historic Marine Protected Areas: Key Principles (adapted from Scotland's Historic Marine Protected Areas, Historic Environment Scotland (2019))

- Recognising the cultural significance of sites/places supports effective decision making
- For a site/place to be recognised it must be understood
- A diverse range of factors may contribute to significance
- Knowledge and information on the marine historic environment is necessary to understand our past, present and future
- Understanding, recognition, and appreciation will change over time alongside the historic environment
- Research, discussion, and exchange of ideas contribute to understanding the historic environment
- Understanding and recognition improves when information is made widely and publicly available, and society has the opportunity to contribute to the knowledge
- Effective decisions are 'well informed, transparent, robust, consistent and proportionate'
- Protecting the marine historic environment will benefit everyone, now and in the future
- Everyone should have a stake in the historic environment, and how it is protected.

The Scottish MPA network currently covers approximately 22% of Scottish waters. Of the 231 MPAs in Scotland, 8 of these are HMPAs (Historic Environment Scotland, 2019b). The context of Scottish HMPAs within this system is an interesting case study. Alongside rising international pressure for spatially increasing MPA coverage the UK has increasingly diversified MPA considerations and stakeholders (Marine Assessment Scotland, 2018). As a result, there is a pool of critical assessment available from various sources which have wide ranging opinions on the Scottish MPA process (Pita *et al.*, 2013; Hopkins *et al.*, 2018). Yet, when assessing the literature on the diversity of methods and services protected by Scotland and the rest of the UK, the values and uses of HMPAs are usually either disregarded as irrelevant for marine conservation or are not included at all[10]. The context of the available literature primarily focusses around diversifying the socio-cultural relations attached to the seascape in marine conservation policy (Jobstvogt *et al.*, 2014; Brennan, 2018), and the place of Cultural Ecosystem Services within environmental MPAs

[10] Of the 1, 019 papers currently available on Scottish MPAs on WOS, only one discussed the protection of cultural heritage within these systems, and four discussed heritage values.

(see Pike *et al.*, 2014; and to some extent, Ruiz-Frau *et al.*, 2011;). Categorised under 'Other Area Based Measures' (OABMs), HMPAs have had little review either by academia, or by heritage practitioners.

When assessing HMPAs by the standards of the UK's current heritage management legislation, it appears that a number of the issues associated with the protection of MCH in the UK are overcome. For example, HMPAs have a much broader definition of MCH than what is provided by statuary heritage protection in the UK[11], and potentially a more inclusive provision for public access[12]. In Scotland, Section 1 of the 1973 act (the *protection of sites of historic wrecks*) is replaced by the provision of HMPAs, leaving only s.2, *prohibition on approaching dangerous wrecks* and *supplementary provisions* active in Scotland. The primary differences are the extent of heritage protected[13], and the active encouragement of research, public access, and engagement within the sites. In the Historic Environment Scotland HMPA Guidelines, the opening sentence of *Part 2: Management of Historic Marine Protected* Areas begins with '*HMPAs should not be thought of as no-go areas*' (HMPA Guidelines 2019, Section 5.1). If it is deemed necessary to prohibit, restrict, or regulate activities within the boundaries of an HMPA, a Marine Conservation Order may be put in place in a specified area, as is the same for the natural marine environment (HMPA Guidelines, 2019 Section 8.1). In this manor, it may be argued that HMPAs are closer to National Parks than they are to conventional designated underwater sites in the UK.

In terms of integration, the Scottish Marine Protected Areas Project combines the efforts of Historic Environment Scotland (HES) with Marine Scotland, Scottish Natural Heritage, The Scottish Environment Protection Agency (SEPA) and the Joint Nature Conservation Committee (JNCC) to appropriately manage and prioritise marine natural and cultural resources through Nature Conservation MPAs, Demonstration and Research MPAs, and Historic MPAs. To facilitate designation, Scottish marine legislation and policy provide powers to designate all types of MPAs to conserve the marine environment for the benefit of future generations through the 2009 and 2010 Marine Acts (Historic Environment Scotland, pg. 4, 2019a). Integration is facilitated within the criteria itself, which dictates significant and important interaction with the surrounding environment as a factor for designation (Box 3). Furthermore, the 2019 Historic MPA Guidelines acknowledge the future for integration between natural and cultural heritage resources: '*There is*

[11] The Protection of Wrecks Act (PWA) 1973 provides protection for designated 'vessels lying wrecked on the seabed', The AMAA 1979 may not be applied to 'sites without structures' including scattered objects or landscapes, the Protection of Military Remains Act 1986 may protect military aircraft and vessels lost at sea while in military service.

[12] A survey conducted for Chapter 8, showed British divers felt excluded from protected areas in England.

[13] HMPAs can be used to protect a variety of MCH types including wrecks or prehistoric landscapes, as well as the associated artefact scatters, and debris fields.

a recognition that areas designated for cultural heritage reasons may also be of value for nature conservation and in turn, areas recognised for nature conservation value may have the potential to deliver incidental benefits for cultural heritage'. (Section 3.7, HES, 2019). Section 3.7 goes on to introduce the capacity to undertake integrated work between Scottish MPA managers regarding biodiversity, geodiversity and historical surveys and assessments designed to enhance national and regional inventories of archaeological sites. To overcome the issues associated with applying natural environment principles to cultural heritage policy, the preservation objectives of HMPAs state:

> 'There is an established tradition in formulating conservation objectives for nature conservation, based around the principles of restoring a feature to, or maintaining it in, 'favourable condition'. However, unlike marine natural features, marine historic assets represent a non-renewable resource, without the capacity to 'recover' where their condition deteriorates. With these key differences in mind, the preparation of preservation objectives for HMPAs will focus on objectives that are appropriate and practicable for marine cultural heritage and in line with the Historic Environment Policy for Scotland (HEPS)'
>
> *(HMPA guidelines, 2019, Section 3.26)*

The question of the effectiveness of HMPAs is yet to be addressed, as there is currently no formal method or reporting process for HMPA assessment within the Scottish or UK governments (*pers. comm*. Robertson, Historic Environment Scotland 2021). It may be the case that this type of MCH management will extend into the rest of the UK, using other methods already established within the UK system. In discussion with Dr. Chris Pater of Historic England on the extent of MCH integration in English policy, Dr. Pater stated, '*heritage is not included in the 'environment' for place-based management tools such as Marine Coastal Zones (MCZs); which otherwise have all the tools available to protect heritage alongside the environment, in compliance with the 2001 Convention'* (*Pater, Interview with Georgia Holly*, 2021). Integrating the protection of MCH in MCZs may provide an option for place-based protection without the need for altering the PWA 1973; but further analysis would be necessary to determine the parallels that may arise between the PWA and the inclusion of MCH within MCZs in the UK system.

3.4.4 Marine Spatial Planning (MSP)

Marine Spatial Planning (MSP) is a form of systematic area-based planning for marine activities. Building upon the principles of ICZM and ecosystem-based management, MSP calls for a decision-

making framework for the management of all marine areas (European MSP Platform, 2021). The Intergovernmental Oceanographic Commission (IOC) of UNESCO describes MSP as:

> 'a public process of analysing and allocating the spatial and temporal distribution of human activities in marine area to achieve ecological, economic, and social objectives that usually have been specified through a political process. Characteristics of Marine Spatial Planning include ecosystem-based, area-based, integrated, adaptive, strategic and participatory.'
>
> *(IOC-UNESCO, pg 18, 2009)*

The process of MSP involves scenario testing using large amounts of data from a diverse range of cultural, recreational and industry stakeholders. The output usually consists of a map-based plan with specific objectives, performance measures and recommendations for a particular marine region. An aim of this output is to facilitate communication between stakeholders, and to provide a platform for sharing subject specific perspectives and values (European MSP Platform, 2021). The primary benefits of MSP are as follows (Boxes 5, 6 and 7).

Box 5: Economic benefits of MSP (adapted from Part 1 of the IOC-UNESCO 2009 report, and Zacharias and Ardron (2020))

- Increases certainty in the private sector by planning new, often long-term investments,
- Identifies multiple uses within a single development area,
- Reduces conflicts between uses,
- Streamlines the planning processes,
- Promotes efficient use of resources and the spaces they are in.

Box 6: Ecological benefits of MSP (adapted from Part 1 of the IOC-UNESCO 2009 report, and Zacharias and Ardron (2020))

- Identifies biologically and ecologically important areas,
- Centres biodiversity objectives within the marine spatial planning and management process,
- Allocates space specifically for biodiversity and conservation,
- Provides context for a MPA network,
- Reduces the effects of human uses on marine ecosystems.

Box 7: Social benefits of MSP (adapted from Part 1 of the IOC-UNESCO 2009 report, and Zacharias and Ardron (2020))

- Increases opportunities for community involvement,
- Takes communities and economies into account when making decisions on ocean space,
- Identifies and protects the Marine Cultural Heritage,
- Identifies and preserves social and spiritual values.

It remains too early to give a succinct measure of the effectiveness of MSP for all sectors involved with the process, however there are some generally agreed upon barriers which have existed throughout its development, summarised in the IOC-UNESCO 2014 Report: Evaluating Marine Spatial Plans (IOC-UNESCO, 2014), and updated by Zacharias and Ardron (2020). Primarily, there is limited evidence that MSP can successfully reduce conflict between sectors and improve ocean biodiversity and conservation, and of the data that does exist, the quality and quantity of this data is often sub-standard. Even with current extent of available data, there is likely further complex interactions between environmental resources that we are yet unaware of. As a result, it is difficult to change the status quo of management for stakeholders and associated parties, especially when all of the information isn't yet available. This is particularly the case in areas where stakeholders have distrust in the government process, and where the process may require more time and expense than is available to the stakeholders at the time (IOC-UNESCO, 2014; Zacharias and Ardron, 2020).

Nonetheless, both MSP country uptake (European MSP Platform Country Overview, accesed August 2021), and academic output (annual % growth rate of publications is between 1972-2021 is 5.2%) is increasing over time . Primary data outputs are coming from the USA, followed by the

UK, China, Germany and India. In 2021, the primary topics discussed in current literature are fisheries governance, stakeholder participation, marine conservation and biodiversity, aquaculture, blue growth, indicators, and renewable energy[14].

Although MCH is not within the primary cited topics in MSP literature, there has been a rise in the discussion of MCH within MSP over the last 20 years (Figure 3). This has been mirrored in practice. For example, there has been an increase in MCH inclusion within each report of the MSP Country Forums (an action developed in the IOC-UNESCO MSP Roadmap which aimed to facilitate international exchange regarding the development of MSP between 2018-2020) (Table 2). Furthermore, in the most recent EU MSP Sector Report, a further nine countries included MCH within their MSP remit (European MSP Platform, 2018).

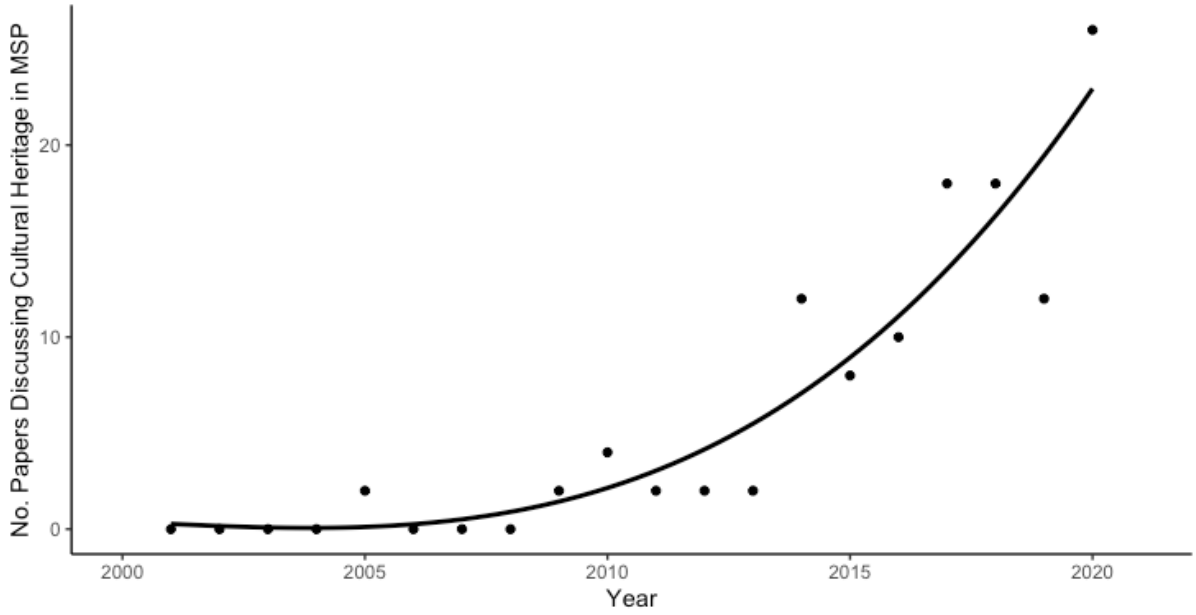


Figure 3: Graph showing the results of a Latent Dirichlet Analysis and Bibliometric Analysis showing the increasing traction of the phrase 'cultural heritage' in literature discussing MSP

[14] Results from a Latent Dirichlet Analysis of 759 papers on WOS between 1972-2021.

Table 2: Table exemplifying the extent of MCH inclusion within MSP Country Forums, detailing where the forum took place, the date, the number of countries who attended, and the inclusion of MCH within country reports.

Forum	**Date**	**Number of countries**	**Inclusion of MCH within report**
Brussels, Belgium	May-18	38	None
Reunion Island, France	Mar-19	25	One mention within specific case
Vigo, Spain	May-19	26	• Two mentions within specific cases • Call for Cultural Capital to be addressed within MSP • Actions developed for the protection of MCH • Local stakeholder report on Maritime Culture and Traditions
Riga, Latvia	Nov-19	44	• Technical Workshop dedicated to 'Tools, Processes and Concepts for Integrating Maritime Cultural Heritage into MSP' • Recommendation and Action: 'Include MCH and traditional knowledge of oceans and seas', and 'more capacity building on cultural heritage and issues at different levels' respectively • Focus on facilitating cross-cultural/interdisciplinary capacity in 'Key points'

Despite increases in the inclusion of MCH in MSP literature, international plans and recommendations, there is a growing body of literature regarding the mis-management of MCH in practice (Papageorgiou, 2018, 2019; Bashirova *et al.*, 2021; Guilan and Weiwei, 2021). This point

may be further exemplified by looking deeper into reported inclusions of MCH in MSP on the EU MSP Platform. Although a further 9 countries included MSP within their remit in 2018, there are still only 10 projects out of the 260 reported on the European MSP website which specifically address the management MCH in MSP in 2021 (European MSP Platform, accessed August 2021). Chapter 10 presents an extensive analysis of the case of MCH in MSP and provides a preliminary framework for inclusion via the EU MSP Methodology.

3.5 Conclusions

Underwater heritage is beginning to be included within international integrated policies and management such as UNEP Regional Seas Programme and MSP; and the social and economic contributions of MCH to the sustainable development of the ocean is beginning to be researched and realised. Nonetheless heritage remains underrepresented and undervalued in integrated frameworks. The case for greater inclusion has been made, raising the question as to why such integration remains limited in practice. This question is explored in the following two Chapters, which assess the extent of integration between natural and cultural resources within interdisciplinary research and literature. In doing so, research gaps and connections are exposed, and are used to develop the research questions which structure the proceeding Chapters.

Chapter 4 Qualitative Literature Review: Cultural Heritage in Resource Management Literature

4.1 Abstract

This Chapter presents the preliminary and advanced literature reviews on the extensive themes of natural and cultural resource management. The preliminary review was conducted with the aim to understand the spread of literature within the disciplines of Marine Cultural Heritage (MCH) and marine resources. The results of this review showed that the field of MCH had a much larger output of policy literature than the field of natural marine resources, particularly regarding the topic of integrated management practices, but had few examples of integrated management in practice. The question of why this is the case is explored using an extended review of all natural and cultural resource management literature published as of 1970. The results of this work showed that the definition of 'cultural resources' within the field of resource management is much broader than that of 'environmental resources'. The most common definition of a cultural resource was in fact 'human interactions with environmental resources', and intangible or tangible cultural heritage made up less than 4% of the literature. It is argued that the lack of conceptual clarity associated with cultural resources has potentially led to a disregard of cultural heritage in resource management literature, and a hypothesis is given: the gaps in integrated legislation between cultural and natural resources may be caused by gaps in literature and research between these topics. This hypothesis is tested in the following Chapter.

4.2 Aims and Objectives

Aim:

This review aims to understand the context of cultural resources within the greater fields of natural and cultural resource management.

Objectives:

1) To understand the spread of literature within the fields of natural and cultural resource management,
2) To understand the context of cultural resources and cultural heritage within this field,
3) To determine whether the issues associated with cultural heritage in integrated management frameworks stem from greater issues within the field of resource management.

4.3 Methodology

4.3.1 Preliminary Review

To review the relevant literature for this work, a preliminary analysis of the peer reviewed literature on Web of Science (WoS) and Scopus regarding policy and legislation within the disciplines of Marine Cultural Heritage (MCH) and the marine environment was conducted (Tables 3 and 4). The stark differences between disciplinary spread (Table 5) was used as the rationale for an extended review of the fields and disciplines of resource management both terrestrially and in the marine environment.

4.3.2 Extended Review

In line with Objective 1, extended literature searches on WoS were conducted using multiple search terms (Table 5), to understand the spread of disciplines within the field of resource management. The results were then exported into excel for analysis. It was noted that the term 'cultural resources' had ambiguous and varied definitions between disciplines, and so not all sources were relevant. Furthermore, the term 'environmental resources' are often used to discuss all resources; however, this does not consistently include cultural resources, which are often separated into different categories. Because of this, environmental, natural and cultural resources were analysed both together (plus screening to avoid duplicates) and separately to provide contingency for a lack of cultural resource representation in the environmental resource category.

In line with Objective 2, and to determine which disciplines were to be excluded, the cultural resource papers were sorted through and categorised depending on cultural resource definition. This was done twice, once blind (without knowing the original discipline) and once with the original discipline in mind, as to not incite bias from pre-conceptions of the selected discipline. These definitions where then plotted and used as part of the review, and the top corresponding disciplines (disciplines which were prevalent throughout all fields) and the most relevant subject specific disciplines were selected to be analysed further (Table 6).

Two assessments were used to understand the spread of literature regarding culture in the field of resource management in line with Objective 3; a broad assessment, which takes into account papers which may discuss cultural resources, but aren't necessarily about cultural resources, and a targeted assessment, which was taken from papers which define their topic as cultural heritage. This was done both on the scale of general research (all papers), and management research (in which the term 'management' was added to the search field) to assess the link between research and management.

4.3.3 Preliminary Review Search Terms and Outputs

Table 3: Preliminary review search terms and outputs, for advanced searches in both Web of Science (WoS) and Scopus; and total % of papers discussing policy or management in the field of Marine Cultural Heritage

Search Engine:	WOS	Scopus
Search Term all papers:	TS=(((underwater OR maritime OR submerged) AND (archaeology OR 'cultural heritage')))	TITLE-ABS-KEY (((underwater OR maritime OR submerged) AND (archaeology OR cultural heritage)))
Search Term all papers on policy:	TS=(((underwater OR maritime OR submerged) AND (archaeology OR 'cultural heritage')) AND ('policy' OR 'management' OR 'legislation'))	TITLE-ABS-KEY (((underwater OR maritime OR submerged) AND (archaeology OR cultural heritage)) AND ('policy' OR 'management' OR 'legislation'))
Total Maritime Archaeology papers:	761	611
Total of above mentioning policy:	131	203
% of papers on policy in MCH	17.21%	33.22%

Table 4: Preliminary review search terms and outputs, for advanced searches in both Web of Science (WoS) and Scopus; and total % of papers discussing policy or management in the field of marine resources

Search Engine:	WOS	Scopus

Search Term all papers:	TS=((marine OR freshwater OR coastal) AND (biology OR ecology OR environment OR 'natural heritage'))	TITLE-ABS-KEY (((marine OR freshwater OR coastal) AND (biology OR ecology OR environment)))
Search Term all papers on policy:	TS=((((marine OR freshwater OR coastal) AND (biology OR ecology OR environment OR 'natural heritage')) AND ('policy' OR 'management' OR 'legislation')))	TITLE-ABS-KEY (((marine OR freshwater OR coastal) AND (biology OR ecology OR environment)) AND ('policy' OR 'management' OR 'legislation'))
Total Maritime Archaeology papers:	96833	198337
Total of above mentioning policy:	11535	28524
% of papers on policy in Marine Environment	11.83%	14.38%

4.3.4 Advanced Review Search Terms Outputs and Selected Disciplines

Table 5: Advanced review (WoS) search terms and initial and final outputs. Final outputs calculated after screening, and including 'management' within the search term

Field	**Search Term**	**Initial Output**	**Final Output**

Natural Resources	TS=("Natural Resources")	20,366	9,980
Cultural Resources	TS=("Cultural Resources")	1,213	1,208
Environmental Resources	TS=("Environmental Resources")	1,368	1,356
Ecosystem Services	TS=("Ecosystem Services")	23,044	2,295
Cultural Ecosystem Services	TS=(("Cultural Ecosystem Services") OR ("Cultural Services"))	1,039	1,000
Cultural Heritage	TS=("Cultural Heritage")	11,268	5,190
Marine Cultural Heritage	TS=(("Underwater" OR "Marine" OR "Ocean" OR "Nautical") AND ("Cultural Heritage" OR "Heritage"))	1,071	1,071
Marine Resources	TS=(("Marine" or "Ocean" or "Underwater") AND ("Resources" OR "Services"))	15,916	12,224
	Total:	75,285	34,324

Table 6: Top corresponding disciplines of all subjects, and the relevant disciplines identified for further study

Top Corresponding Disciplines	**Other Relevant Disciplines**
ENVIRONMENTAL SCIENCES	Archaeology

ENVIRONMENTAL STUDIES	Maritime Archaeology
GEOGRAPHY	Biology/Ecology
ECOLOGY	Marine Biology/Ecology
ECONOMICS	Environmental Resources/Resource Management
GEOSCIENCES MULTIDISCIPLINARY	Law/Policy
GREEN SUSTAINABLE SCIENCE TECHNOLOGY	
BIODIVERSITY CONSERVATION	
REGIONAL URBAN PLANNING	
GEOGRAPHY PHYSICAL	

4.4 Discussion

4.4.1 Preliminary Review

An initial result of the preliminary review showed that there are almost double the number of papers on policy in the field of MCH compared to the marine environment (Tables 3 and 4). Even so, the current academic consensus suggests that a lack of *awareness* of MCH within sectorial approaches is a significant reason for the underrepresentation of culture in existing integrated resource frameworks (Maarleveld, 2012; Satterfield, *et al.*, 2013; Kingsley, 2016; Brennan, 2018; Papageorgiou, 2018).

Internationally, governments, NGOs and academic bodies are becoming increasingly aware of the natural and cultural resources within their coastal and marine zones, exemplified by the increasing numbers of papers published on policy in the last few decades by these agencies (Figure 4). It seems however, that as awareness of these resources increases; as does the awareness of the inadequacies in their protection, management and research (Table 7). Furthermore, there is a plethora of evidence which suggests that cultural resources are the most disadvantaged, and are afforded the least attention in both policy and legislation, as well as in public engagement and awareness (Seppelt *et al.*, 2011; Chan *et al.*, 2012; Tratalos *et al.*, 2016; Papageorgiou, 2018). Considering this, it may be the case that the literature inequalities between papers on policy in cultural marine resources vs. the field of natural marine resources may be evidence of a rallying call for more effective protection for MCH, rather than a correlation between awareness and effectiveness.

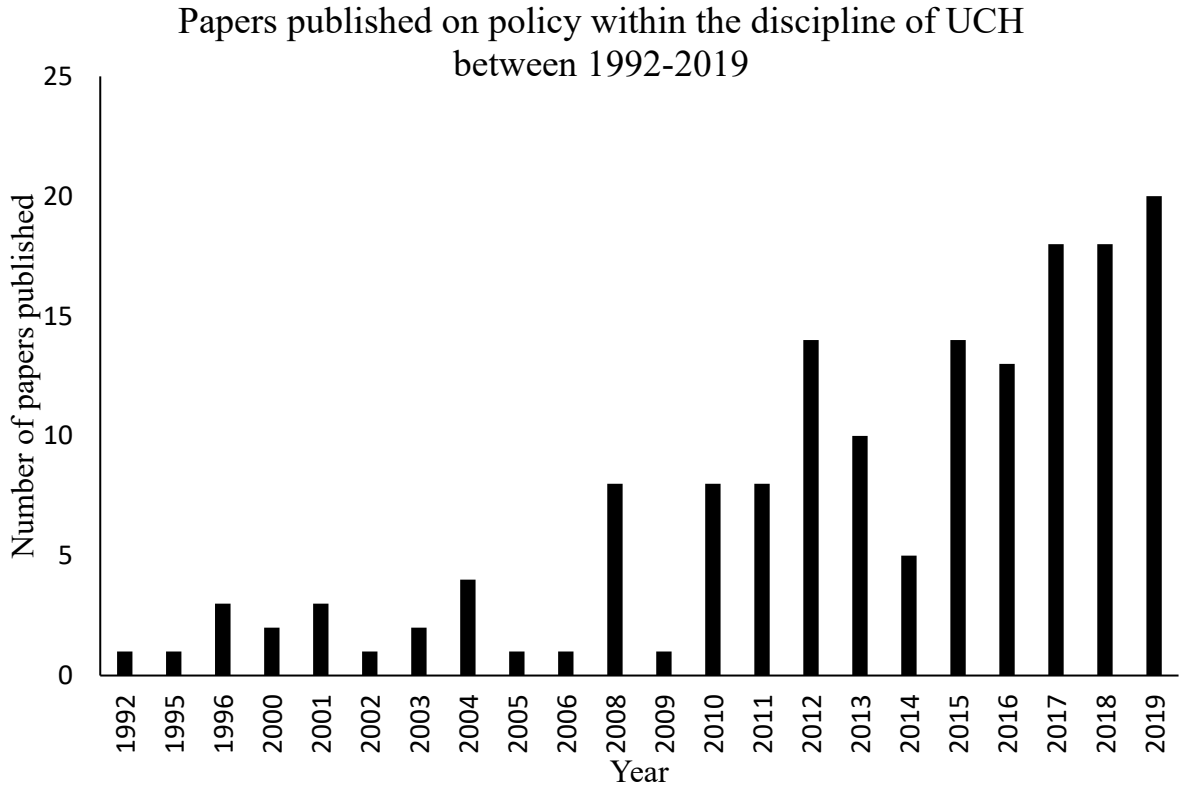


Figure 4: Papers published on policy within the discipline of MCH between 1992-2019 (WoS and Scopus)

Table 7: Top topics published within the policy papers reviewed in the field of MCH (WoS and Scopus)

Category	**Topic (%)**
Total papers reviewed on policy in MCH	93
Papers discussing integration for sustainable development	51.6
Papers discussing inequalities in protection, management and research	44.1
Case studies on top down management	74.2
Case studies on bottom up management	25.8
Examples of integrated policy in practice	3.23

There is evidence of a clear trend over the last 50 years regarding the need for a methodology for more successful and sustainable protection of MCH. 51% of papers reviewed in this study under the topic of policy in MCH focus on the potential of an integrated management system. However, a gap exists in the number of papers which give an example of an integrated system in practice. Additionally, there was extremely limited evidence of a comparative study between both bottom up and top down management methodologies (Figure 5). Rather than a lack of awareness, the lack of research and understanding in the practicality of MCH in integrated marine policies such as MSP may be a reason for the policy vacuum in which MCH management finds itself; opening the question, if awareness of the need for integrated management has been so significant in literature over the last 50 years, why are there such limited examples of it in practice?

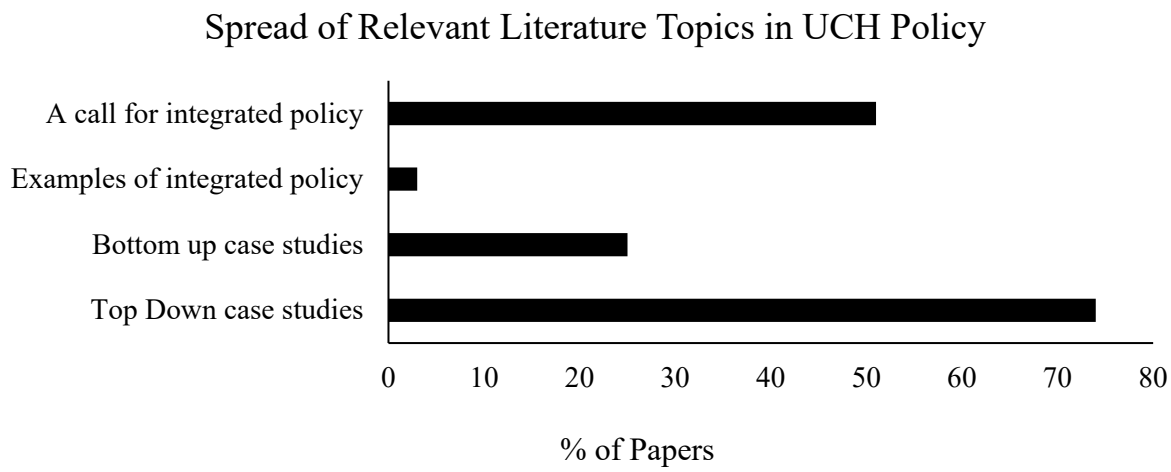


Figure 5: Spread of literature topics in MCH policy publications (WoS and Scopus)

To further explore this question; an extended review of the spread of disciplines and topics within the field of terrestrial and marine resource management was conducted to understand the larger picture of how we have come to the context onto which this thesis is built upon.

The primary findings of this review in answer to the research question include;

1) the broad spread of disciplines within the field of resource management has led to a spread of interpretations of culture and cultural heritage in literature
2) gaps in integrated legislation between resources may be caused by gaps in associated literature and research

4.4.2 Extended Review

Hypothesis 1) The broad spread of disciplines in resource management has led to a broad spread of interpretations of cultural heritage.

The world's resources are split up into various categories defined differently by each state, NGO and Government agency which manages them. Environmental resources (ER) are often defined as natural resources, such as by the UK Government Environment Agency (Environment Act 1995), and often include cultural resources within its rhetoric e.g. The 2001 Millennium Ecosystem Assessment (MEA, 2001).

Within the environmental and natural resource literature analysed for this review, there was no presence of cultural heritage in the top cited sources. A reason for this is simply the size of the cultural heritage discipline compared to environmental and natural resources, (3,279 papers specifically discussing cultural heritage compared to over 25,000 papers in the field of natural and environmental resources), but considering there has been such a significant call for the greater inclusion of cultural resources in the field for over a number of years, a larger presence was expected.

Considering the limited presence of cultural heritage within natural and environmental resource literature, it is not necessarily surprising that the definition of culture is so varied (Table 8). 55% of the literature referred to cultural resources as the benefits received from environmental resources, and only 4% defined cultural resources as tangible and intangible cultural heritage. These results compliment and broaden the findings of a study conducted in 2017, in which the interpretations of cultural ecosystem services in ecosystem services literature was reviewed. In this case, only 2% of sources defined cultural ecosystem services as tangible or intangible heritage (Hølleland *et al.*, 2017). As such, the findings in this study indicate that this issue is broader and goes back further than the field of Ecosystem Services, and stems from a lack of cultural heritage representation as a defined resource in environmental and natural resource management literature.

Table 8: Highest cited definitions of cultural resources within the field of resource management

Top Definitions of Culture in Top Cited Literature	**% of all top cited literature**
Human interactions with ES	55%
Valuation methods for ES	11%
Sustainable Development	7%

Social and Political Issues	12%
Public Awareness/Perception of Natural Resources	5%
Tangible and Intangible Cultural ES	4%
Human Resources	4%
Rec and Tourism	2%

Hypothesis 2: gaps in integrated legislation between resources may be caused by gaps in associated literature and research

The literature in environmental and natural, terrestrial and marine resources, and ecosystem services all share a similar disciplinary spread. The top published discipline was consistently environmental studies and sciences, and the first subject specific topic was ecology. The only topic which this was not the case for was within the field of cultural heritage, in which the first subject specific discipline was archaeology (Table 9). The outlier here flags the expected academic differences between these subjects, and raises the question: are these topics too different to be integrated in management? Furthermore, the top cited topic within the field of environmental resources (double the citing value of the next most cited) was on the economic valuation of environmental resources, indicating the beginning of an early answer to the issues discussed in the following Chapters: the lack of an internationally agreed upon method of valuation for MCH.

Table 9: Disciplinary spread (top five disciplines) within resource management literature and cultural resource management literature (WoS)

All Resource literature	**Cultural Resources**
ENVIRONMENTAL SCIENCES	ENVIRONMENTAL SCIENCES
ENVIRONMENTAL STUDIES	SOCIAL SCIENCES INTERDISCIPLINARY
ECOLOGY	ARCHAEOLOGY
ENGINEERING ENVIRONMENTAL	HOSPITALITY LEISURE SPORT TOURISM
WATER RESOURCES	ENVIRONMENTAL STUDIES

The results of this analysis provide some preliminary answers to Objectives 1 and 2 of this thesis, namely; (1) to critically assess the current context of MCH within integrated marine resource frameworks and policy both within [and outside of] academia; and (2) to determine what factors are limiting the successful management of MCH in integrated frameworks and policy, and use this to determine focussed research questions for the following Chapters.

To further understand the crossovers, connections and gaps in literature between natural and cultural resources and their management, a quantitative literature review was conducted using Bibliometrics and Linear Dirichlet Analysis in the following Chapter. This research aims to provide a clearer view of the connections between integrated research and integrated policy, and uses this information to look into the future of these disciplines, by mapping the rate of research progress against the SDG Goals for 2030.

Chapter 5 Quantitative Literature Review: The Future of Integrating Natural and Cultural Resource Management for Sustainable Development

5.1 Abstract

This review uses content analysis to model research patterns in the fields of marine and terrestrial resources from 1990 onwards, to determine if the level of integration between the management of cultural and natural services is in line with UNESCO's Sustainable Development Goals (SDGs) for 2030. Over thirty-four thousand peer-reviewed articles were extracted from Web of Science (WoS) records and analysed holistically and computationally using systematic literature review (SLR), latent dirichlet allocation (LDA), bibliometric analysis, and mathematical predictive modelling, respectively. The SLR extracted eight primary disciplines for further analysis: natural resources, cultural resources, environmental resources, ecosystem services, cultural services, cultural heritage, Marine Cultural Heritage and marine resources. The LDA showed that within these topics, the call for further integration between cultural and natural services has increased exponentially over the last 20 years. Bibliometric analysis showed that the examples of successful management of culture within integrated frameworks is particularly lacking. Network analysis identified the field of marine resources to have a higher level of culture-nature integration than terrestrial resources. To understand why cultural and natural services lack successful integration, terrestrial and marine resource literature was analysed comparatively. Within the field of terrestrial resource research, the overarching research link between cultural and natural resource management is sustainability, yet key links are lacking, such as in valuation and policy research. Conversely, results show that within the field of marine resources, cultural and natural services have stronger research links in both management and subject specific themes. Notably, natural and cultural marine resources were more strongly linked by the theme of 'valuation' than they were by the themes of 'framework' and 'governance'. The network connections and disconnections observed in this study suggest that research into *how to implement* mixed methods of management that *benefit both natural and cultural services* appears to be a missing link between research and the effective management of cultural services within integrated frameworks. Suggested future work suggests the necessity for more research into mixed methods of management and methods of valuation that are coherent between both natural and cultural resources, that are able to measure the interconnections of these disciplines rather than the differences.

5.2 Introduction

The sustainable management of natural and cultural resources is a key concern of all global environmental organisations in the 21st century. Eight out of UNESCO's 17 Sustainable Development Goals (SDGs) for 2030 reference the management of Environmental Resources, which by definition includes both cultural and natural services (MEA, 2001), as an essential aspect of human development. As such, various frameworks for resource management have been implemented internationally. The most recent management methodologies have put significant focus on the integration of natural, cultural (tangible and intangible cultural heritage) and social services as the driver for increased sustainability, but implementation offers mixed results (IPBES, 2019a). For example, the Millennium Ecosystem Assessment, which popularised the term 'Environmental Services', aims to integrate the management of social, cultural and natural services into one framework package, yet current consensus suggests a significant lack of integration of culture within the framework (Carpenter *et al.*, 2009; Daniel *et al.*, 2012; Martín-López *et al.*, 2013; Seppelt *et al.*, 2011). Within integrated management frameworks, cultural services are often nominally included and poorly managed, which has resulted in a significant cohort of literature exposing these issues (Daniel *et al.*, 2012; Vukomanovic and Steelman, 2019).

The UNESCO *Policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention* (UNESCO, 2015b) explicitly calls for the integration of cultural heritage into environmental conservation management systems for the Sustainable Development and wellbeing of society. The policy acts to encourage states parties to 1) recognise and promote the potential of cultural heritage for sustainable development for environmental, social, and economic development, as well as for peace and security, and 2) to adopt a holistic and integrated approach to better appreciate the interlinkages between nature and culture, in alignment with the sustainable development objectives. The policy has been successful in integrating culture into the sustainable development rhetoric, yet the most recent progress report highlighted the importance of a continued effort to promote integrated management approaches in legislation. To aid in implementation, the report outlined Thematic Indicators to measure the contribution of heritage to sustainable development (UNESCO, 2019).

Although the 2015 UNESCO Policy has achieved overwhelming support by states parties, the integration of cultural services into environmental legislation is lacking and the academic consensus regarding the management of cultural services within integrated frameworks is overwhelmingly negative (Guzmán *et al.*, 2017). Furthermore, the 2019 Policy Progress Report stated that well-intentioned development activities that do not integrate with heritage management may in fact be undermining environmental sustainability and social inclusion. As

such, the development of a 'clear roadmap for implementation' is highlighted as a necessary future development to support state parties in the implementation of the 2015 Policy (UNESCO, 2019).

Marine and terrestrial natural and cultural resources are largely managed under differing legal prerogatives, and separate frameworks. Both fields have increased integrative research, yet both suffer a similarly negative consensus regarding the management of cultural services within integrated frameworks. As such, marine and terrestrial resources provide an interesting comparative study of the current state of integrated cultural and natural service management, in particular: if cultural and natural services should be managed as one in the first place, and if so, which methods should be used to effectively manage them.

This is particularly the case for Sustainable Development Goal 14: Oceans: the sustainable management of the ocean has been highlighted in SDG governance as a critically important yet under-managed resource (UNESCO, 2019b). As priority is given to the ocean sciences in the upcoming Decade of Ocean Science (2021-2030), it is important that research into the role of marine cultural services within integrated management frameworks is present.

Although there is a growing number of critical papers regarding the mis-management of culture within integrated management frameworks, relatively few studies have provided a clear reason for why this is the case, or what needs to change in order to improve the issue. The documents that do provide theoretical frameworks for integration, usually do not include cultural services (Nunhes *et al.*, 2019). Notably, the issue has not been analysed self-reflectively, to determine the role in which research patterns play in this issue, and none have provided comparative studies between marine and terrestrial resources. As such, this study aims to provide a comparative assessment of research integration between cultural and natural services within the fields of marine and terrestrial resources. The results of this work are used to ask: i) should these resources be integrated ii) what methods are and aren't working currently, and iii) according to the 2015 UNESCO Policy, does this level of integration align with UNESCO's SDGs for 2030?

5.2.1 Objectives

1. Empirically analyse the current literature consensus for the integration of cultural and natural services within the fields of marine and terrestrial resources
2. Compare and contrast the research links between cultural and natural services in the fields of marine and terrestrial resources
3. Model research patterns and networks to predict integrated research alignment with SDG targets for 2030

5.3 Methodology

5.3.1 Data Selection, Collection and Cleaning

Due to the multi-disciplinary nature of this work, an interdisciplinary methodology was used to effectively assess the spread of literature. A qualitative systematic literature review (SLR) was conducted to assess the spread and general trends across literature over time and to determine the most appropriate search terms without selective bias. Due to the broad results outputted from Web of Science, the eight most highly cited and relevant topics were selected to represent the range of disciplines (Table 10). The topics were refined by extracting non-relevant categories identified in Chapter 4, duplicates, incomplete records, and non-relevant field tags (when relevant to the analysis method). The final records included the authors' names, affiliations, article titles, abstracts, full records and cited references. The data was organised by year and grouped into natural, cultural, or interdisciplinary research.

Table 10: Search terms and outputs used for data collection in WoS

Field	**Search Term**	**Initial Output**	**Final Output**
Natural Resources	TS=("Natural Resources")	20,366	9,980
Cultural Resources	TS=("Cultural Resources")	1,213	1,208
Environmental Resources	TS=("Environmental Resources")	1,368	1,356
Ecosystem Services	TS=("Ecosystem Services")	23,044	2,295
Cultural Ecosystem Services	TS=(("Cultural Ecosystem Services") OR ("Cultural Services"))	1,039	1,000
Cultural Heritage	TS=("Cultural Heritage")	11,268	5,190

Marine Cultural Heritage	TS=(("Underwater" OR "Marine" OR "Ocean" OR "Nautical") AND ("Cultural Heritage" OR "Heritage"))	1,071	1,071
Marine Resources	TS=(("Marine" or "Ocean" or "Underwater") AND ("Resources" OR "Services"))	15,916	12,224
Total:		75,285	34,324

5.3.2 Data Analysis

The following analyses were conducted in R Statistical Software. Latent Dirichlet Allocation (LDA) was used to monitor the academic output of integrated research. Bibliometric analysis was used to identify cross-disciplinary networks and themes. Linear regression was used to model future academic output patterns up to the year of 2040.

5.3.3 LDA Analysis

Latent Dirichlet Allocation (LDA) uses a probabilistic Bayesian model for collections of discrete data, such as text. Each item within the collection is modelled under a set of topics, which in turn is modelled within a set of topic probabilities. This method of text analysis provides a way of representing a document, or vast amounts of documents, succinctly, and categorised into themes and networks (Blei *et al*., 2003).

LDA was used to computationally analyse the content of the abstracts. The analysis was performed using the 'lda', 'stopwords', 'SnowballC', and 'LDAvis' packages on R (Blei and Jordan, 2003; Chang, 2015). The respective code used was an adapted version of the code used by Droste *et al*., available on the public github repository (Droste *et al.*, 2018), and results were visualised using 'ggplot'.

The text was processed by eliminating stop words (such as and, if, but), reducing the key terms to stem words, and removing words which occur less than five times. The top words per article were selected and grouped into topics and organised by year. Topics related to interdisciplinary research in cultural and natural resources were extracted and plotted against their frequency per year.

5.3.4 Bibliometrics

Biblio-analysis was performed by using and adapting the 'bibliometrix' package on R (Aria & Cuccurullo, 2017). Within the bibliometrix package; descriptive and network analyses were used to map research links within academic fields, and are presented in this study using a topic dendrogram.

5.3.5 Descriptive Analysis

The papers selected in the systematic literature review were inputted into R Studio for Bibliometric Analysis. The dataset was refined in R giving a final input of 34,324 papers. The metadata was organised into columns using the standard Clarivate Analytics WoS Tag codify. Initially, a descriptive analysis was used to detail various components of the data-frame to be used for network analysis.

5.3.6 Network Analysis

Bibliographic network analysis was conducted to identify inter- and intra-disciplinary connections within the datasets to create interdisciplinary networks represented as matrices. To eliminate bias in the generation and analysis of a network, multiple methods were used to determine the overall influence of connections between subject areas. "Co-citation" (when two articles are both cited in a third article), "coupling" (at least one cited source appears in the bibliographies or reference lists of both articles), "collaboration" (where nodes in a network are authors and links are co-authorships) and "co-occurrences" (the level by which the same words occur in different articles) were used to identify the strongest research links to create the most meaningful conceptual structures.

5.3.7 Conceptual Structures

The network matrices created in the previous stage were mapped using the 'conceptualStructure' function on R. A topic dendrogram was used to present the closest and farthest research links between datasets.

5.3.8 Predictive Modelling

The dataset was statistically tested for significance using the R packages 'sjPlot', 'phia' and 'interactions', and was modelled linearly for both terrestrial and marine resources. Linear regression was used to predict future trends in the dataset from 1990 to 2040.

5.4 Results

The first objective of this research was to empirically analyse the current literature consensus for the integrated management of cultural heritage and natural services. Table 11 exemplifies a selection of eighteen pieces of literature between 2015-2020, which include a call for the better integration of natural and cultural heritage resource management. These papers are complimentary to Figure 6, which shows the results of an LDA used to extract the number of papers which include similar calls for integration since 1990. The results showed an exponential increase in the frequency of the theme 'integration' in relation to natural and cultural heritage resource research from 1990 onwards.

Table 11: Selection of literature calling for the integration of natural and cultural resources, collected from WoS, categorised into Author and Year, the general consensus of the paper, the methodology used, the primary themes within the paper, and the area in which the paper was based (inland or marine).

Author and Year	**Consensus**	**Methodology**	**Themes**	**Area**
(Connolly, 2020)	Integrating environmental and cultural heritage policy is necessary for sustainable development, in line with the SDGs	Discursive analysis of primary written sources and original interviews: Penang	Urban policy, sustainable development	inland
(Zscheischler, Busse and Heitepriem, 2019)	Integrating environmental and cultural heritage legislation is necessary at a community level for sustainable development	Stakeholder analysis: Germany	Cultural landscapes legislation, sustainable development	inland
(Morel and Bankes Price, 2019)	Coordination and cooperation between environmental and cultural heritage policy	Discursive analysis of policy: England	Regional Policy	inland

	sectors would provide substantial improvement in cultural heritage management			
(Porebska *et al.*, 2019)	Integrated management of environmental and cultural heritage policy would improve defence against destructive environments	Analysis of UNESCO World Heritage Site: Krakow	Urban management	inland
(Palang *et al.*, 2019)	Local people are more likely to adhere to cultural heritage policy, if they see both cultural and environmental importance in the environment	Theoretical analysis: Estonia	Cultural landscape policy	inland
(Khorassani *et al.*, 2019)	An integrated impact analysis which takes into account environmental and cultural factors would better protect cultural heritage sites, for more successful sustainable development in line with the SDGs	Environmental Life cycle assessment (LCA) analysis for heritage: Spain	Integrated impact assessment, sustainable development	inland
(Ryfield *et al.*, 2019)	Local people are more likely to adhere to environmental policy, if they see both cultural and environmental importance in the environment	Theoretical Case Study Analysis: Irish Sea	Cultural ecosystem services	marine

(Egberts and others, 2019)	Nature-culture divides in policy are negatively affecting the environment, an integrated approach would better inform policy	Discursive Analysis: Dutch Wadden Sea	Marine policy	marine
(Pop *et al.*, 2019)	Integrated management of cultural heritage, which takes into account both the environment and cultural heritage, could improve sustainable development in line with the SDGs	Literature analysis and survey: Romania	Management, sustainable development	inland
(Brown and Murtha, 2019)	By expanding the definition of cultural resources to include nature, environmental protective policies could be integrated to increase sustainable development	Ethnographic fieldwork and interview analysis: USA	Policy, sustainable development	inland
(Eliasson, Knez and Fredholm, 2018)	Cultural Ecosystem Services are not properly managed in Environmental Services, but if integrated successfully could increase sustainable development and achieve the SDGs	Interview analysis: Sweden	Cultural ecosystem services, sustainable development	inland

(Cantasano, Pellicone and Letto, 2017)	Cultural heritage is not properly integrated into Italian ICZM, but successful integration would increase sustainable development, in line with the SDGs	Discursive case study analysis: Italy	ICZM, sustainable development	coastal
(Ababneh, Darabseh and Aloudat, 2016)	There are few studies on the integration of cultural heritage and environmental policy, but a better understanding of this could successfully inform policy to increase sustainable development	Case study analysis: Jordan	Management, sustainable development	inland
(Khakzad, Pieters and Van Balen, 2015)	Cultural heritage is rarely properly integrated into ICZM and MSP, but if properly managed could significantly increase protection	Case study analysis: Belgium	ICZM	coastal
(Tengberg *et al.*, 2012)	Cultural Ecosystem Services are not properly managed in Ecosystem Services, but if valuated differently, could be properly integrated, leading to improved sustainable development	Two case studies; Sweden, Arafura-Timor Seas	Ecosystem services, sustainable development	inland

(Agapiou, Lysandrou and Hadjimitsis, 2017)	Cultural heritage is not properly integrated into MSP	Assessment and evaluation: Cyprus	MSP	marine
(Fletcher *et al.*, 2014)	Cultural Ecosystem Services are not properly integrated into Ecosystem Services, but if properly integrated, could significantly increase sustainable development	Interview analysis: Black Sea	Cultural ecosystem services, sustainable development	coastal
(Pater and Oxley, 2014)	To properly protect British MCH, heritage needs to be better integrated into the marine agenda for the marine environment	Case study analysis: England	Policy	marine

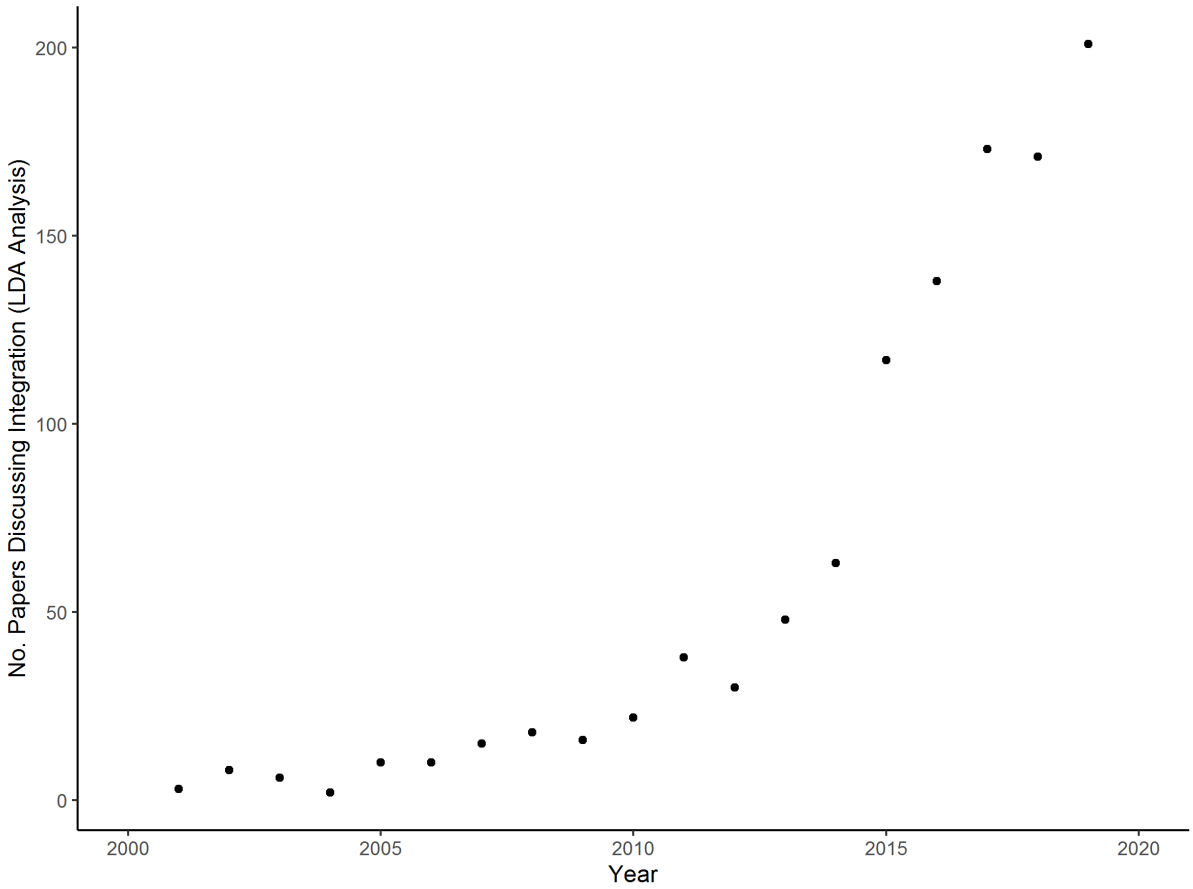


Figure 6: Number of papers discussing the integration of natural and cultural services over time, obtained using LDA analysis of the dataset.

Objective 2 aimed to show the research links between cultural and natural services in marine and terrestrial resource literature. Figures 7 and 8 show a hierarchical clustering of topics derived from network analysis for terrestrial resource literature (Figure 7) and for marine resource literature (Figure 8) (min. degree = 6, cluster size = 5). Within terrestrial resource literature, natural and cultural services are represented in separate clusters, connecting at a height of 1.5. Natural services are more closely related to topics such as 'biodiversity', 'conservation' and 'policy', and cultural services are more closely related to topics regarding 'challenges' and 'preferences'. The topics 'cultural services' and 'natural services' are equally related to the topic of 'sustainability'.

Marine resource literature has stronger links between cultural and natural services (cluster height – 0.6) and are represented within in the same cluster. Within the cluster, multiple research links are identified between natural and cultural services, including subject specific topics such as 'fisheries' and 'tourism', and management topics, such as 'valuation' and 'frameworks'. 'Values'

and ‘valuation’ are at the centre of the cluster, representing a clear research overlap between the topics of natural and cultural services, within the field of marine resources. ‘Frameworks’ and ‘governence’ appear a step below valuation, indicating that these themes have weaker links between natural and cultural services.

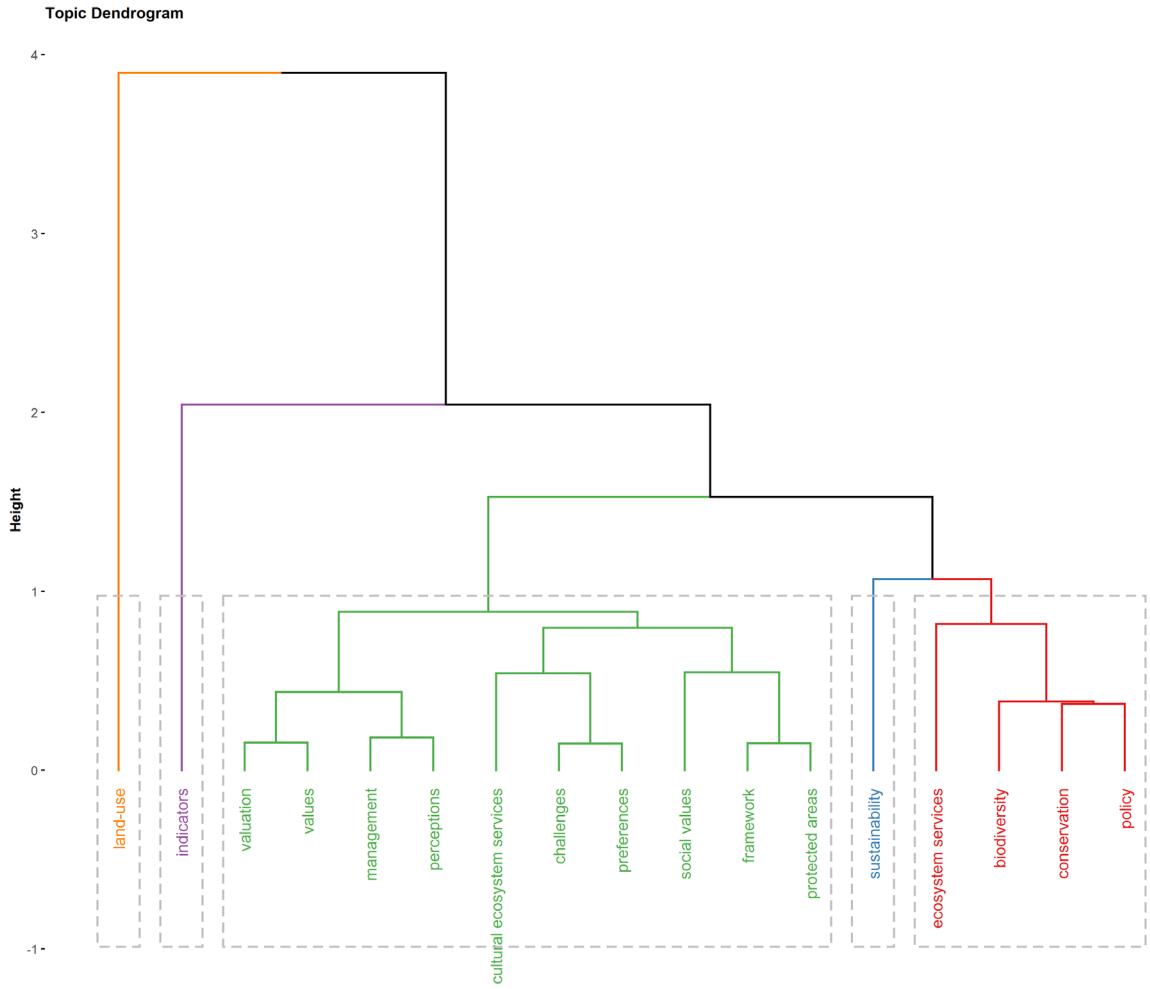


Figure 7: Topic dendrogram showing thematic clusters within the field of terrestrial resource research

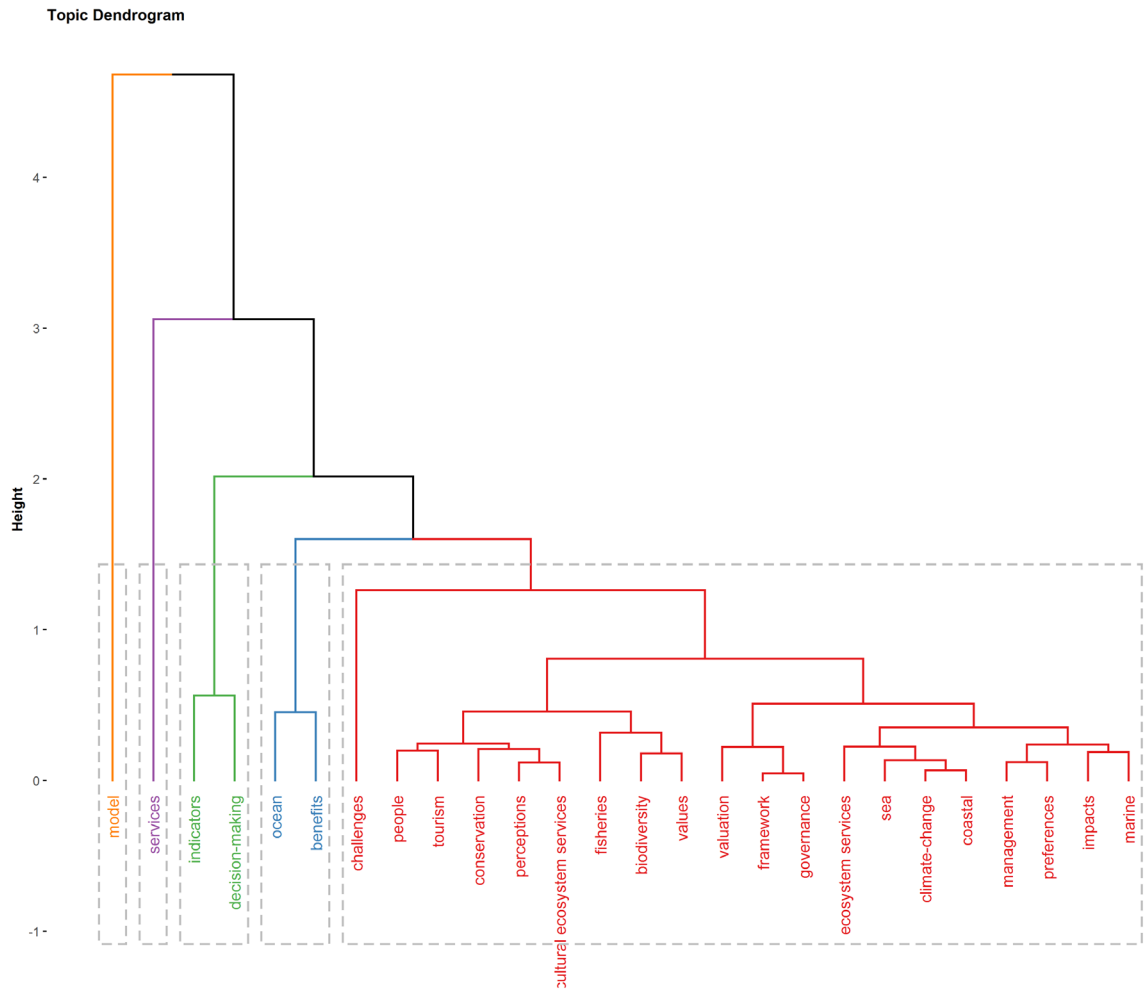


Figure 8: Topic dendrogram showing thematic clusters in the field of marine resource research

In line with the final objective, the proportion of research regarding cultural services, natural services, and integrated research from 1990 to 2020 was used to predict the future trends of these fields into 2030 and 2040. The results show that the proportion of academic output in the field of cultural services is increasing by 0.3% per year ($F_{(1,81)}$= 24.07, p=<0.001) from 5% of the literature in 1995 to 18% in 2030, and 21% in 2040. Natural service literature makes up the largest percentage of the field at 89% in 1990, and is decreasing proportionally by 0.3% per year ($F_{(1,81)}$= 16.68, p=<0.001) to 78% in 2030 and 74% in 2040, and has the largest overall number of citations. The rate of integrated research does not change significantly per year ($F_{(1,81)}$= 0.68, p=0.41), with an output of around 4% of the literature throughout the predicted time period (Figure 9).

Comparitively, marine resources had fewer overall citations and papers (Figure 10). The proportion of academic output in the field of cultural services is increasing at a rate of 0.15 per year ($F_{(1,81)}$= 7.30, p=<0.001), from 3% of the literature in 1995 to 8% in 2030 and 10% in 2040. The proportion of natural services literature is decreasing ($F_{(1,81)}$= 98.80, p=<0.001) at a rate of 0.5% per year, but citations are increasing. The output of this field decreases from 94% in 1990 to 80% in 2030, and 70% in 2040. Conversely to terrestrial resource literature, the proportion of

interdisciplinary literature is increasing significantly at 0.4% per year ($F_{(1,81)}$= 52.38, p=<0.001) in both academic output and citations. The output increases from 3% of the literature to 17% in 2030 and 20% in 2040.

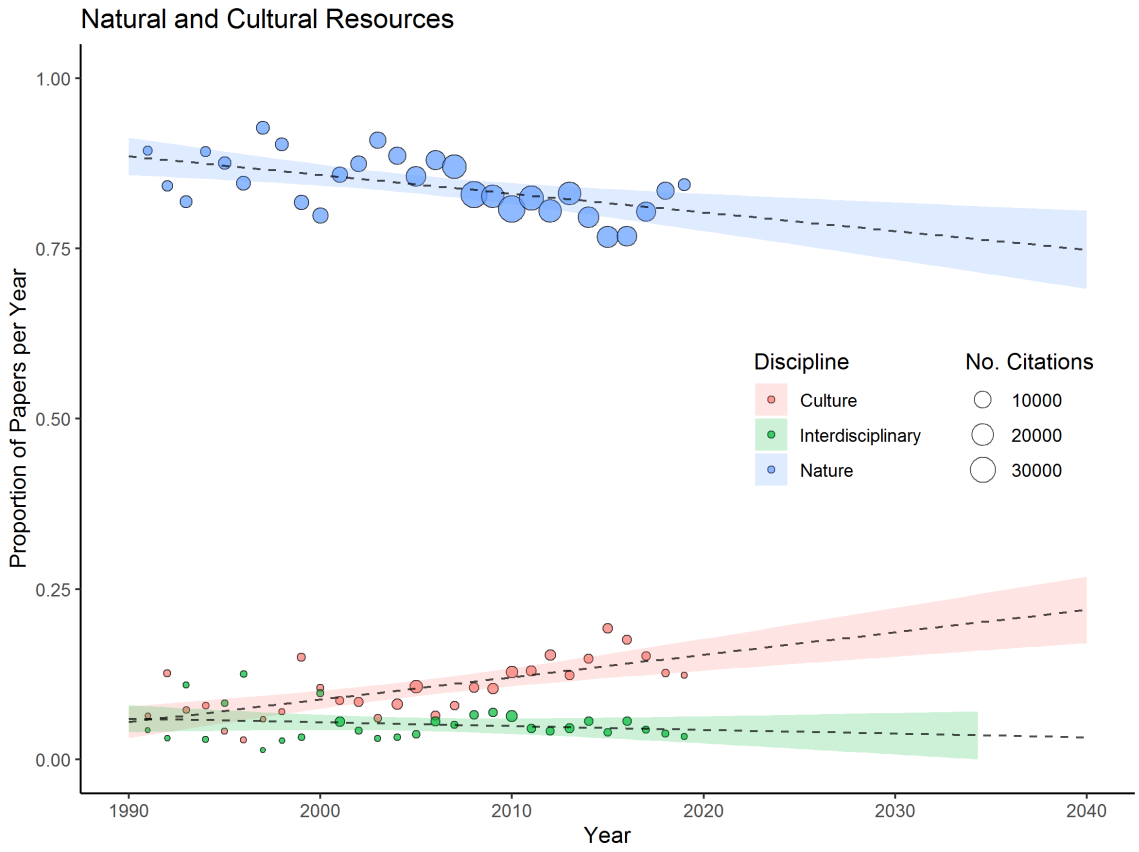


Figure 9: The proportion of research regarding cultural services, natural services, and integrated research from 1990 to 2020, used to predict the future trends of these fields into 2030 and 2040

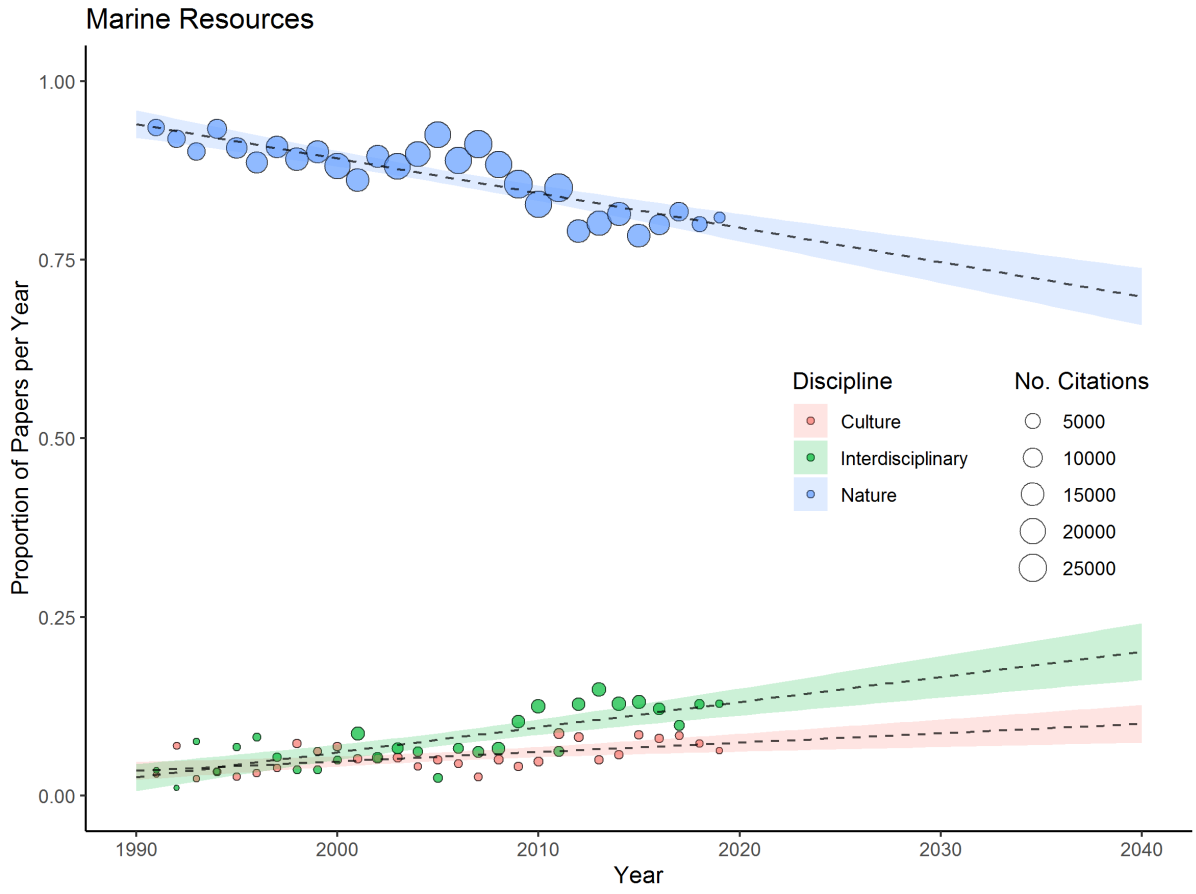


Figure 10: The proportion of research in the field of marine resources regarding cultural services, natural services, and integrated research from 1990 to 2020, used to predict the future trends of these fields into 2030 and 2040

5.5 Discussion

5.5.1 Key Findings: Historic and Current Patterns

- There is an increasing call for the integration of cultural and natural services within the fields of terrestrial and marine resources, yet there are few examples of the successful integration of cultural heritage.
- Within terrestrial resource literature, natural and cultural service research is connected by the theme of sustainability, but significant research connections are lacking in management, policy, and subject specific research.
- Within marine resource literature, the themes of cultural and natural services are more closely integrated than in terrestrial resource literature. Multiple links were identified in both management and subject specific research. Within the theme of management, the services were more closely linked by valuation than they were by the themes of 'framework' and 'governance'.

5.5.2 Key Findings: the Future of Integrated Resources

- Proportionally, integrated research within the field of terrestrial resources is not increasing, whereas integrated research within the field of marine resources is increasing.
- Considering the major research links between cultural and natural services align with the values and goals of the SDGs, it is argued that an increase in integrated research is likely to aid countries in reaching their SDG targets.
- The field of marine resources is significantly increasing integrated research effort, yet it is argued that this field faces steeper challenges, with more urgent implications, if integrated research is not effectively implemented into management and policy.
- To bring countries closer to SDG targets, future work should attempt to utilise the promising marine resource movement documented in this work, to fully understand and analyse the future impacts of, and provide an effective framework for, integrated cultural and natural marine resource management.

This research aimed to assess the current level of research integration between natural and cultural services by comparing the fields of marine and terrestrial resources. These results were used model these patterns against the UNESCO SDGs for 2030. To do so, multiple context analysis methodologies including SLR, bibliometric analysis, LDA, and predictive modelling were used to determine relationships and patterns within the literature. The main findings indicated that within the field of terrestrial resources, natural and cultural service research is linked by the shared concept of sustainability (usually in the form of shared goals within UNESCO's SDGs, as exemplified in Table 11), yet connections are lacking in key research areas such as policy and valuation. Research into marine resources showed that this field has a higher level of culture-nature integration and has stronger connections in both management and subject specific themes. These findings present an opportunity to formulate research questions targeted at the current gaps in research, with the aim to form a more effective platform for the integrated management of these resources (Part 2).

5.6 Historic and Current Patterns

Recently, there has been an increase in literature discussing social valuation as a method to value cultural services, thus allowing cultural and natural services to be comparatively valued and managed together (Bonenberg, 2019). However, one of the main issues with this methodology is that social valuation is often only used to value social or cultural services, negating the comparable aspect of this metric (Rincón-Ruiz *et al.*, 2019). Within the field of marine resources, it appears that the theme of 'valuation' is linking research between natural and cultural services,

suggesting stronger links within the field of marine resources compared to terrestrial resources. This may be exemplified in recent trends in policy, considering the increasing uptake of integrated ocean policies and frameworks such as ICZM and MSP over the last decade (Chapter 3).

Nonetheless, research links in 'frameworks' and 'governance' are still comparatively weak, suggesting that an increase in research regarding how to implement integrated valuation methods, and whose responsibility it is to facilitate this integration effectively is needed in order to positively affect management. This is largely exemplified by the lack of research in implementation and practice case studies, compared to current pool of theoretical methodology literature (Table 7). This research balance is further reflected in current integrated management frameworks such as ICZM and MSP: there has been a significant rise in engagement with social valuation methods, yet there are still no visceral examples of the successful integrated management of cultural services within these frameworks (Rincón-Ruiz *et al.*, 2019). To take this further, a successful method of *mixed* valuation that takes into account the interconnections between cultural and natural services is not yet widely accepted, and so it is not surprising that successfully integrated protection is not yet adopted into local legislation.

When comparing marine to terrestrial resources, it is important to note that increased research into natural-cultural service integration in the marine environment is likely a product of shared responsibility and necessity. In the case of MCH, submerged sites are in a far more dynamic medium than terrestrial sites, and so suffer similar environmental conflicts as the associated natural resources (Oxley, 2001). Additionally, the legal prerogatives in territorial and international waters are internationally fragmented and far less policed than terrestrial resources. Furthermore, MCH exists in a highly integrated socio-environmental medium. For example, shipwrecks often provide ideal niches for economically valuable marine species; linking heritage to fisheries, reef research and local communities. A loss of cultural heritage in this environment is linked to habitat management and social and cultural capital, rendering integrated, subject-specific research and management a necessity (Khakzad, Pieters and Van Balen, 2015). The interconnectedness of marine resources means that nominal integration of MCH into marine management frameworks is likely to disadvantage both cultural and natural resource stability, making research into the implementation of mixed valuation methods a vital development for both natural and cultural services.

Integrated frameworks for marine resources have become increasingly popular, and awareness and understanding of the importance of MCH as a resource is increasing (Chapter 3). Social valuation methods have been discussed as a potential way to level the valuation playing field for cultural services (Gelcich *et al.*, 2019), and the theme of valuation does appear to be integrating

natural and cultural service research in the field of marine resources. Despite this, research linking *how* natural and cultural services should implement valuation methods, and who is responsible for facilitating, monitoring and evaluating these methods is weak. Further research into how to implement mixed management methods that benefit both natural and cultural services, and that highlight the benefits of interdisciplinary resources which offer mixed ecological and cultural benefits is needed before cultural services can benefit from integrated management systems.

5.7 The Future of Integrating Resources

The proportion of integrated research within the field of marine resources is predicted to increase by 2030, whereas integrated research within the field of terrestrial resources is not (Figures 9 and 10). This may be a product of the recent push for sustainable ocean management by initiatives such as the Decade of Ocean Science, SDG14: Oceans, and the 2015 UNESCO Policy for Sustainable Development, which all define integration between the cultural and natural resources in both research and management an essential aspect of sustainable development (UNESCO, 2015b; IOC, 2018; Trakadas *et al.*, 2019). By analysing the research links within these two fields it appears that the theme of 'valuation' has opened up the opportunity for subject specific research in the field of marine resources, whereas general links in 'sustainability' have not proven integrative enough for terrestrial resources to significantly advance in integrated research output. It is not yet clear as to whether this effort is enough to affect sustainable development, but the academic consensus (Table 11) and research links identified in this study (Figures 7 and 8) suggest that an increase in integrated research could bring countries into closer alignment with the values and rhetoric of the SDGs.

The models in this research attempt to provide a tentative step towards understanding the evolving patterns and interconnectedness of natural and cultural services through shared values in sustainability. The most recent IPBES Global Assessment has highlighted a lack of global-scale impact analyses which integrate across nature, social valuation and culture (IPBES, 2019a), and it is clear that further work needs to be conducted into the practicalities of integrated management before a significant impact to sustainable development may be monitored. However, if convincing research is conducted into a mixed valuation method that takes into account the interconnections between both cultural and natural services, which can also be incorporated into current management frameworks such as MSP, natural and cultural services may be brought closer to their SDG targets.

5.8 Limitations

The datasets used in this study span large spatial scales and time-periods from 1990-2020, and 2020-2040. As such, associated predictive analytics are best suited to identify large-scale patterns and, when used with the qualitative and quantitative analyses provided in this study, to provide a compelling case for action. Proportional data was used in the modelling process to compare academic contribution, as such; the models attempt to represent the proportional difference between fields while still conveying comparable patterns. This does not affect the validity of the findings, but should be taken into account when applying the models to a broader context.

The topic dendrograms rely on effective natural language processing (NLP) methodologies, which are well known to depend upon the appropriate presentation of context by the user. The use of the qualitative review in Chapter 4 aimed to negate the misuse of context in this case, and all assumptions based on dendrograms are further supported either by academic consensus or by further analysis (such as LDA or bibliometric descriptive analysis). In addition to this, a major reasoning for the use of multiple methodologies was to limit computational error (such as incorrect theme categorisation due to a lack of context or incorrect definitions). As such, contextual bias of NLP was limited as far as reasonably possible.

With regards to integration, this study does not promote the belief that natural and cultural resources should be entirely integrated, and recognises that there are clear research and management boundaries which are a positive and necessary aspect of the respective disciplines. The point of this work is to highlight that an increase in research integration will in turn increase the effectiveness of integrated management – which has the potential to increase sustainable development, as per the academic consensus.

5.9 Conclusion

The principle implications of this study show that although promising research links are beginning to grow between natural and cultural service literature, a greater research effort needs to occur to provide the platform by which successful integrated frameworks may stand. Integrated research between natural and cultural services needs to evolve from research into theoretical social valuation methods as a metric for understanding cultural service value, into *how to use* mixed valuation methods to unite natural and cultural services under pre-existing integrated management frameworks. Research needs to be conducted into subject specific issues which link culture and nature socially, economically and environmentally. Considering marine resources have established stronger links, yet potentially face more extreme implications, research

regarding the integrated management of marine resources should be a priority, as mirrored by the upcoming UN Decade of Ocean Science.

Part 2 Case Studies

Part 1 has provided the scope and platform to develop targeted research questions for the following Section. In this prelude to Part 2, an executive summary of the results so far will be presented, and will be used to develop and justify targeted research questions (below). The Objectives of this thesis are to (1) provide context for the current role of MCH in integrated frameworks, (2) determine the factors limiting MCH integration, (3) use this knowledge to develop and answer targeted research questions, and (4) implement the findings into practical examples. Objectives 1 and 2 have been achieved in Part 1 of this thesis, Objective 3 is achieved in Part 2, and Objective 4 is achieved in Part 3. Considering these Objectives are largely structural, the following Chapters will refer more to the specific research questions which are developed below. The Objectives and Research Questions will be revisited in the Thesis Discussion (Chapter 11).

Executive Summary

After introducing the topic area in Chapters 1 and 2, the current context of MCH within integrated marine resource frameworks and policy both within and outside of academia was addressed in Chapters 3 and 4. In these Chapters, an increase in engagement with integrated management techniques both in academia and in policy was clearly determined, particularly within ICZM, MSP, H/MPAs, and Blue Growth and Blue Economy. When looking into the connections between academia and industry, connections were drawn between integrated research and engagement with: SDG 14 Oceans; platforms such as the Decade for Ocean Science 2021-2030; and programmes such as the UNEP Regional Seas Programme. Despite this, in comparison to the previous two decades of literature and the rallying policies put in place to encourage natural/cultural integration (e.g. the UNESCO *Policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention* (UNESCO, 2015b)), it was clear that the current level of MCH representation within integrated management platforms remains proportionally small.

The factors limiting the successful management of MCH in integrated frameworks and policies were addressed in Chapters 4 and 5. Chapter 4 discussed how a broad spectrum of cultural heritage definitions throughout literature and policy has led to a broad representation and conceptualisation of heritage in management. Furthermore, a significant lack of literature was identified in Chapter 5, particularly regarding how to implement valuation methods which (1) can be used comparatively between natural and cultural resources; and (2) can be used to measure and value the interconnections between these two resources.

Research Questions

The above findings have been adapted into the subsequent research questions, which will form the structure of Parts 2 and 3 of this thesis.

Part 2

1. *How does the definition and associated conceptualisation of heritage in integrated frameworks affect the practicality of its management?*

Research question 1 was developed to further understand the spectrum of cultural heritage definitions identified in Chapter 4. The connections between the definition of a resource in policy, and how it is then conceptualised through implementation and by society is an integral aspect of effective policy making and management (Chapter 6). As such, special considerations have been put in place to identify how definitions of MCH have been conceptualised as a result of previous integrated frameworks, and how these conceptualisations may develop into the future. This research question is answered within two of the case studies presented in the following Chapters: an analysis of definition and conceptualisation in integrated management frameworks (Chapter 6) and legislation (Chapters 8 and 9).

2. *What is the value of underwater heritage as part of the marine environment?*

Research regarding the interconnections between resource value and governance were identified as key research gaps between natural and cultural marine resources in Chapter 5. Research Question 2 was developed to address this research gap. To understand the perceived and potential values of MCH to the wider marine environment, Chapters 7, 8 and 9 analyse the theme of MCH value from both a social valuation standpoint (Chapter 7) and from the perspective of an economic indicator within integrated legislation systems (Chapters 8 and 9).

Part 3

3. *How can underwater heritage be practically integrated into existing marine resource management frameworks, and who is responsible for overseeing this process?*

The final research question is addressed in Part 3 of this thesis. This work aims to facilitate the effective management of MCH within integrated frameworks by bridging the gap between academic theory and practice. To provide a platform by which to do so, the above research question is used to develop practical recommendations and proposals across multiple levels of governance. A further explanation of the justifications and methodologies by which this is achieved will be addressed in the prelude to Part 3.

In the following Chapter, a content analysis of the Millennium Ecosystem Assessment is conducted in answer to research question 1: *how does the definition and associated conceptualisation of heritage in integrated frameworks affect the practicality of its management?* In doing so, a distinct lack of inclusion of cultural heritage within the MEA rhetoric and associated field work is identified. The results of this work have been speculated in literature, but not yet statistically proven.

Chapter 6 Case Study: MCH in the Millennium Ecosystem Assessment

6.1 Abstract

The Millennium Ecosystem Assessment (MEA) represents the first international attempt at an integrated management framework for both natural and cultural ecosystem resources, terrestrially and offshore. As a result, the most common definitions and conceptualisations of natural and cultural resources in integrated frameworks are reflected within this methodology (MEA, 2005b). Significant research into the state, management and protection of ecosystem resources has been undertaken because of the MEA, and various successful management plans have been put in place during the last two decades of practice. Despite this, there has been a plethora of speculatory research regarding the inefficient, and potentially detrimental bias in research and protection effort for cultural services included within the MEA spectrum (Chan, *et al.*, 2011; Chan, *et al.*, 2012; Kirchhoff, 2012; Church, *et al.*, 2014; Propper, 2014; Kirchhoff, 2019). In answer to Research Question 1 of this thesis: *How does the definition and associated conceptualisation of heritage in integrated frameworks affect the practicality of its management,* this work presents a textual analysis and assessment of the semantics of the MEA framework and associated Sub-Global Reports to explore how differing definitions of cultural heritage can affect its management as an integrated resource.

To provide background for the current academic consensus, a textual analysis is used to evidence the observed bias, and to assess whether the translation of heritage within this system is effective in practice. Finally, the semantics of the MEA framework and associated Sub-Global Reports are tested for correlation to determine whether the current translation of heritage is 1) institutional or individual (within the framework itself or only within practice); and 2) purposeful or unintentional (as a useful tool to translate heritage for the most effective protection of the culture and environment, or a result of limited capacity and capabilities).

The results indicate that, as suggested within the academic consensus, there is a hierarchical management pattern between services: with cultural and supporting services given the least priority. Furthermore, a correlation was found between the research patterns of the sub-global reports and the MEA framework itself, suggesting that the observed hierarchical management is institutional,

rather than a result of incorrect application as speculated previously. Three main arguments are presented to explore these findings further: 1) the low priority given to supporting and cultural services are due to limited capacity within these fields 2) as a result, cultural services have been semantically reduced to 'tourism and recreation' and the intangible values of both cultural and supporting services are disregarded, and 3) a nominal inclusion of cultural services within the framework is of detriment to the successful management of both the cultural heritage and the environment. By understanding the content of the MEA Framework and its degree of influence on other integrated frameworks, the application of the MEA may be made more successful and efficient, thus providing a more informed base for managing and prioritising integrated resource management.

6.2 Introduction

The MEA

The MEA aims to systematically assess the impact of global ecosystem change on human well-being, through categorizing assets of the ecosystem into Ecosystem Services (ES), determined by their individual benefits to the human population (MEA, 2005a). Initiated in 2001, the MEA have collaborated with several different disciplines to scientifically assess the current status and future development of the ecosystem, how it has and may impact humans in the future, and how to conserve and promote its sustainable use.

According to the MEA, the assessment represents the largest integration of social and natural scientists to date, resulting in a broad consensus on all associated findings (MEA, 2005b). The results of these findings are contained in five technical volumes and six synthesis reports, which are openly available to the public. Through the availability of the framework and reports, the assessment aims to improve decision making processes on integrated ES management, and to encourage the publication of integrated scientific assessments of this kind in the future. The success of this, as reported by the MEA, depends entirely on the adoption of the MEA Framework within the decision-making processes of international ES management. Such success has not yet been evaluated by the MEA, and therefore the potential for repetition of the assessment is currently unknown (MEA, 2005a).

Ecosystem Services – as defined by the MEA

The success of the MEA depends on the adoption of the ES assessment framework, in which ecosystem services are defined according to their benefits to mankind. ES have been defined multiple times depending on their value and how their value is estimated (Daily, 1997; De Groot and Wilson, 2002; De Groot, *et al.*, 2010; Kenter, *et al.*, 2015; Scholte and van Teeffelen, 2015; Chan, *et al.*, 2016). For the purpose of this review the ES will be defined according to the MEA. The ES are categorized into provisional, regulatory, cultural and supporting services and each have unique benefits to the human populations associated with them (Table 12). Determinants and constituents of human wellbeing include security, basic material for a good life, health and good social relations – all of which act as constituents of human rights to freedom and choice. According to the Framework, all ES contribute to all of the determinants and constituents mentioned above.

Table 12: Definitions of ES provided by the MEA

Service	Definition	Examples provided by the MEA
Provisioning	Products obtained from the ecosystem	Food, fresh water, fuelwood, fibre, biochemicals, genetic resources
Regulating	Benefits obtained from the regulation of ecosystem services	Climate regulation, disease regulation, water regulation, water purification
Cultural	Nonmaterial benefits obtained from ecosystems	Spiritual and religious, recreation and ecotourism, aesthetic, inspirational, educational, sense of place, cultural heritage
Supporting	Services necessary for the production of all ecosystem services	Soil formation, nutrient cycling, primary production

Current academic consensus

There have been multiple publications examining the application of the MEA Framework, of which the academic opinion is somewhat varied. Various biases regarding the emphases of specific ES over others have been speculated, and occasionally statistically demonstrated (de Bello, *et al.*, 2010; Seppelt, *et al.*, 2011; Plieninger, *et al.*, 2013; Martín-López, *et al.*, 2014b). Currently the suggested

reason for such bias has overwhelmingly been the inappropriate application of the MEA framework and common recommendations for future improvement have been based upon better application of the framework by individual assessors, stronger regulation by the MEA or more integrative studies and management to improve available data (Carpenter, *et al*., 2006; Egoh, *et al.*, 2007; Carpenter, *et al*., 2009; Layke, *et al.*, 2012). During the last decade, particular attention has been paid to the application of cultural ecosystem services (CES) and the subcategory of cultural heritage. Multiple articles have examined the representation of cultural heritage within the framework, and concluded that cultural heritage is not adequately managed within it (Carpenter, *et al*., 2009; Seppelt, *et al*., 2012; Hølleland, *et al.*, 2017).

In the large number of papers discussing the various biases and downfalls of the MEA Framework, there are only a small number which have provided statistical evidence of such claims. For example, of the 34 papers referenced in this article (of which many had large data sets within them) only 9 analyzed ES data statistically. Further to this, there are few clear analyses of why the so-called 'bias' exists, and few open discussions regarding the uses of mindful prioritisation or services versus unintentional, circumstantial disregard within ES management. This paper aims to quantify potential biases within the MEA Framework compared to its implementation, with particular reference to the stunted integration of cultural services. By providing evidence as to where the biases are and the potential causes of these biases, clearer goals may be defined for the future development of the MEA framework and process.

Research Questions

Having systematically reviewed the MEA Framework and Sub-Global Reports can we:

a) Provide evidence for hierarchical research and reporting of services
b) Determine whether this bias is a result of the MEA methodology itself, or a result of insufficient application
c) Understand whether observed hierarchical patterns are an intentional, useful management tool, or an unintentional result of limited capacity and capability in the low priority services.

6.3 Methodology

A systematic context analysis of the MEA Framework and Sub-Global Reports was used to indicate biases in the text. The context analysis was conducted using a count of keywords from each service

(Table 13) (screened to avoid duplicate use: if one word was used multiple times in the same context, and general context: for example 'water' could be used as in 'freshwater' for a provisioning service or 'water purification' for a regulating service). After the first count the top five words of each category were cross referenced against the number of times they were used to ensure analysis was based on frequency of use rather than range of words associated with each category (to avoid counts of different words used in the same context, e.g a list of services such as 'regulating services including: climate change, water regulation, water purification, water treatment').

The keywork counts were then analysed using two-sample t-tests to determine if the frequency of words for each ES statistically differed. Each ES was analysed against the other to determine any biases within the text. The same method as above was used to determine biases in all 30 of the Sub-Global Reports (Table 15) available through the MEA, however, as the content analysis of Sub-Global Reports was based on the focusses of each report rather than the frequency of word use (as this would create a bias emphasis pattern from papers that were solely focussed on one ES) a test of significance was not used. In this case, a test of correlation was used to determine if the context patterns identified in the MEA Framework resembled the outputs from implementation within the associated Sub-Global Reports.

It was noticed during the analysis process that the emphasis on cultural services seemed to be weighted towards tourism and recreation. This has also been anecdotally observed in various external publications (Seppelt, *et al.*, 2011; Daniel, *et al.*, 2012; Plieninger, *et al*., 2013). It was therefore thought necessary to produce a more in-depth study analysing the frequency of cultural services content within the Sub-Global Reports. To assess cultural services, the contents in Table 15 were categorised into each type of CES mentioned, including: tourism and recreation, local cultures (such as traditional arts/knowledge), both tourism/recreation and local cultures, only briefly mentioned 'culture' with little or no follow up, mentioned 'cultural services' with insufficient definition, or no mention at all (Figure 15). The most mentioned cultural service (tourism and recreation) was then taken away from the overall analysis of cultural service frequency and was then re-analysed in the same method as discussed previously.

Table 13: Keywords associated with each ES

Culture	**Provisioning**	**Regulating**	**Supporting**
recreational	food	flood/s	soil formation/s
spiritual	fresh water	drought/s	nutrient cycling/es
religious	fuel/s	land degradation/s	nitrogen
non-material	agriculture	disease/s	phosphorus
aesthetic/s	timber/s	climate regulation/s	sulphur
ecotourism	fish/es	erosion	carbon cycling/es
community/ies	biochemical/s	salinization	primary production
educational	genetic resources	compaction	carbon
sense of place		nutrient depletion	oxygen
cultural heritage		pollution	soil fertility
cognitive development/s		urbanization	
reflection/s		acid rain	
ceremonial		algal blooms	
relations		climate change/regulation/s	
tigers		water regulation/s	
whales		water purification/s	
		famine	
		protein	
		harvest	
		air quality maintenance	
		landslide/s	
		water treatment /s	
		irrigation	
		invasive species	
		fertilizer/s	

Table 14: Top five most used words associated with each ES

Culture	**Provisioning**	**Regulating**	**Supporting**
community	food	flood	soil formation
spirit	water	drought	carbon
recreation	fuel	land degradation	nutrient cycling
religion	agriculture	climate change/regulation	nitrogen
eco/tourism	fish	fertilizer	phosphorous

Table 15 Words used in Sub-Global Reports associated with each ES

Region	**ES**	**Region**	**ES**
Altai-Sayan Ecoregion	Intro mentions: bio, landscape, historical, cultural, religion	**Himalayas (Hindu-Kush)**	enviro change
	Biodiversity		provisioning, regulating, supporting, cultural heritage
	Natural Forests	**India (local villages)**	Land use changes
	Grazing Lands		soil and water
	Regional waters and climate change		agriculture and tree crops
	Enviro consciousness of rural populations		forests and forestry plantations

Timor Seas	preventing unregulated fishing		grasslands
	sustaining fish stocks		domestic animals
	Assisting sustainable/alternative livelihoods		fish
	understanding sea system dynamics		aesthetic and spiritual (no follow up)
	data management between sea nations	**India (urban)**	food
Argentina	food production		fuel
	soil erosion control and carbon sequestration capacity		water
	freshwater provision		biodiversity
	habitat provision		health
	nutrient cycling		fibre
Australia Flood Plains	indigenous use		culture
	biodiversity		climate
	tourism		waste recycling
	recreation	**Indonesia**	fisheries
	fish stocks		marine food
	mitigation of climate change		water quality

	cattle grazing		recreation
	invasive species		tourism
	water pollution	**Norway**	food production
	infrastructure		fibre
	burning		timber activities
	climate change		tourism
Brazil	Supporting services		hydroelectricity
	Provisioning services		irrigation
	Food security		drainage water
	Forest timber	**Papua New Guinea**	marine resources
	Cultural services (not specified)		domestic waste
Canada	provisioning services	**Peru**	spirituality
	cultural services		water
	fisheries		food
	food		soil
	logging		primary production
	tourism		agrobiodiversity
	non-aboriginal communities	**Philippines**	water resources

	traditional arts/crafts/medicines		fish resources
	stories/dances/legends		rice
	traditional fishing/hunting/gathering/dwelling		climate regulation
	artistic heritage		biodiversity
	aesthetic and recreational	**Portugal**	water
Caribbean Sea	fishing		food
	tourism		fibre
	associated services'		climate regulation
Central Asia Mountain Ecosystems	Genetic resources (plants/animals)		soil protection
	Water pollution		runoff regulation
	Forestry		recreation
	landscape control		cultural heritage (no follow up)
	02 production		aesthetic value
	C02 production		biodiversity
	tourism/recreation	**Southern Africa**	freshwater
Chile	water		wood fuel energy
	tourism		crops

	biodiversity		air and water quality
	mining		fisheries
	agriculture		grazing
	livelihood of ethnic group		biodiversity
	observation and research		medicinal plants
China	ecology		wetlands
	diversity	**Sweden (Kristianstad)**	wetlands
	cultural and aesthetic values		(no info on actual services)
	recreational opportunities	**Sweden (Stockholm)**	aesthetic
	manure		recreational opportunities
	fodder		cultural
	water circulation		ecosystem services'
	water resources	**Trinidad**	freshwater
	desertification		timber
	land use and cover		forest resources
	ecological protection		climate regulation
Colombia	ecosystem and forest cover		air
	agricultural production		soil

	water		nutrient cycling
	ecotourism		tourism
	biodiversity		recreation
Costa Rica	timber activities		coastal features
	poaching		fishing
	pollution		biodiversity
	ecosystem fragmentation	**US (Alaska)**	provisioning, regulating and cultural
	non-indigenous agriculture	**US (Wisconsin)**	forestry
	stories and histories		fishing
	community gatherings		hunting
	cultural security		eco and ethno tourism
	codes/norms/myths/beliefs/dreams		recreation
Egypt	water		biodiversity
	floral diversity	**Fiji**	agricultural production
	medicinal plants		tourism
	mineral resources		fisheries
	agriculture		coastal erosion

	grazing		logging
	soils		industrial pollution
			waste disposal
		Himalayas (east)	Forest products
			water
			soils

6.4 Results

Overall there were 91 ES associated words analysed in the framework. Regulating services had the maximum number of words and initial highest frequency (words: 31, frequency of appearance: 80 times) and supporting services had the fewest (words: 10, frequency of appearance: 13 times). When word count and frequency were cross referenced, the actual highest frequency of appearance was provisioning services (66 times), which contributed to 45% of overall research focus. The next highest ES was regulating services which contributed to 29%, cultural services contributed to 20%, and finally supporting services only contributed 5% to the overall word frequency (Figure 11). The frequency emphasis pattern for the MEA Framework was clearly in favour of provisioning services, with regulating services and cultural services having similarly fewer appearances, with a clear decline observed in the frequency of supporting services (Figure 13).

Within the Sub-Global Reports, the analysis showed a similar pattern. The highest frequency of appearance was provisioning services which contributed to 34% of the overall research focus. The next highest contributor was regulating services at 30% with 48 mentions. Cultural services had 43 mentions and contributed to 27% of the overall focus, and finally supporting services contributed to 9% with 15 mentions (Figure 12). The frequency emphasis pattern observed showed a close relationship between provisioning, regulating and cultural services and a clear decline in the appearance frequency of supporting services (Figure 14).

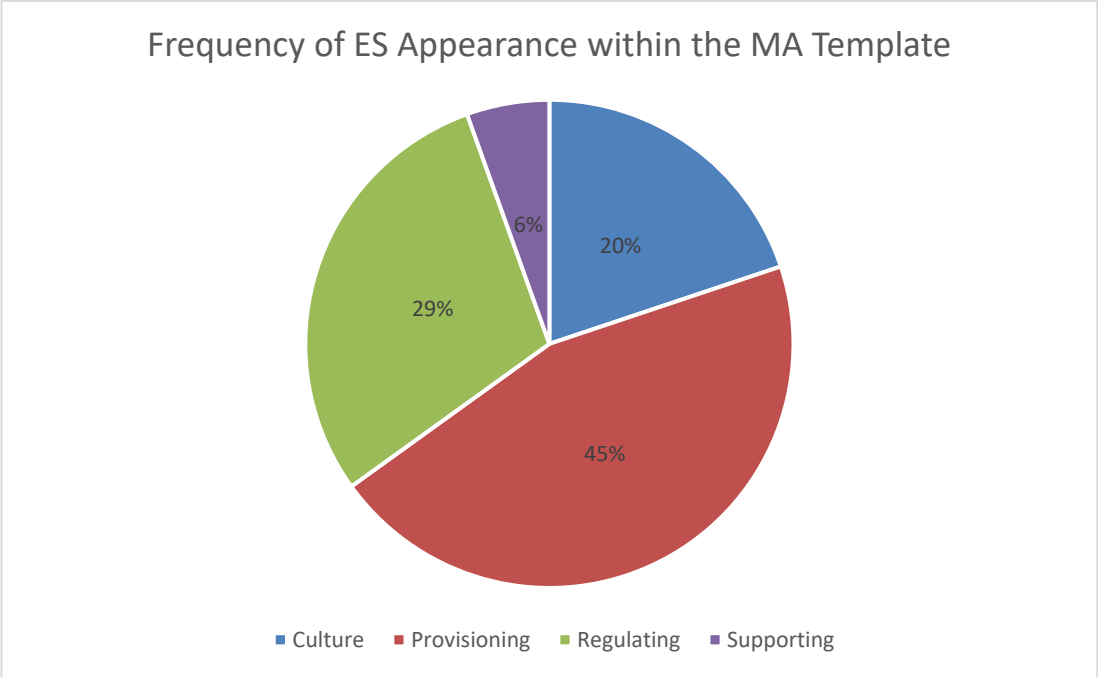


Figure 11: Pie chart showing the frequency of appearance (%) of each ES within the MEA Framework

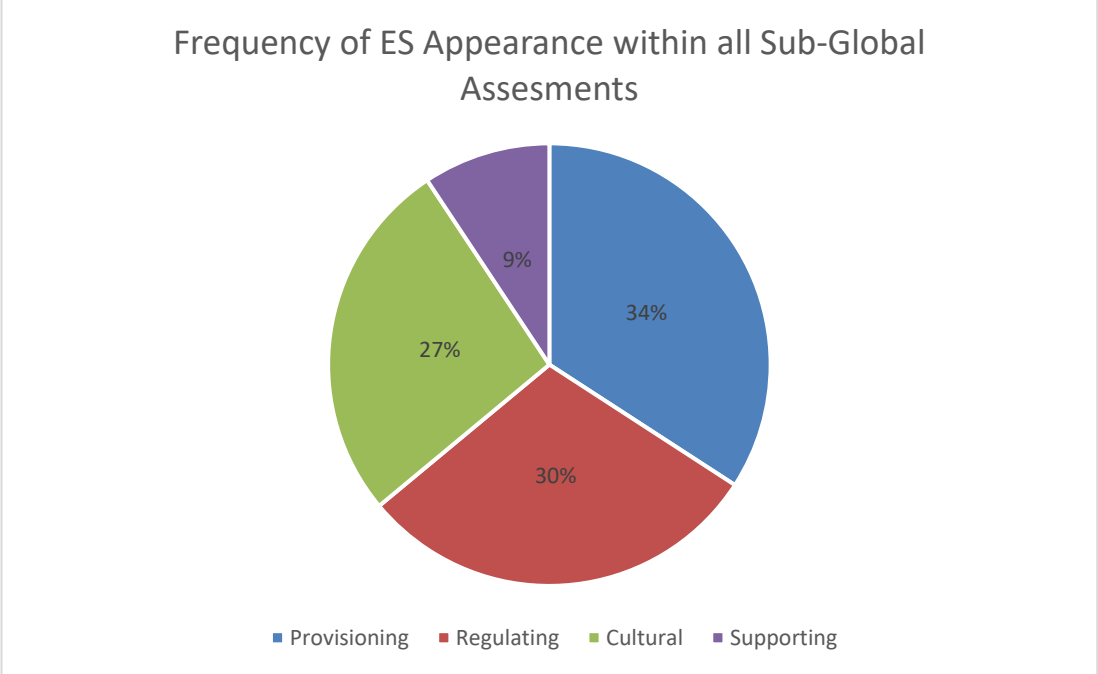


Figure 12: Pie chart showing the frequency of appearance (%) of each ES within the Sub-Global Reports

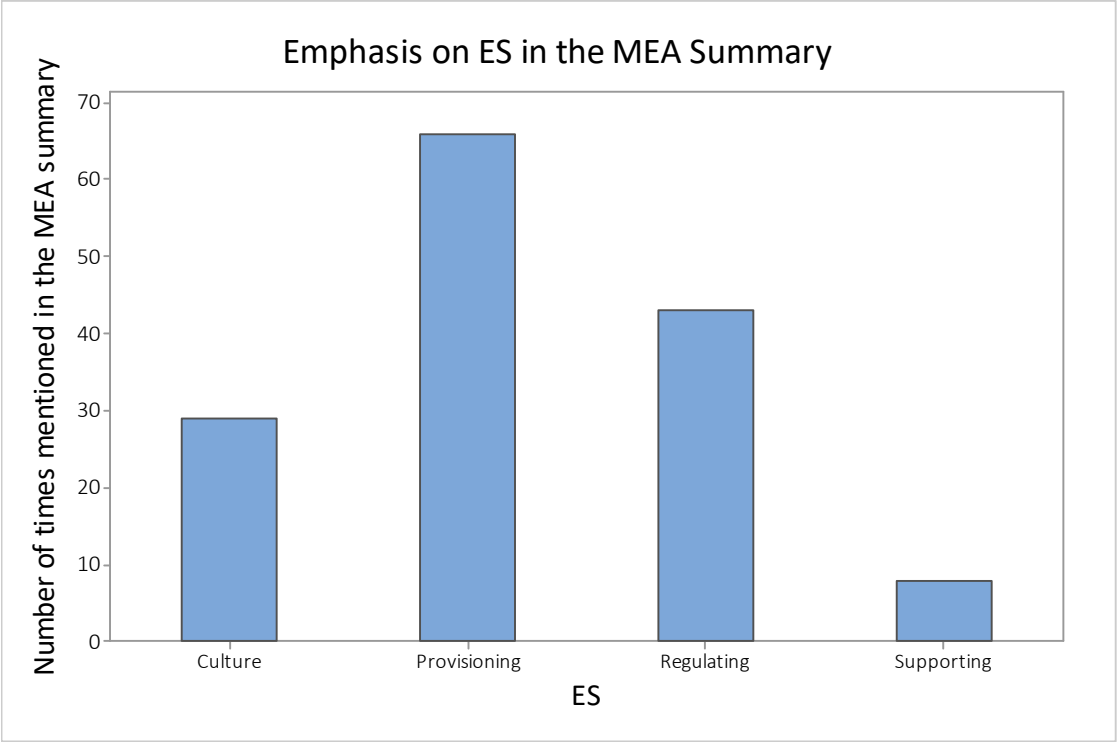


Figure 13: Bar chart illustrating pattern of ES emphasis frequency within the MEA Framework

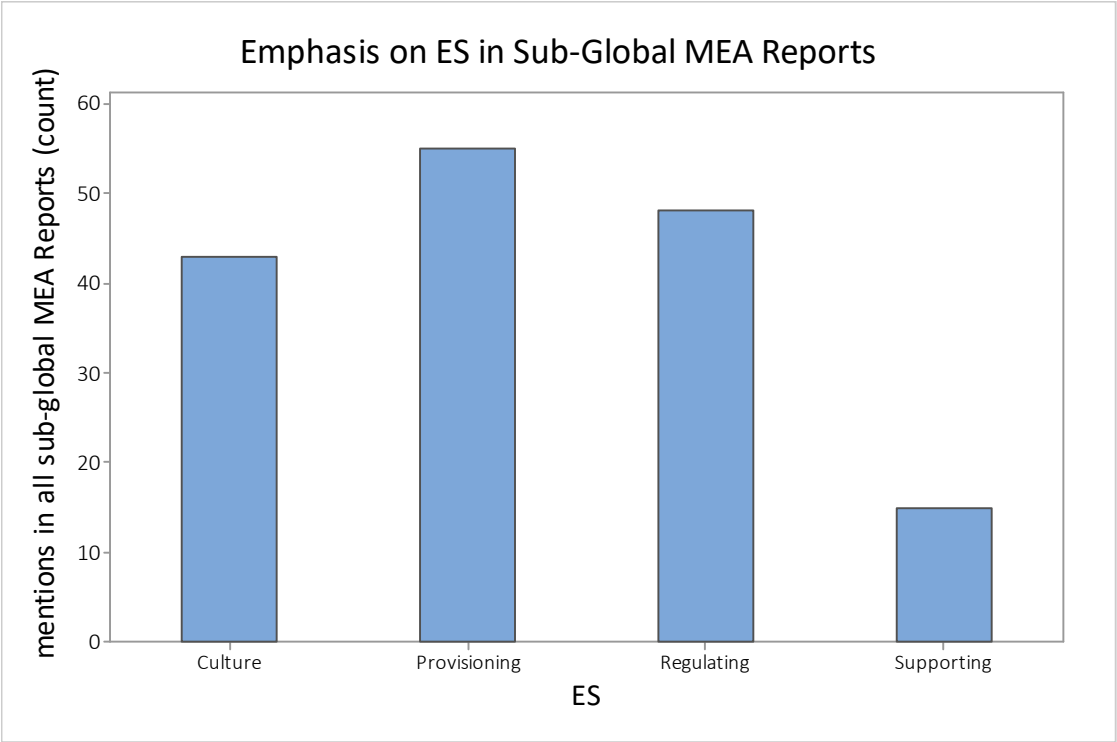


Figure 14: Bar chart illustrating pattern of ES emphasis frequency within Sub-Global Reports

The two-sample t-test initially showed that the only significant differences in ES emphasis frequency within the MEA Framework was the frequency of supporting services compared to all services other than culture (p-values of 0.016 and 0.004) (Table 16a). The correlation test

between the MEA Framework and associated Sub-Global Reports showed a correlation (p=0.027) between the ES emphasis frequency pattern within the MEA Framework and all proceeding Sub-Global Reports (Table 16b).

Table 16a) Table of p-values generated by the two- sample t-test of all ES with significant p-values shown in bold (P=provisioning services, R= regulating services, C= cultural services, S= supporting services b) Correlation test analysing the MEA Framework

a) ES	p value (two-sample t-test)
C+P	0.062
C+R	0.178
C+S	0.053
P+R	0.196
P+S	**0.016**
R+S	**0.004**

b) Correlation	p-value
MEA Framework vs. Sub-Global Reports	0.027

The highest mentioned type of culture was tourism and recreation (8 papers). All other types of culture were mentioned equally in four different papers out of the thirty papers analysed. Once the papers mentioning tourism and recreation were excluded from the Sub-Global Report analysis, there was a statistically significant difference (p=0.047) in the ES emphasis frequency of culture compared to provisioning services (the most mentioned service) (Table 17).

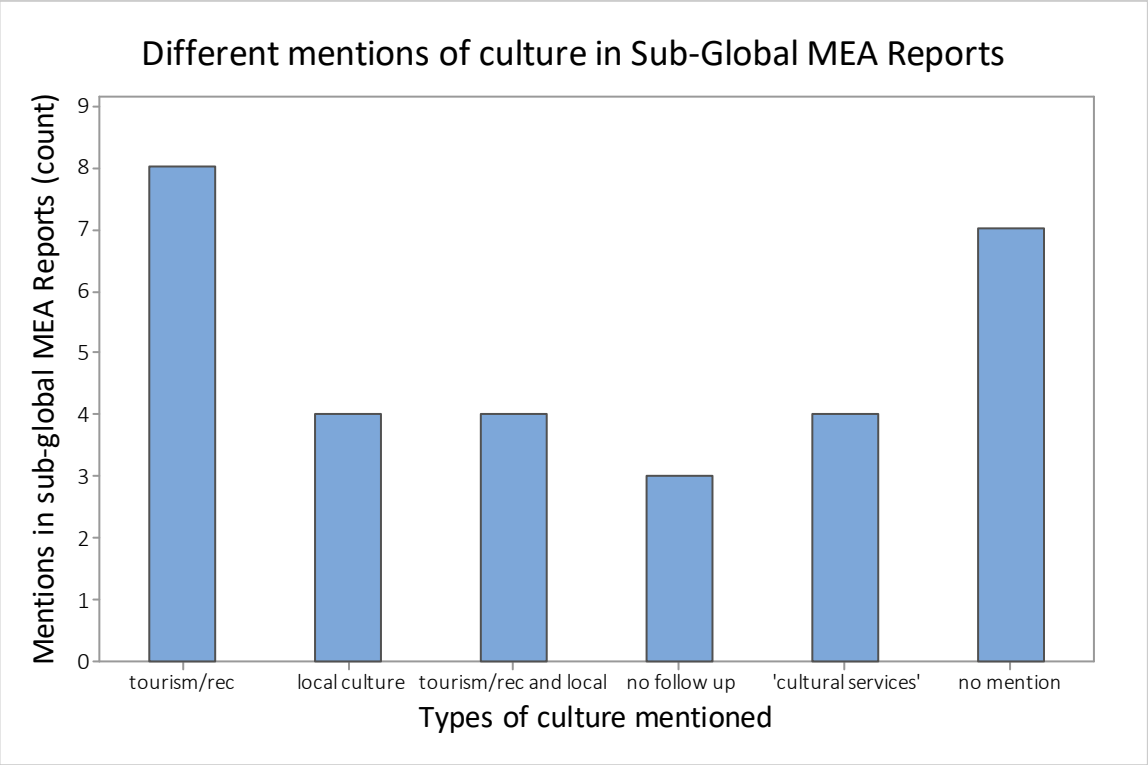


Figure 15: Bar chart illustrating frequency of papers mentioning different categories of cultural services

Table 17: Table of p-values generated by a two-sample t-test of all cultural services mentioned in the MEA Framework without tourism and recreation. All significant p-values shown in bold. (P=provisioning services, R= regulating services, C-T= cultural services

ES	**p-value from two-sample t-test**
P+C-T	**0.047**
R+C-T	0.145
S+C-T	0.235

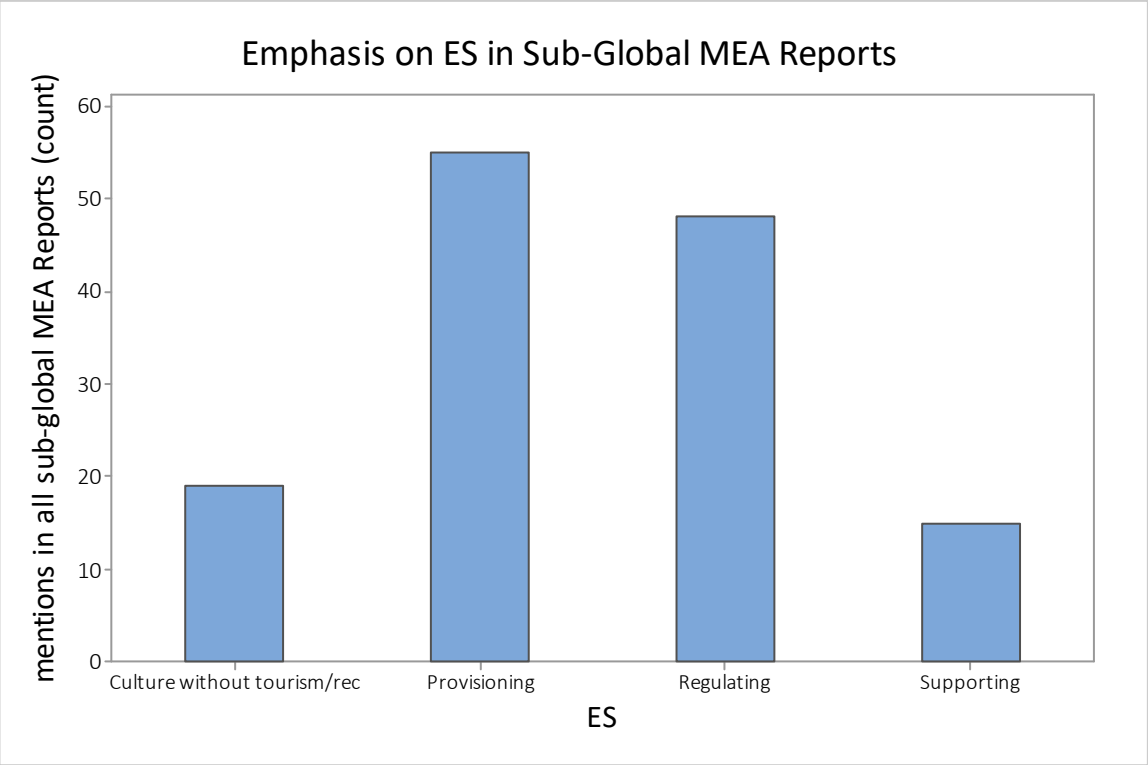


Figure 16: Bar chart illustrating pattern of ES emphasis with culture not involving tourism and recreation

6.5 Discussion

Key Findings

- To provide evidence for the current academic consensus: there is a significant difference between service research priority in the MEA framework, with cultural and supporting services given the lowest priority, indicating a bias towards the provisioning and regulating services
- The correlative patterns between the MEA framework and associated Sub-Global Reports suggests that the root of the observed bias is institutional, rather than adopted in practice
- Cultural services are semantically represented as 'Tourism and Recreation' in both the core framework and its implementation

In answer to the first two research questions of this study, the above results indicate that there is hierarchy between services within MEA approved studies, with cultural and supporting services afforded the least priority (Figure 16). To determine whether the hierarchy is a product of institutional research bias within the MEA framework, or a result of practical application of the MEA methodology as previously speculated, correlation tests between the texts of the original

MEA framework and associated reports were undertaken. The results of the correlation indicate that biases within the framework have been directly reflected within the associated Sub-Global Reports (Table 16b). This would indicate that previous recommendations regarding the stricter regulation and more stringent application of the MEA framework are redundant and a more in-depth re-assessment of the MEA framework itself is necessary. It is important to note that correlation only demonstrates a parallel and cannot prove causation (see note). However, considering the dependent nature of a framework and the studies based upon it, it is fair to suggest a causation pattern is valid.

Finally, to determine whether the observed hierarchy is a product of constructive prioritisation between resources or a consequence of limited expertise, the methodologies of measuring and prioritising services were examined, and compared to the standards set by natural and cultural UNESCO conventions. The rhetoric of the MEA is in line with the UNESCO SDGs, particularly as sustainable development is quoted as a key aim for the assessment itself (MEA, 2005b). Furthermore, the MEA is in line with the overall goals of the World Heritage Convention (which remains the only UNESCO Convention with an integrated understanding of both the natural environment and cultural heritage) particularly with regards to the emphasis on the protection of services for human well-being (MEA, 2005a).

Interestingly, the sustainable development rhetoric is not the only comparable factor between the MEA and other integrated UNESCO Conventions and policies. A similar lack of cultural heritage representation is mirrored in the World Heritage Marine Programme, which inscribes marine areas of natural, cultural, or mixed value onto the World Heritage List. Within this list, there are currently 43 natural sites, 4 mixed sites, and no sites protected for heritage purposes alone (UNESCO, 2021). Neither the MEA or the World Heritage Marine Programme uses a methodology which has the capacity to account for both natural and cultural categories. Considering the lack of methodologies within the MEA and other comparable platforms, it is suggested that the current hierarchy of resources is a result of limited institutional capacity, rather than a result of purposeful prioritisation.

These findings aim to open a discussion regarding the prioritisation of services within the MEA: a significant and influential body in the evolution of integrated resource management. In particular, the current consensus regarding the lack of integration of cultural services is built upon by offering a pretext as to why this is the case; and by providing a quantitative platform by which the framework may be re-evaluated. The significance of this discussion aims to both aid in the re-evaluation of the framework and extend to the associated research patterns which have stemmed

from it. As such, the following arguments are presented: 1) cultural and supporting services have been undervalued in the MEA framework due to a lack of capacity in these areas, 2) as a result, cultural services have been semantically reduced to 'tourism and recreation', and the multiple intangible values of both cultural and supporting services are ignored, and 3) the continued endorsement of this methodology undermines the management of cultural services in other interdisciplinary resource management frameworks, and is of detriment to the integrated management of both culture and the environment.

1) *Why cultural and supporting services are undervalued in the MEA Framework: a capacity and capability issue*

Although the MEA rhetoric has been used throughout global resource management frameworks, the assessment does not claim to be all-encompassing. In particular, a lack of understanding regarding the status of ES around the world and the economic value of non-marketed services is mentioned as a limitation of the methodology (MEA, 2005a). The assessment also attempts to provide examples of where uncertainties are too large to be used, which is primarily at the local and national scale. The potential for insufficient information on economic costs and alternative uses of ecosystems at a local level is described as 'typical', which is potentially indicative of the poor coverage of the local cultural services highlighted in this study.

Nonetheless, the detrimental effect of not managing any ES appropriately is significant in practice. If the use of these services is not continuously monitored in practice, the already limited resources which the assessment aims to protect are at risk. If such usage is not allocated depending on urgency, vital resources may be mismanaged and allocated depending on accessibility rather than necessity. Although it could be argued that there is more urgency to protect the natural services than the cultural services, it is clear considering the observed correlation between the representation of these services in both methodology and practice and the lack of a comparable valuation method between them; that the low prioritisation of cultural and supporting services within the MEA Framework is an example of a lack of institutional capacity and capability, rather than of purposeful prioritisation. Furthermore, it may be argued that purposeful prioritisation of natural over cultural services is against the integrated rhetoric of the framework itself; which aims to assess the interdisciplinary benefits of both culture and the environment, rather than to further separate their management.

2) *Limited institutional capacity has resulted in inadequate conceptualisation of cultural services*

A common underlying issue reiterated in numerous studies (Wallace, 2007; Fisher, Turner and Morling, 2009; De Groot, *et al.*, 2010) is the broad understanding and application of ES themselves, as no clear standardisation of ES definitions is available (Boyd and Banzhaf, 2007). This lack of conceptual clarity is particularly apparent for cultural heritage (Hølleland, *et al.*, 2017). Furthermore, understanding how to comparatively value both natural and cultural services economically (Costanza, *et al.*, 1997, 1998; Loomis *et al.*, 2000) and intangibly (Fisher, *et al.*, 2009; Vejre, *et al.*, 2010; Chan, *et al.*, 2012; Daniel, *et al.*, 2012; Tengberg, *et al.*, 2012) remains a challenge. Although information is available regarding the value and management of heritage sites in works such as *Conservation Principles* (Historic England 2008); methods for assessing the value of heritage as an ES is relatively limited, and the lack of an explicit methodology of this kind within the framework is likely an inhibiting factor to the effective management and prioritisation of cultural heritage.

The subjectivity of cultural services is amplified by the nature of ES to be researched by multiple disciplines and to be commonly applied to different communities. As such, one of the reasons for the bias noted in this study may lie with the issue of conceptual subjectivity, as suggested by Small and Munday (2017) and Kirchhoff (2019). Yet, if we compare the varied definitions of cultural services in literature to cultural services within the MEA (Figure 15); it is clear that the conceptual spectrum of culture according to the assessment is, in contrast, highly limited. 'Tourism and recreation' is the primary representation of culture, likely because it is the simplest method to measure and quantify culture as a resource, and as a result, the broad collection of benefits and connections received from cultural services are over-looked and under researched. There are multiple publications regarding how to measure, define and examine culture as a resource (Claesson, 2011; Chan, *et al*., 2012; Daniel, *et al*., 2012; Fish, *et al*., 2016; Tratalos, *et al.*, 2016), raising the question as to why such a limited interpretation of culture is still represented in the MEA framework two decades after its conception?

3) *The intangible values of natural and cultural resources*

Various scientific frameworks aimed at understanding and assessing the intangible aspects of both natural and cultural resources exist; such as how landscapes directly relate to human wellbeing through the perception of biophysical landscape aesthetics, or how patterns in human value may be predicted through statistical models (Silvennoinen, *et al.*, 2001; Ribe, 2005).

Nonetheless, the intangible aspects of both cultural and supporting services are often vaguely referenced or not mentioned at all in practice (Figure 15). For example, Hølleland *et al.*, showed in cases where cultural heritage is mentioned in associated frameworks, 'intangible' and 'subjective' aspects of heritage (MEA, 2005a:102-103) are often disregarded (Hølleland *et al.*, 2017).

The underrepresentation of intangible cultural services within the MEA is further exemplified in spirituality and religion. Similar to landscape aesthetics, the value of the service has been disregarded (Verschuuren, 2006). Nonetheless, there are various projects that attempt to research and analyse how services such as these interact with the environment and directly affect human wellbeing. One of these projects is the 'Integrated History and Future of People on Earth', an integrated community of scientists from natural and social disciplines who research the relationship between intangible cultures and the environment to understand how to manage ecological services more sustainably (Costanza *et al.*, 2012).

There are multiple recent articles which have focussed on the issues perceived in the valuation of intangible services within the MEA. Small and Munday (2017) discuss the problem of intangible valuation as a semantics issue, particularly in the case of cultural services. Building upon the argument that there is currently no management system for intangible services in the MEA Framework (Chan *et al*., 2012), Small and Munday suggest the term 'cultural ecosystem services' should be discarded for 'non-material services' which focus on socio-environmental datasets as a method of valuation. Kirchhoff (2019) suggests abandoning cultural ecosystem services entirely, to simply measure the environment's immaterial benefits to society as part of the natural services themselves. Both evaluations equally regard and consequently suffer from the broad and multiple meanings of 'culture' as a resource; and both turn to limiting the service as an accessory to other, natural environmental services.

As discussed within the MEA itself, 'culture conditions individuals' perceptions of the world, influences what they consider important, and suggests courses of action that are appropriate and inappropriate.' (MEA, 2005a:102). This is not recognised within the MEA currently, where 'intangible' seems to be used synonymously with 'immeasurable'. As a result, multiple aspects of culture are nominally included under the umbrella of cultural services, but are subsequently disregarded in practice.

4) *Continuing to endorse the current MEA methodology would be in detriment to the sustainable development of all ES*

The primary finding of this work is that a lack of institutional capacity and capability has led to an underrepresentation of cultural and supporting services within the MEA framework. As a result, the concept of CES has been grossly over-simplified, and the intangible aspects of both service types have been disregarded. The MEA website overview suggests that there is currently not enough data to determine whether the assessment would be worth repeating (MEA, 2005b), however, the next step for the MEA may not lie with repetition, but re-evaluation. As discussed in Part 1 of this thesis, there is now a significant call for the greater integration of cultural heritage into integrated resource management frameworks globally. Multiple modern frameworks have used ecosystem service methodologies to establish these systems, and cultural heritage continues to be largely disregarded. As the issues identified over the last two decades of MEA style-frameworks are mirrored in integrated resource management frameworks such as Marine Spatial Planning and Integrated Coastal Zone Management (Agardy, di Sciara and Christie, 2011; Gee *et al.*, 2017; Jay, 2017; Papageorgiou, 2018), it is the responsibility of the source to evaluate and update its rhetoric. Multiple benefits may be achieved from further capacity building with cultural heritage practitioners, and partnerships with other integrated research frameworks. The effective management of the environment cannot be fully understood without assessing the influence of culture and heritage values within this system. Further research regarding valuation and management frameworks which assess the interconnectedness between natural and cultural resources is conducted in the following Chapter.

Note

Frequency has been cross-referenced to avoid duplicate counts and incorrect context, particularly against the range of words associated with the ES category. As a result of this, frequency may be used in this study to indicate the amount of emphasis put on the service. This in turn can be extrapolated and serve as an indicative tool to expose the potential biases within the text.

Chapter 7 Case Study: Lessons on MCH Awareness, Valuation, and Policy in a Biological Field School

7.1 Abstract

In answer to Research Question 2 of this thesis: *What is the value of underwater heritage as part of the marine environment,* this work examines the value given to Marine Cultural Heritage (MCH) as a marine resource, and the effects of MCH education and valuation on both natural and cultural resource management. A survey was given to 136 students before and after attending a lecture on MCH, and participating in a role-playing natural and cultural marine resource management exercise. Bias from internal influence was limited by conducting transparent discussion regarding false results and ensuring student anonymity. Before education, participant awareness, understanding and valuation of MCH was low, particularly when compared to understanding of the marine environment. After education, there was a significant increase in awareness, understanding and valuation of both MCH *and* the marine environment; even though the exercises focussed solely on increasing the understanding of MCH. A correlation was found between MCH education and valuation of the marine environment as a whole, and furthermore, a link was identified between MCH valuation, and resource management strategy. These findings are used to argue two key points; that the current lack of MCH representation in integrated marine management frameworks may be a result of low MCH awareness and understanding in resource practitioners; and crucially, that the successful integration of heritage in marine policy has the potential to significantly benefit the marine environment.

7.2 Introduction

A review of natural and cultural resource management literature conducted ahead of this study highlighted the disparity between the call for integrated management in research and the lack of integrated management in practice for cultural resources (Chapter 4). To explore these findings further, the research links between these resources were analysed in literature, and 'valuation' was identified as key linking theme between natural and cultural marine resources, more so than the themes of 'framework' and 'governance' (Chapter 5). As such, ideas regarding how to

implement mixed methods of valuation that benefit both natural and cultural resources in practice appeared to be the missing link between research and successful implementation.

The UNESCO policy for the *Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention* (UNESCO, 2015b) calls for increased integration of cultural heritage into environmental management systems, and the most recent *Policy Progress Report* (UNESCO, 2019a) suggests that recent development activities that have not integrated cultural heritage may jeopardise environmental sustainability. Considering the latest developments of the 2015 Policy and the literature described in Chapter 3, it appears that further research into the relationships between natural and cultural resources and their management is the next step towards providing the 'roadmap for implementation' (UNESCO, 2019) for the successful integrated management of cultural and natural resources.

This study aims to understand how social value links natural and cultural marine resources. A 2016 review of coastal and marine resource literature found there was limited research regarding the public valuation of cultural resources (Martin *et al.*, 2016). To add to this research, a similar review was conducted for this study. Three-hundred-and-eighteen papers were systematically reviewed using the aims and objectives identified in the 2016 Review. Five years on, the results were largely similar. The majority of literature on the public valuation and perception of marine resources focused on natural resources (78%), compared to cultural resources (22%). To expand upon the previous research objectives, the sample demographic was noted for each paper. Public perception and valuation research in the field of natural marine resources was made up largely of general public case studies (50%), followed by stakeholder studies (23%), studies on local people (18%) and studies on tourists (10%). The field of MCH was less varied, consisting of 73% local case studies to 27% studies on the general public.

Arguably, the most wide ranging and versatile method of understanding social valuation for cultural heritage is public perception, gathered in the form of surveys and interviews with local people (Price, 2013). It is therefore not surprising that most valuation literature is on understanding the local perceptions of specific heritage sites. Yet, if cultural resources are to be integrated with natural resource management frameworks, it would be useful to broaden the scope of this research. This is particularly the case considering perception and social valuation are linked to effective management (Daigle *et al.*, 2016; Strickland-Munro *et al.*, 2016; Kobryn *et al.*, 2018; Zorondo-Rodríguez *et al.*, 2019; Ankamah-Yeboah *et al.*, 2020), and there is currently no available literature that explores the perception and valuation dynamics between cultural and natural resources.

There are few studies that actively engage young people in perception and social valuation research (4% of papers analysed in this study), and there is currently no work to understand the perceptions of young people who are likely to work in this field in the future. The demographic 'future decision makers' is made up of young people (15-24) who have expressed and actively engaged with a desire to work within a certain field in the future. The United Nations Population Fund (UNFPA) defines this demographic as the most influential drivers of change, and the least researched (UNFPA, 2018). Research into understanding and engaging with the 'future decision makers' demographic for natural and cultural resources will provide significant insight into meaningful public perceptions and valuations that, alongside local case studies, could influence the management of these resources in the future.

This work aims to understand the relationships of a cohort of students which would fit into the category of 'future decision makers', to both natural and cultural underwater resources. The relationship between understanding, awareness and value has been discussed extensively in policy and literature (Kontogianni *et al.*, 2012), but we do not have an awareness of the effects of this cycle across disciplines. In line with the findings presented in Chapter 5, the question is asked: can an increase in awareness and understanding *of MCH* increase the value given to *both* cultural and natural marine resources?

7.2.1 Objectives:

1. Assess the current levels of awareness and understanding of MCH in the student cohort
2. Measure the effect of MCH education on the valuation of both natural and cultural underwater resources
3. Analyse a practical experiment to test the effects of education and valuation in a simulated management environment.

7.3 Methodology

7.3.1 Data Collection

Fieldwork was conducted between the 27 June and 2 August, 2019 by a team of three researchers employed by the biological fieldwork organisation Operation Wallacea (OPWALL) in the Caribbean island of Dominica. A total of twelve schools and 136 pre-selected students (by OPWALL) participated in a week long field-school, in which they undertook an education program on coral reef ecology. As part of the course, the author developed and conducted an interactive

educational activity day focused on MCH, which included an introduction lecture and a practical debating exercise. This was the first time OPWALL had engaged with or included education on cultural heritage within their field schools, and following completion of the season, the course was developed into Operation Wallacea's permanent lesson structure.

7.3.2 Development of questionnaire and approach to collection

Data was collected by a before/after free-text response survey design using UNFPA's 'future decision maker' demographic as the sample for the study. A total of 272 questionnaires (before and after the education day) were distributed among the students, with a 100% return rate. The data collection process is described below and assessed using the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis method.

The before/after questionnaire was composed of five open ended questions by two single answer questions and descriptive information was collected on age, school level and nationality. To ensure anonymity, the surveys were categorised by a randomised ID number. The responses were used to assess the first two research objectives outlined above. The questions included:

i) a question which aimed to confirm the 'future decision maker' demographic by asking why the participant had chosen to take part in the field school

ii) two questions asking students to describe what the marine environment and Marine Cultural Heritage was, to gauge understanding (objective 1)

iii) two questions asking students to rate the importance of these resources (on a scale of 1-10), and a third asking the participant to elaborate on their respective reasoning (objective 2)

iv) a question asking if they feel that they learned something from the experience, to monitor teaching standards and overall student satisfaction.

7.3.3 Lecture

The aim of the 'Introduction to MCH' lecture was to establish an equal level of understanding across participants. The lecture was given in a 45 minute time slot with 15 minutes of questions. The topics and learning objectives of this lecture were as follows:

Table 18: 'Introduction to MCH' lecture structure

Topic	Sub-topics
i) What is MCH?	a. A history b. Tangible vs Intangible MCH c. International and local case studies
ii) Why is it important	a. Shared heritage and identity b. Influences on culture c. Tourism for local communities d. Local and international case studies
iii) Why should I care/how can I get involved?	a. MCH and the SDGs b. How MCH can play a part in climate and environmental issues c. Volunteering (locally and internationally), educating (yourself and others)

Learning objectives

i) students should have a fair understanding of what MCH is

ii) students should be able to list reasons why MCH should be protected

iii) If students are interested in MCH, they should be aware of ways to further their education

7.3.4 Town Hall

The aim of the second activity was to test a simulation in which the effects of understanding and social value could be measured in relation to practical management choices. As such, the objectives of this activity were to further assess the student's understanding of natural and cultural resources and their management, and to assess the effects of education and valuation on i) stakeholder (role played by students) interactions and ii) the structure of integrated resource management frameworks.

To test the research objectives stated above, a 'town hall' scenario was conducted after the lecture, in which students were fully briefed on a case study of a naturally and culturally important marine site, the stakeholders involved, and the structure of the exercise. Students were divided randomly (n=3-5) into groups of stakeholders (example stakeholders: 2001 Convention, local fishermen, international fishing fleet, conservationists, hotel owners, and local government) and participated in a structured period in which they would spent time meeting other stakeholders and presenting and discussing proposals for development of the case study site, with the aim to create a mutually beneficial management proposal to present to the 'government' group (also simulated by students). After the exercise, the groups were asked to write a brief report on how their proposal changed throughout the experience, and if they were satisfied with the final management plan and why. Data was collected from this exercise by recording the debates, and collecting the series of proposal drafts, final proposals and final write up sheets. The structure of this exercise was as follows:

Table 19: Town hall exercise structure

Activity	Time Period
Town Hall Brief and assigning roles	10 mins
Reading role briefing sheets and questions	10 mins
Discussions with stakeholders (1st)	30 mins
Discussions with stakeholders (2nd) and individual discussions with government	30 mins
Government proposal prep and town hall set up	10 mins

Government proposal presentation	5 mins
Debate	30 mins
Final proposal presentation and vote	5 mins
Write up	10 mins
Overrun contingency	10 mins

7.3.5 Field Work SWOT Analysis: Strengths, Weaknesses, Opportunities and Threats

The objective of this methodology was to provide a baseline understanding of the current awareness and perception levels of the future decision maker demographic on both natural and cultural marine resources, and to use the opportunity to test a stakeholder simulation to assess the effects of education and valuation on natural and cultural heritage management.

A key strength of this dataset lies in the controlled conditions in which it was conducted. Access to highly specific demographics such as the future decision makers is rare, and commonly results in low response rates. This is particularly the case for such a broad range of nationalities and schools, which provides a representative sample geographically and socio-economically (evidenced in Section 7.3.7). Furthermore, the high level of control on external factors (such as access to internet or parent influence) is also rare, considering students lived on premises without access to internet for a week, and all education was provided by the same three researchers throughout the whole eight-week period. The researchers and educational activities were monitored and assessed externally by OPWALL's research and education standards, so assumed consistent. In addition to collecting data, this method could also raise awareness on natural and cultural marine heritage, which is likely to be particularly significant for the perceptions of the future decision maker demographic.

A weakness of this methodology is that such specific conditions are difficult to replicate, and involve high time, cost and energy input. The high response rate was achieved because the questionnaire was assigned as a scheduled activity; however, this leaves room for bias in the sample who typically would not return the questionnaire, and may have filled in answers with low-effort or randomly. The high level of control of researcher on the respondents also presents a

weakness as well as an advantage, as this can lead to bias in students who want to input the 'correct' answer. This was avoided as much as possible by discouraging this type of behaviour, and providing a transparent briefing of the aims and objectives of this work.

7.3.6 Data Analysis

A qualitative and quantitative scoring system (QLSS and QTSS, respectively) was developed to analyse the datasets collected in this study, with the primary aim of limiting bias and providing a thorough assessment of the varied data types. The QLSS used a holistic scoring system in which text was analysed by hand, using a double blind method (in which no descriptive data could be seen and answers were scored twice on different occasions to determine fair scoring) using a pre-determined scoring chart (Table 20).

Table 20: Scoring chart for QLSS

Category	0	2	4	6	8	10
Interest	No interest	Fleeting interest	General interest	Awareness of importance and clear personal interest in future	Strong interest in the future of subject	Clear interest in all aspects of the subject and seeking future work
Understanding	No understanding	Guess	General idea	Partial understanding	Good knowledge of topic	Complete Understanding

The QTSS scored answers computationally, using R Statistical Software to determine word matches to dictionary definitions (The Oxford English Dictionary, Vol. 2; Merriam-Webster's Collegiate Dictionary, Chambers Dictionary), plus synonyms, for the marine environment and MCH. Answers were cleaned by eliminating stop words and punctuation (such as and, if, but) and condensing words down to their root form. A score was given depending on how many word matches occurred per answer. Both scoring systems were analysed in line with objective two, by testing for correlation with value (a self-given numeric score). Each individual town hall was analysed using the debate recordings, the stakeholder reports and the group proposal. Scores were given to each stakeholder group for debating effort (overall effort, time spent debating, compromise and integration with other groups) and resulting hierarchy in the final proposal (priority given above other stakeholders).

To provide descriptive results of free-text answers, Latent Dirichlet Allocation (LDA) was used to computationally analyse the content of the questionnaire answers and town hall debates. The analysis was performed using the '*lda*', 'stopwords', 'SnowballC', and 'LDAvis' packages on R (Blei *et al.*, 2015).

To test the validity of both the QLSS and QTSS methods, a test for correlation between the scoring systems was conducted, in which a correlation was found ($t = 2.4267$, $df = 237$, $p = 0.01$).

7.3.7 Demographic Statistics

The majority of the participants were from Britain (68%: 50% English, 10% Scottish, 8% Welsh), followed by Spain (11%), Canada (7%), Brazil (7%) and North America (5%). Most were between the ages of 16-17 (77%), followed by 18 year olds (18%) and 15 and 19 year olds (5% in total). Three quarters of participants had a PADI Open Water Scuba Diver qualification (71%), around a quarter had no scuba diving qualification (27%) and a minority had a PADI Advanced Open Water qualification (2%).

All of the students can be categorised within the 'future decision maker' demographic under the UNFPA standards (young people between the ages of 15-24 who have expressed and actively demonstrated a desire to work within a certain field in the future) considering their ages and engagement with the OPWALL field school. Despite this, to eliminate potential bias from students who may have participated for other reasons (such as parent influence or to travel) students were also given a score of interest depending on their answer to *Q1: 'Why did you choose to take part in OPWALL Field School 2019?'*. The most common answers to this question are grouped into four themes: 'amazing opportunity', 'scientific research', 'good experience' and 'wanted to learn'

(Table 22). Just over half of the students expressed a direct desire to work within the field of environmental resources in the future (58%). Over a quarter of students (37%) had a fleeting interest such as 'school had the opportunity/recommended it' or showed general interest with more detailed answers, such as 'because Dominica has a high level of biodiversity' or 'I was interested in learning about the nature of the Caribbean'. Only 5% showed no interest, with answers such as 'wanting to travel' or 'friends had been'.

7.3.8 Confounding Variables

Interest in the marine environment increased with scuba qualification, but there was no pattern observed between scuba qualification and understanding of either the marine environment or Marine Cultural Heritage before or after education. There was no significant correlation between age and interest ($p=0.09$) or understanding (marine environment: before/after: $p = 0.38/p=0.42$; MCH: before/after: $p=0.95/p=0.12$). There was no significant correlation between future interest and understanding of the marine environment (before: $p=0.22$, after: $p=0.61$), however, there was a significant correlation between future interest and understanding of Marine Cultural Heritage after education (before: $p=0.12$, after: $p=0.01$).

7.4 Results

7.4.1 Objective 1: Assess the current level of awareness and understanding of MCH in the future decision maker demographic

The level of awareness and understanding of MCH was low (QLSS: 25% of participants had a fair understanding; QTSS: 67% of participants included either zero or one word from the dictionary definition). This was particularly clear when compared to participant understanding of the marine environment (QLSS: 90% of participants had a fair understanding; QTSS: 61% of participants included three or more words from the dictionary definition) (Table 21).

After education, there was a significant increase in awareness and understanding of both the marine environment (QLSS: 7% increase in understanding of the marine environment, $t=-3.4781$, $p=<0.001$; QTSS: $t=-4.9271$, $p= < 0.001$) and MCH (QLSS: 43% increase in understanding of MCH, $t=-11.159$, $p=<0.01$; QTSS: $t=-7.4605$, $p = <0.001$).

Table 21: Level of understanding of the marine environment and Marine Cultural Heritage, before and after the MCH education day.

Understanding	**% Before**	**% After**
ME	90.882353	97.05882
MCH	25.441176	68.38235

7.4.2 Objective 2: measure the effect of MCH education on the valuation of both natural and cultural underwater resources

A positive correlation was found between MCH education and the valuation score given for MCH (QLSS: p = <0.001; QTSS: p = 0.03) and MCH education and the valuation score given for the marine environment (QLSS: p=0.02; QTSS: p= <0.001).

To provide insight into the reasoning behind the valuation score students gave to the marine environment and MCH, Q6 asked: *'Why did you score the marine environment and MCH with the above values?'.* Before education, the top answers to question six were clustered into the themes 'marine life', 'global warming' and 'coral reefs', in which topics such as 'healthy' 'food' and 'preserve' were common. After education, these themes expanded to include answers such as 'future generations', 'underwater heritage' and 'cultural heritage'. Within these themes, topics such as 'future', 'past', 'people' and 'preserve' were commonly mentioned (Table 22).

Finally, to determine the overall reaction of participants to the education day, question seven asked*: 'Thank you for participating in this survey. Do you feel like you have learned anything after participating in the exercises today? Have any of your opinions changed?'* (Box 8). The majority of participants wrote that they had learned from the experience and used positive emotive language (93%) and that their opinions had changed because of the experience (89%). The most common themes discussed topics such as 'importance' in connection with cultural heritage and the marine environment. Following this, the second most common learning point was the influence of different stakeholders for the protection of natural and cultural resources, because of the town hall exercise (Table 22).

Box 8: Sample student survey

Student Survey

1. Why did you choose to participate in OPWALL Dominica?
2. What do you understand as the marine environment?
3. What do you understand as Marine Cultural Heritage?
4. On a scale of 1-10 (when 1 = not important and 10 = very important), how important do you believe it is to conserve the marine environment?
5. On a scale of 1-10 (when 1 = not important and 10 = very important), how important do you believe it is to conserve the MCH?
6. Why did you score the marine environment and MCH with the above values?
7. Thank you for participating in this survey. Do you feel like you have learned anything after participating in the exercises today? Have any of your opinions changed?

Table 22: LDA of free-text answers

Question	Answer Labels		Answer Top Terms
1 (*Why did you choose to participate in OPWALL Dominica?)*	Amazing opportunity		thought, opportunity, amazing, great
	Scientific research		research, wanted, scientific, experience, scientific
	Good experience		good experience, interesting, chose
	Wanted to learn		opportunity to learn, environment, wanted to learn
6 (*'Why did you score the marine environment and MCH with the above values?*)	Before	Marine life	life, planet, marine, healthy, earth
		Global warming	world, species, food, people, millions
		Coral reefs	life, preserve, ocean, heritage, ecosystem
	After	Future generations	future, history, coral, past, world, preserve, people, life, conserve
		Underwater heritage	heritage, underwater, life, underwater heritage, planet

		Cultural heritage	people, life, depend, conserve, humans
7 (*Do you feel like you have learned anything/ have any of your opinions changed?)*	Cultural heritage		cultural heritage, underwater, important
	Marine environment		MCH, environment, marine, didn't realise, marine environment
	Understand importance		importance, understand, coral, local people, MCH, care, knowledge, opinion changed

Table 23: Percentage of participants who valued the marine environment over Marine Cultural Heritage, or who valued both resources equally, before and after the MCH education day

Valuation	**% Before**	**% After**
Equal	30.147059	54.41176
ME	66.176471	45.58824
MCH	3.6764706	0

7.4.3 Objective 3: Analyse a practical experiment to test the effects of education and valuation in a simulated management environment

Overall, the 2001 Convention and the conservationist groups were prioritised the highest, and the fishing fleet representatives, the lowest. The 2001 Convention also showed the highest debating effort and fishing fleet representatives the least (Table 24). LDA analysis was used to highlight patterns in the language used within the final proposals and the stakeholder reports (Table 25). The themes identified represent the top discussion points by each group, which can be generally categorised into three topics: other stakeholders, primary negotiation points and main concerns. The primary finding of the LDA is that the majority of groups behaved as expected and discussed relevant points each week, and so group inconsistencies can be ruled out as a confounding factor when testing the effects of education and valuation in the experiment. As such, the results of the questionnaire were tested against the outcomes of the town hall exercise to determine the patterns between education, valuation and MCH management. It was found that when a group had a higher level of education and valuation, MCH was prioritised highly in the final proposal.

Groups who had a lower understanding and valuation prioritised the resource below others (Table 26).

Table 24: Representatives in order of priority given in the final Town Hall proposal over six weeks. Score calculated by summing the priority number for each week (top priority = 1, lowest priority = 5), smaller number = higher priority. Representatives in order of highest negotiators. Score calculated by sum of number of representatives integrated with in the final proposal (highest = 4, lowest = 0), highest number = highest integrator

Score	Top Priorities	Score	Top Negotiators
8	2001 Convention	20	2001 Convention
8	Conservationists	18	Local Fishermen
12	Hotel Owners	15	Conservationists
13	Local Fishermen	14	Hotel Owners
18	Fishing Fleet Reps	14	Fishing Fleet Reps

Table 25: LDA Analysis was used to determine the top terms and their prevalence, for the whole Town Hall dataset, and for each individual representative

Representative	Discussion Label	Discussion Top Terms
Government Officials	fishing fleet	fishing, fishermen, local, reef, local fishermen
	local fishermen	local, reef, local fishermen, fishermen, allowed
	mile radius	mile radius, pier, shipwreck
Fishing Fleet	allowed fish	fish, reef, fishermen, local fishermen
	local fishermen	profits, local fishermen, equipment
	hotel owners	equipment profits, hotel, fish supply
Local Fishermen	reef	reef, fishing, local, fishermen, hotel
	farms	fish, farms, government, shipwreck, zone

	fishing	farms, fishermen, government, hotel, protected
Hotel Owners	conservation	local, conservationists, fleets, floating pier
	employ local	local, fishing, fish, build, choice
	dive shop	reef, funding, funding research, reefs, tourism
Conservationists	hotel owners	reef, funding, funding research, reefs, tourism
	wreck	reef, locals, wreck, hotel, research
	reef hotel	educate, fishermen, hotel owners, importance, local
UNESCO 2001	damage	wreck, reef, government, conservationists, pay
	fishing fleets	fishing, coral, fishing fleets, fleets, radius
	local fishermen	local, fishing, local fishermen, reef

Table 26: Table showing the top prioritised stakeholder each week, compared to average group valuation and education scores. Groups which prioritised the cultural heritage resource are highlighted in bold.

Top Priority	Week	Average Group Valuation	Average Group Education
Local fishermen/ Conservation	1	8	6
2001 Convention/ Conservation	2	**10**	**9**
2001 Convention/ Conservation	3	**9**	**7**
Hotel owners	4	8	5
2001 Convention/ Hotel owners	5	**9**	**7**

2001 Convention/ Conservation/Local fishermen	6	**9**	**7**

7.5 Discussion

7.5.1 Key Findings

- After education, understanding of the marine environment showed an increase of 8% for the entire sample. However, samples which had a lower understanding of the marine environment to begin with showed a significant increase in understanding after education.
- For MCH, there was a 43% increase in understanding after education, with 68% of the sample demonstrating a high understanding after education.
- The average valuation of both the marine environment and MCH increased after education, by one and three points respectively. Before education, 30% of participants valued the resources equally, which rose to just over half of participants after education.
- A significant correlation was found between education and valuation. *Furthermore, a significant correlation was found between MCH education, and valuation of the marine environment.*
- After education, the value score reasoning expanded from themes such as global warming and food, to include themes such as future generations in relation to the past, future and culture.
- Groups that had a higher education and valuation score of MCH, prioritised MCH higher in mixed management frameworks than groups who had lower education and valuation scores.

This research aimed to understand the relationships of a sample of the future decision maker demographic to both natural and cultural underwater resources. The results were used to test for correlation between education and valuation, and in particular, to test whether an understanding of MCH could have an effect on the valuation of *both* resources. This work follows an extensive systematic literature review that aimed to understand why cultural heritage is often nominally included but not successfully managed within integrated resource frameworks. The review highlighted a gap in knowledge regarding the benefits *natural* marine resources may receive from integrating cultural resources into management frameworks, and suggested further research in this area could increase the success of integrated management in practice, in line with the UN's 2030 Sustainable Development Goals (Chapter 5).

In a review conducted for this work, it was found that research regarding the social valuation of marine resources was limited, and largely focussed on natural resources. Furthermore, the proportion of research regarding the social valuation of underwater cultural resources was largely made up of undefined general public samples, compared to the research in stakeholder, local, tourist and general public samples represented in the field of natural resources. A sample missing from both fields was 'future decision makers': a demographic deemed particularly influential for change by the UN Population Fund. It is argued that research into this demographic not only fills a gap in a particularly understudied population sample, but may be used to provide insight into the choices made by future people in power. As such, these results are used to explore the research question: '*What is the value of underwater heritage as part of the marine environment*', in an attempt to provide a timely answer to a study which is, inherently, addressing the future of integrated natural-cultural resource management.

In line with the first research objective of this study, the results show that the general understanding and awareness of MCH was low, complementing the current academic consensus on cultural heritage awareness in the general public (Fletcher *et al.*, 2014; Kobryn *et al.*, 2018; Varinlioğlu, 2020). The second objective aimed to test for patterns between education and valuation for both resources. The results are in line with the most recent studies regarding education and valuation for natural marine resources (Chen *et al.,* 2019), and add to this research by presenting a similar positive correlation between education and valuation of MCH. In answer to the primary research question of this study, a positive correlation was found between MCH education, and the valuation of both cultural *and* natural marine resources; suggesting that an awareness of MCH can increase the social value given to the marine environment. Furthermore, in a simulated environment relevant to the potential future career choices of this sample, it was found that the positive correlation between education and valuation affected the opinions and overall prioritisation of MCH within a mixed natural/cultural resource management framework.

These results expose two key arguments; firstly, there is a low level of MCH awareness in a population sample which have shown interest in working within resource management in the future. When tested in a simulated environment, participants with a high understanding and awareness prioritised MCH alongside natural resources. This example may be used to argue that the lack of MCH representation within integrated frameworks is a result of poor understanding and awareness of the resource itself, and that simply increasing understanding in resource practitioners may increase the inclusion of MCH within these frameworks. Determining whether this pattern is mirrored in a practitioner sample would be a useful addition to this study.

The second argument is as follows: including MCH in integrated marine management frameworks will increase the social valuation given to *natural* marine resources. This argument builds upon the findings of Chapter 5, which suggested that for the successful integration of MCH to occur, the process has to benefit *both* natural and cultural resource protection. There are multiple studies that show public valuation of resources is linked to protected area compliance and active public and stakeholder involvement in the form of monitoring, reporting and data collection (Potts *et al.*, 2016; Walker-Springett *et al.*, 2016; Benham and Hussey, 2018; Kelly *et al.*, 2018; Thomas *et al.*, 2018; Avelino *et al.*, 2019). The results of this study provide an example of the benefit MCH can provide to the social valuation of both natural and cultural resources in integrated frameworks, and in doing so aims to provide an incentive for re-evaluating the inclusion of cultural heritage in existing frameworks, for increased compliance and acceptance of current protected areas, crucially, to the benefit of the overall marine environment.

7.6 Limitations

The primary limitations of this work include; characteristic biases analogous to the broad geographical spread of participants, the potential of internal influences, and data processing. Each limitation is described below with regards to the measures taken to limit bias, validity of the results, and conclusions.

7.6.1 Characteristic Biases: Geographical Spread

The descriptive statistics and confounding variables aim to provide clarity as to the characteristic biases of the studied sample. English language skills for all participants were high, and so the lectures and town hall experiments were conducted in English without translators. As such, it is not expected that language or culture barriers significantly affected the results. Small differences were found between the initial knowledge levels for each school, which is expected considering the differing curriculums and education systems for each sample. However, as all samples showed the same pattern before and after education, these initial differences were not taken into account.

Despite the potential biases stated above, all country samples exhibited the same patterns in response to the study parameters. As such, geographical bias should not affect he validity of the results.

7.6.2 Characteristic Biases: Future Interest

All participants are valid examples of the 'future decision maker' demographic, nonetheless, additional questioning was deemed necessary to minimise bias from external influences. Over half of the participants directly discussed future work within the field of resource management, and a quarter showed direct interest in the topic. The small percentage of students (5%) who showed no future interest in the topic should be taken into consideration when interpreting the results, but should not affect the validity of this study.

7.6.3 Internal Influence

The primary concern regarding internal influence is the potential effect of the mentor-student relationship established throughout the week. To minimise bias towards 'correct' answers in line with the mentor's views, it was stressed that bias such as this would provide false results, and there was no right or wrong answer to be given. Furthermore, the answers would have no effect on their performance during the week. As such, internal influence was avoided as much as is possible, and should not affect the validity of the results.

7.6.4 Data Processing

To minimize bias in data processing, the questionnaire and town hall were analysed using a qualitative and quantitative scoring system. The results of both analyses were correlative and were used together to present the results in this work. The limitations of each method are largely accounted for in the other, and complimentary results such as those presented suggest a low level of bias in the data processing procedure.

Overall, the high level of environmental control and low level of external influences have decreased the effects of the usual limitations analogous to questionnaire research.

7.7 Conclusion

The arguments presented provide an example of the complexity associated with the links between education, social valuation, and resource management. It is clear that the process of MCH education can positively affect the value given by certain demographics to the marine environment, and in a simulated environment, this relationship can influence the decisions made in natural and cultural resource management. It would be useful to expand this research to practitioners and stakeholders, to determine if the findings of this study are reflected in different samples.

The following two Chapters apply the findings of Chapters 6 and 7 in a legal setting. Research Questions 1 and 2: the effects of definition, conceptualisation and value, are brought together in an evaluation of integrated legislation in the UK and Bulgaria. These Chapters will conclude Part 2 of this thesis, and introduce Part 3: Bridging the between theory and practice, in which Research Question 3: *How can underwater heritage be practically integrated into existing marine resource management frameworks, and who is responsible for overseeing this process,* is answered.

Chapter 8 MCH Valuation, Definition and Conceptualisation in the National Legislation of the UK and Bulgaria

Part 1: An introduction to the integrated management of MCH and the marine environment in the UK and Bulgaria

8.1 Prelude

The following two Chapters will provide a comparative case study of the integrated management of MCH and the marine environment in the UK and Bulgaria. These case studies have been chosen to reflect the broad scope of MCH management and protection, with the hope that by analysing two greatly differing methodologies, various conclusions may be drawn regarding the primary issues and themes integral to the effective and successful protection of MCH in integrated environmental systems.

An extensive case study of both regions has been undertaken and will be presented in the form of practitioner perceptions regarding the management of MCH in integrated marine frameworks and policies. The Chapter will open with an introduction to the development of the relevant legislation and policy discussed throughout the analysis (part 1), followed by a comparative analysis of the extent to which methods of managing MCH have been integrated with environmental policies in both the UK and Bulgaria (part 2). In answer to Research Questions 1 and 2 of this thesis, a comparison of the intangible aspects of MCH protection within an environmental system including how MCH is defined, conceptualised, and valued in alignment with international and regional perspectives will be presented. The comparisons drawn will then be used to understand how this knowledge may develop practice regionally, and the results of this work will be used to inform the final methodologies and recommendations presented in the concluding Chapters of this thesis.

8.2 Aims and Objectives

Aims

As speculation continues to rise regarding the management of MCH within integrated resource management frameworks (Chapter 4); this work aims to extend our understanding of the current

state of MCH management in both the waters of the UK and Bulgaria, and to provide recommendations for the effective protection of MCH in integrated environmental systems.

Objectives

1. Produce a study of the development of MCH policy in the UK and Bulgaria
2. Comparatively analyse the methods by which the management of MCH has been integrated alongside the marine environment in the UK and Bulgaria
3. Use this analysis to present key lessons for the effective protection of MCH in integrated heritage-environment systems

The aims and objectives of the following Chapters build upon a foundational understanding of specific aspects of both UK and Bulgarian MCH legislation: particularly, the extent to which each state's legislative system incorporates or could incorporate integrated policy concepts such as Blue Growth, or integrated management systems such as MSP and ICZM. As such, it was deemed necessary to provide a thorough descriptive introduction to MCH management in both the UK and Bulgaria before commencing with an extended critical comparative analysis.

Considering the purpose of Chapter 8 is to provide the context to the research questions addressed in Chapter 9, a qualitative literature review was deemed a sufficient methodology, particularly as a significant body of literature already exists regarding the UK's heritage management. To address the effectiveness of the system in practice, expert and public interviews were cross analysed with the literature to provide the necessary information.

Although extended reviews of the UK's MCH management do exist, the questions raised throughout this Chapter are so far largely unanswered in literature: such as the extent to which MCH legislation in the UK may compliment or juxtapose the values of integrated management; and the practicality of applying integrated methodologies to UK MCH definitions, conceptualisations and values. Furthermore, as well as assessing the information collected from expert interviews, public surveys and questionnaires were used to assess the effectiveness of current practice from the perspective of SCUBA divers – a largely underrepresented population sample in evaluations of UK MCH management.

Conversely, the systems governing MCH in Bulgaria are unexplored from an international perspective, and the extent of natural-cultural legislative integration is yet to be addressed. To provide a thorough exploration of the state of heritage legislation and management in Bulgaria, expert interviews were cross-analysed with translated legislature, archaeological reports over time, and the limited body of critical literature, to provide a rounded representation of MCH management and integration with natural environment policies. The resulting body of work was

fact-checked by Bulgarian heritage professionals for accuracy. There are currently no similar reviews of Bulgarian MCH management from an international perspective. As such, Section 8.4 represents a unique viewpoint in literature, and provides a strong foundation for future research.

8.2.1 Methods

Methodology: Comparative Analysis

Considering the limited extent of research available at a national-level, a dual-comparative methodology was considered to be the most appropriate way to provide an initial answer to the research questions framed below. The integration of heritage into environmental law is a complex topic. As discussed in Chapter 4, conceptually, cultural heritage can be understood and represented in policy in a multitude of ways, often depending on regional cultural identities and priorities. Furthermore, concepts such as 'cultural landscapes' and the operational guidelines of the World Heritage Convention have placed the definitions of natural and cultural heritage on an environmental and cultural spectrum.

The representation of the natural and cultural environment in law is evolving alongside the integrated frameworks and policies detailed throughout this thesis. Considering regional-level policies are largely influencing national level legislation at this time (Chapter 3), a full examination of the global state of integrated, national-level legislation is unnecessary for the capacity of this thesis. Instead, the concepts developed in Chapters 6 and 7 are applied to multiple levels of governance both internationally, in the form of recommendations to the 2001 Convention, regionally, by integrating them into the methodology of MSP, and in the case of the UK and Bulgaria, nationally. In the following Chapter, a national-level case-study has been used to examine and expand upon the practicality of natural-cultural integration from a legislative perspective, to fully test the hypotheses of previous Chapters, from an alternative angle.

Comparative analyses represent a useful tool to inform policy without committing to a global investigation of the extent of national-level integrated legislation, but instead, providing a detail-driven analysis of the legislative text of two nations, and the network of internal and external influences which effect its practice. The UK and Bulgaria were chosen for this analysis for several reasons. The UK is considered a leader in heritage protection and provides a unique and recent example of integrated heritage management in planning and development policy (e.g. including heritage as part of the overall environment in the recent Fisheries Act 2020). Comparatively, although Bulgarian MCH management is considerably less researched and underrepresented in literature, it represents a unique example of integrated heritage-environment management, as it is developed within the nation's base heritage and natural environment legislation. These two

distinct methodologies for integrating heritage and the environment in practice are both unique and contrasting, rendering them ideal cases to apply the various hypotheses and research questions raised throughout this thesis, and to exemplify the spectrum of heritage-environment legislation in practice.

Methodology: Interviews

The author conducted semi-structured interviews with eleven industry professionals (Tables 27 and 28) to discuss the state of Marine Cultural Heritage protection in their respective countries (sample interview questions: Appendix B). Interviewees were selected due to their direct involvement with the management of the MCH in each state, and care was taken to include devolved nations (in the case of the UK) and to represent both inter and intra-governmental bodies. Historic England, Historic Environment Scotland, the Marine and Fisheries Division of Northern Ireland's Department of Agriculture, Environment and Rural Affairs, and Cadw were all contacted as part of the UK study. The only body not represented in this study is Cadw, as there was no person appointed to marine heritage at the time of interviews. Interviewees outside of official advisors to government were used to provide alternative viewpoints, and were selected to represent multiple environments and expertise. In Bulgaria, The Centre for Underwater Archaeology (CUA) represents the official arm of MCH management, and so interviewees were conducted with the director and available affiliates of the CUA.

Before the interview, interviewees were presented with the same information regarding the purpose of the study, and the primary discussion themes. Similar questions were asked for all participants, however flexibility was introduced to allow for additional information in the form of reactive conversation, thus addressing the same themes, but allowing for the broadest collection of feedback.

The UK interviews were conducted virtually in March 2021, and the Bulgarian interviews used are a collection of interviews conducted during field work in Bulgaria between the years of 2017-2019, checked and updated in March 2021. The interviews were conducted according to the University of Southampton's ethical rules (Ethics No. 62532), and were stored and analysed using the platform nVivo, by which the information was clustered into the themes of definition, conceptualisation, value, and practice. Within these clusters, positive and negative aspects of each theme were used to weigh up overall opinion.

Table 27: UK Interview Participants

Participant	**Position**	**Date**	**In-text reference**

Dr. Antony Firth	Director of Fjordr, marine and historic environment consulting	10/02/2021	Firth, 2021
Dr. Christopher Pater	Head of Marine Planning at Historic England	10/02/2021	Pater, 2021
Ms. Caroline Barrie-Smith	CITiZAN Project Manager	04/02/2021	Barrie-Smith 2021
Mr. Philip Robertson	Deputy Head of Designations at Historic Environment Scotland	04/02/2021	Robertson, 2021
Dr. Garry Momber	Director of the Maritime Archaeological Trust	04/02/2021	Momber, 2021
Mr. Colin Dunlop	Marine Historic Environment Advisor at Marine and Fisheries Division, DAERA	05/02/2021	Dunlop, 2021

Table 28: Bulgarian interview participants

Participant	**Position**	**Date**	**In-text Reference**
Dr. Kalin Dimitrov	Deputy Director of the National Institute of Archaeology with Museum, former Director of the Centre of Underwater Archaeology	Field seasons: 2017-2019, confirmed 2021	Dimitrov, 2021
Dr. Nayden Prahov	Director of the Centre of Underwater Archaeology, former archaeologist at the National Institute of Archaeology with Museum at the Bulgarian Academy of Sciences	Field seasons: 2017-2019, confirmed 2021	Prahov, 2021

Mr. Pavel Georgiev	Archaeologist at the Centre for Underwater Archaeology	Field seasons: 2017-2019, confirmed 2021	Georgiev, 2021
Dr. Dragomir Garbov	CUA affiliate researcher	Field seasons: 2017-2019, confirmed 2021	Garbov, 2021
Professor Kroum Batchvarov	Associate Professor of Maritime Archaeology at the University of Connecticut	Field seasons: 2017-2019, confirmed 2021	Batchvarov, 2021

Methodology: Surveys

An anonymous, combined multiple-choice and free-text survey and educational quiz (Appendix C and D) was shared with the majority of BSAC and PADI dive clubs in the UK[15] with the aim of understanding scuba diver awareness, perception and opinion of UK MCH management. There was a total of 615 and 534 responses to the survey and quiz, respectively. The data spans various topics and themes associated with engagement, awareness, opinions and understanding of British MCH, and extends across all four devolved nations. To effectively analyse the results the free-text answers were downloaded into Excel and manually categorised and sorted into corresponding clusters. Only those opinions which were actively relevant for the analysis of integrated culture-nature management were used in the final iteration of this Chapter, which were in fact a small portion of the available data. To supplement the information gained in the quiz, information sessions were held via Zoom on request of dive clubs. Six sessions were held with a total of 137 participants. These sessions allowed divers to discuss their thoughts and opinions with their peers and the author; some of which are included in this study.

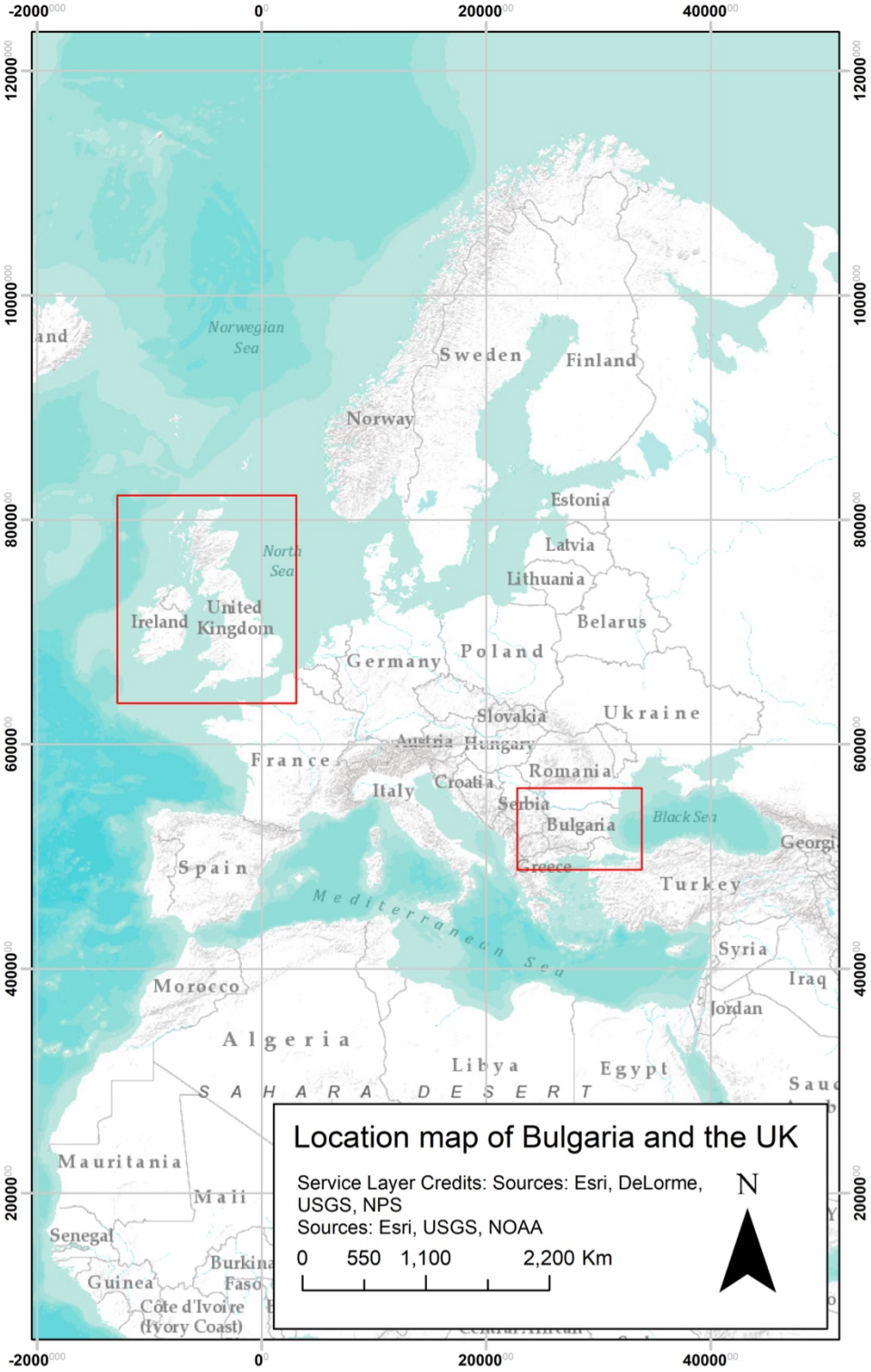
Table 29 Information sessions with scuba diving clubs

Dive Club	**Date**	**Participants**

[15] All clubs with an available email address on the PADI and BSAC club locators were contacted, a total of 387 clubs.

Holborn Scuba	10/02/2021	15
Stellar Divers	11/02/2021	24
Dive Tech Edinburgh	17/02/2021	32
Bracknel Sub Aqua Club	18/02/2021	12
Totnes Sub-Aqua Club	17/03/2021	28
Richmond Sub-Aqua Club	19/03/2021	26

The results of the interviews, surveys, literature and policy reviews were used to structure the comparative analysis presented in Chapter 9. The final result is not intended to be all-encompassing, but is based on an amalgamation of the opinions of industry professionals, the author, and a portion of the public which tangibly encounter the MCH. When available, all opinions have been attempted to be evidenced by country data and literature.



Map 1: Map showing the location of the two case studies

8.3 MCH in the UK

The following Section aims to provide a background to the relevant legislation and policy analysed in part two. While there have been a series of detailed analyses of UK MCH-related legislation

(Pickard, 2001; Ross, 2003; Pater and Oxley, 2014; Pater, 2020), new legislation and various iterative changes in policy and implementation mean that even relatively recent analyses do not address every aspect. Particularly, the influence of socio-political and economic factors integral to the development and effectiveness of the more recent theoretical advances explored in the following Sections. For that reason, a relatively in-depth introduction to both case study areas is provided in this Chapter as a basis for the subsequent discussion. Both introductions to the UK and Bulgarian situations will begin with a summary of the development of heritage legislation, followed by a synopsis of the specific MCH legislation analysed in in the following Chapter, and a brief introduction the state of integrated MCH management in each region.

8.3.1 The development of heritage policy in the UK

In the UK, underwater heritage legislation developed around a century later than legislation on land, and so the following Section will provide a brief background to terrestrial legislation before introducing its underwater counterpart.

The first British Act of protection for tangible cultural heritage was the *Ancient Monuments Protection Act 1882*, which was a result of several legal battles in the second half of the 19th century regarding the ploughing of Romano-British Dyke Hills at Dorchester on Thames and the selling of building plots amongst the stones at Avebury (Brown, 1905). The Act established a schedule of 50 prehistoric monuments and elected General Pitt-Rivers as its first inspector. The following decade saw various movements towards the protection of buildings and monuments: several cities including Chester, Colchester and Newcastle successfully petitioned for powers to protect medieval city walls; the first Survey of London took place (1894) (of which the first volume was published in 1900); the National Trust (formed in 1895) acquired its first building (a 14th century thatched house in Sussex called Alfriston Clergy House) and the *London County Council Act* gave permission for the Greater London Council (later abolished in 1986 with responsibility transferred to English Heritage) to purchase ancient monuments of 'architectural and historic interest' (the first of which being a Tavern built in 1611 on Fleet Street) (Ross, 2003).

In 1900, the *Ancient Monuments Act* was amended to broaden its scope to Romano-British and medieval monuments. The limited spectrum of the Act compared to other European countries at this time prompted the publication of the Care of Ancient Monuments (1905) by Gerard Baldwin Brown, who argued that the UK severally lagged behind other countries in its protection of heritage in legislation (Brown, 1905). Shortly after, the Royal Commissions were established in Scotland, England and Wales to establish inventories of pre-1900 monuments, and included mention of other sites deemed 'worthy of preservation'.

The Ancient Monuments and Consolidation and Amendment Act 1913 was introduced to minimise such damage being caused to monuments by increased construction and industry. The Act placed responsibility on owners to give a month's notice to carry out works, and gave powers to an advisory board to assess the national importance of the site. Furthermore, a small fine or short term of imprisonment was introduced to discourage the public damage of ancient monuments (Historic England, 2016).

The following decades of heritage legislation was largely influenced by the damaging effects of the world wars, influencing the establishment of international cultural heritage treaties such as *The Hague Convention 1954*, to which the UK signed in 1954, and ratified in 2017. At this time the public opinion swayed towards the benefits of protecting heritage alongside the environment; for example, the sale of land around Stonehenge was largely and publicly boycotted (and later reversed), and the protection of both the natural and cultural aspects of Avebury and Hadrian's Wall were similarly brought into the public's attention. As such, amendments to the *Ancient Monuments Act* in 1931 encouraged local authorities to create preservation schemes around monuments and their environment, representing the concept of conservation areas in British legislation for the first time. Power was given to local authorities to do this by the *Town and Country Planning Act* in 1932 (Ross, 2003).

The destruction of WWII prompted the establishment of nation-wide salvage lists, and compilation by the minister was made obligatory by amendments to the *Town and Country Planning Act* in 1947, which introduced a grading system using more specific criteria. During this time the *Historic Buildings and Ancient Monuments Act* introduced grant schemes for the repair of historic buildings (1953), and multiple restorations took place. Legislation and heritage management largely focussed on the repair of British culture and spirit.

In the later half of the 1960s, the *Civic Amenities Act* formally introduced Conservation Areas of architectural or historic interest sparking a nationwide resurvey of listed buildings, and the *Town and Country Planning Act* was amended to give all buildings on the list statutory protection. Following, the 1970s saw further amendments to the *Town and Country Planning Act* to further encourage the establishment of Conservation Areas by local authorities (1971) (Historic England, 2016).

As a result of increased accessibility to shipwrecks with the popularisation of the aqualung, underwater heritage was first mentioned in law in the *Protection of Wrecks Act 1973*; in the form of a short Private Member's Bill, a temporary legislation designed to minimize the destruction of a small number of shipwrecks. This Act facilitated the designation of certain shipwrecks protected by restricted access; discussed in further detail in the following Section. The next inclusion of MCH

in heritage law was later in 1979, as the *Ancient Monuments and Archaeological Areas Act* integrated various legal instruments for the protection of monuments dating back to 1882, and included the possibility to schedule heritage situated 'in, or under the seabed' within the territorial sea as possible sites for designation[16].

Following a public exchange of letters in *the Times* between the Nautical Archaeology Society (NAS) and the director of the National Maritime Museum in 1988, the JNAPC was formed with the aim of developing a coherent policy on the protection of MCH in British waters (JNAPC, 2010). In 1989, the JNAPC published 'Heritage at Sea', which proposed multiple amendments to the current laws, and recommendations for the more effective protection of MCH. Such recommendations included new, more effective legislation, the elimination of historic shipwrecks from salvage law, the need for an inventory of underwater sites and an integrated national collections policy, pre-disturbance surveys for commercial interaction with the seabed, and maritime sites to be managed by the heritage agencies which manage terrestrial sites, among other recommendations (JNAPC, 2010). Further to this, the Government published the White Paper 'This Common Inheritance' (1990) which implemented four out of the ten recommendations, including the waiving of ROW fees, funding for a Maritime Record of Sites, for the NAS to employ a training officer for Sports Divers, and transfer of the administration of the *Protection of Wrecks Act 1973* from the Department of Transport to a heritage ministry. Since, multiple other recommendations have been achieved (JNAPC, 2010).

During this decade, the *National Heritage Act 1983* created the Historic Buildings and Monuments Commission, later renamed English Heritage and now Historic England, as government advisor for the built historic environment, making it necessary for the Secretary of State for the Environment to consult English Heritage for advice concerning listed monuments[17]. The Welsh historic environment agency Cadw was founded in 1984, and later Historic Scotland (now Historic Environment Scotland) in 1990 (Historic England, 2016).

With regards to the development of MCH policy, other than the few recommendations taken on by the Government in the 1980s, little was done in the following years (Oxley, 1996). This prompted the JNAPC to publish 'Still at Sea' (1993) to emphasise the ongoing issues with the limited protection of MCH, the Code of Practice for Seabed Developers (1995) for commercial development, and various guides for divers (Underwater Finds – What to do (1998), Underwater

[16] Although AMAA may be used to schedule heritage in or under the seabed, it was not used to do so until recently. The act was first used offshore to protect the wrecks of Scapa Flow in the Orkney Islands in 2001.
[17] English Heritage was split in 2015, retaining management of historic properties and relinquishing scheduling to Historic England.

Finds – Guidance for Divers (2000, 2007), Wreck Diving – Don't Get Scuttled (2000b)). This continued into the millennium during which time the JNAPC made multiple further recommendations for legal and administrative changes to improve the protection of MCH in territorial waters.

The first decade of the millennium also saw significant effort for the listing of terrestrial monuments. In 2011, the National Heritage List for England was launched, giving the public access to a digital database of English Heritage. A more strategic approach to designation was adopted in 2012, which focussed on priorities in the National Heritage Protection Plan. As such, applications for designation would only be accepted if the site was under threat, within a current strategic project, or if there was evidence for its significance (Historic England, 2016).

In the realm of underwater heritage, the *National Heritage Act 2002* was updated to promote 'enjoyment of, and advancing undertaken of, ancient monuments in, on and under the seabed' adding 73,000 square kilometres to the English Heritage remit. As such, ancient monuments under this act could be in or under the seabed in the territorial waters adjacent to England. The *Marine and Coastal Access Act 2009* made it obligatory to require a licence for planning and development activities near wreck sites, and defined underwater heritage as part of the environment for the first time in UK law (Pater, 2020). This has recently been represented for a second time in the *Fisheries Act 2020*. A more detailed understanding of the protection of MCH in legislation and policy is expanded upon below.

8.3.2 Legislation and policy relevant to MCH

The territorial waters of the United Kingdom have an extensive and rich archaeological record spanning thousands of years of human interactions with the sea and continental shelf. Britain has played a major part in the development of the discipline of maritime archaeology and houses a number of influential bodies and organisations within the field. As such, the current state of MCH protection in UK waters is particularly interesting; despite its progressive influence in the field of maritime archaeology, the legislation in place to protect MCH has been described as neglectful, and in need of significant reform (Gribble *et al*., 2009; Martin and Gane, 2020).

Britain's governance of its MCH has remained largely unchanged over the last century and a half. The *Protection of Wrecks Act 1973* (PWA) was initially developed as a reaction to an increase in diver interference with historic warships; having become largely accessible with the development of SCUBA equipment in the 1960s. Despite being developed as a temporary measure (Firth, 1999), the PWA remains the primary method of managing MCH in English, Welsh and Northern Irish Waters.

Further nation-wide Acts which provide relevant MCH laws include the *Ancient Monuments and Archaeological Areas Act 1979* (AMAA), the *Merchant Shipping Act 1995* (MSA), the *Protection of Military Remains Act 1986* (PMRA) and the *Marine and Coastal Access Act 2009* (MCAA). A brief summary of these Acts and their purpose is detailed below.

The Protection of Wrecks Act 1973 (PWA)

This collection of legislation remains the principle protection of MCH in the UK's territorial waters. Section 1 of the Act entitles the Secretary of State for Digital, Culture, Media and Sport to designate vessels of historic, archaeological or artistic importance as a 'restricted area'. Once designated, a protected area is placed around the site and diving is prohibited unless a licence has been issued by the Heritage Agency. The Act is administered by Historic England, Cadw in Wales and the Department for Agriculture, Environment and Rural Affairs in Northern Ireland.

Scotland has since disregarded S.1 of the 1973 Act and replaced it with part of the *Marine (Scotland) Act, Part 5*. In this case, Historic Environment Scotland acts to advise Marine Scotland regarding the designation of Historic Marine Protected Areas (See - Oxley, 2001) These areas protect multiple forms of MCH including shipwrecks, man-made structures, scattered remains and artefacts, and prehistoric landscapes. In opposition to the PWA, divers are encouraged to visit HMPAs with the intention to record, appreciate or conserve unless special restrictions are in place. No artefacts may be salvaged and there must be no disturbance to the site, and planning permission or marine licences must be acquired to carry out activities such as development and construction (Historic Environment Scotland, 2019b). Section 2 of the PWA allows the Maritime and Coastguard Agency through the Receiver of Wreck to designate a 'prohibited area' around a wreck if its contents may be dangerous to life or property, and is maintained in Scotland.

As a result of these amendments to the PWA, the management of MCH in Scotland is significantly more integrated with the environment than any other devolved nation. As a result, the Scottish management of MCH and the marine environment is philosophically and theoretically significantly different to the rest of the UK, particularly in light of recent amendments to the *Marine Scotland Act* (2010).

An initial analysis of the Scottish HMPA system is provided in Section 3.4.3 of Chapter 3. A more detailed analysis remains to be conducted by the Scottish government, or in academia. To address the questions raised in this Chapter, the contrast between the English (and overarching British legislation) (and in some cases Northern Ireland and Wales) and the Bulgarian system will be used to maintain clarity and contrast in the presented arguments.

The Ancient Monument and Archaeological Areas Act 1979 (AMAAA)

The AMAAA provides a collection of legislation to protect the archaeological heritage by scheduling monuments of national importance. Maritime sites may be designated under this Act if they are within territorial waters, comprise of a building, structure or vessel of public interest, and are not already designated under the PWA. This form of designation was used in the case of the wreck of *Louisa* in Cardiff Bay, which could not be designated under the PWA as the remains were in inland waters.

The Protection of Military Remains Act 1986 (PMRA)

The PMRA is administered by the Ministry of Defence to prevent disturbance to human remains within military vessels, and to protect areas of historical military significance. The Act applies to British military vessels within both territorial and international waters, and foreign military vessels within UK waters. Either 'protected places', which must have been sunk after the 4th of August 1914, or 'controlled sites', which must have sunk within the last two hundred years, can be designated. All military aircraft are automatically protected under this legislation. Divers may visit protected places, but not controlled sites.

The Merchant Shipping Act 1995 (MSA)

Part 4 of the MSA iterates the recovery of wreck materials in territorial waters as governed by the law of salvage. Recovered material must be reported to the Receiver of Wreck who manages the interests of the relevant parties such as salvors, owners, archaeologists and museums. If left unclaimed at the end of one year, the material becomes the property of the Crown. In practice the Crown waives its rights and a salvor acting within the law may be entitled to a salvage reward, not exceeding the value of the recovered material. Initially developed with the owners of recently wrecked vessels in mind, this act has unfortunately served to encourage the illegal recovery of archaeological materials, as evidenced when a three-month amnesty collected 30,000 objects which had been illegally removed by divers after granting immunity from prosecution (Dromgoole, 2006; Martin and Gane, 2020).

The Merchant Shipping and Maritime Security Act 1997

Section 24 of this Act is used to enable the Secretary of State for Transport to take part in international agreements for the protection of wrecks in international waters. The Secretary of State may designate, prohibit access, and provide licences to enter designated sites.

The Marine and Coastal Access Act 2009 (MCAA)

Section 66, Part 4 of the MCAA defines activities (such as construction and development) directed at wreck sites within the UK Marine Area or on any British vessel, aircraft or marine structure as

licensable activities which may require a licence from the Marine Management Organisation (MMO) in English inshore and offshore waters, and Welsh and Northern Irish offshore waters. Marine Scotland is responsible for licencing for Scottish inshore and offshore waters. Natural Resources Wales and the Department of Agriculture, Environment and Rural Affairs (Northern Ireland) are responsible for licencing in Wales and Northern Ireland, respectively. This is the first Act to include underwater historic and archaeological features as part of the marine environment[18] which represents a significant movement towards the integrated protection of MCH. In particular, the MMO was assigned duty to review particular matters inclusive of 'the physical, environmental, social, cultural and economic characteristics of the authority's region' (sub-section 54(2)). 'Cultural characteristics' in this case were defined as of 'historic or archaeological nature' (54(4)).

The MCAA is a result of various negotiations including two White Papers in 2006 and 2007, and a draft marine Bill in 2008. The Act enables the production of a Marine Policy Statement by the Secretary of State and devolved administrations for the sustainable development of the UK marine area.

Fisheries Act 2020

The Fisheries Act gives the UK full control of its fishing waters in light of leaving the EU. The Act aims to work towards the sustainable protection of fisheries, fishing, aquaculture and marine conservation, and makes provisions about the functions of the MMO. The significance of this Act for MCH is regarding its integration of archaeological and historic interest within the scope of the marine environment, and as a result financial assistance may be given for the conservation of heritage sites. Since, it has been suggested that this could be taken further by including this definition of the environment in the Sustainability clause of the Act, and for further amendments to be made for the regulation of fishing activities to conserve heritage; filling in gaps in current legislation (Honor Frost Foundation, 2020).

UK Marine Policy Statement 2020 (MPS)

The Marine Policy Statement, first published in 2011, delivers a planning system for the sustainable management of decisions affecting the marine environment, for the purposes of section 44 of the Marine and Coastal Access Act 2009. The primary objectives within this statement include: the promotion of sustainable economic development; mitigating the UK's

[18] MCH was included as part of the environment within marine planning (part 3), marine licencing (part 4) inshore fisheries (parts 6-8) and coastal access (part 9), although not in relation to marine conservation zones (part 5), which were siloed for the sole protection of the natural environment.

carbon footprint and so reducing the impacts of climate change and ocean acidification; ensuring healthy marine ecosystems by protecting habitats, species and 'our heritage assets'; and contributing to the societal benefits of marine resources for local and social economic issues (MPS, pg. 3, 2020). In this case, 'ensuring a strong, healthy and just society' is dependent on 'diversity of the marine environment, its seascapes, its natural and cultural heritage and its resources' (MPS, pg. 11, 2020). The MPS was updated in 2020 regarding the interpretation of EU law within the statement following the UK's withdrawal from the EU.

The development of MCH protection as part of the environment in UK policy may be traced to negotiations on the Draft Marine Bill established in 2005 by the UK government and Devolved Administrations, within which 'understanding our marine environment, its natural processes and our *cultural marine heritage*' [italics added] was included within a set of strategic goals for the marine environment (Pater and Oxley, 2014).

Following this, the High Level Marine Objectives in 'Our Seas – a shared resource' were developed in 2008 as a foundation for the Marine Policy Statement in 2011. Within these objectives, the 'marine cultural heritage' was defined:

> 'the historic environment of the seas includes individual sites and assets of historic, archaeological, architectural or artistic interest, whether or not they are afforded statutory protection by heritage protection legislation'
>
> *(MPS, pg 9, 2020)*

The recognition of significance regardless of designation is a particularly important step towards the evolution of heritage as part of the surrounding environment in UK policy, particularly considering heritage legislation has previously relied on designation based on significance (as in the PWA 1973).

The inclusion of cultural heritage as a significant factor of the sustainable development of the ocean represents a similar vision to the goals of *UNESCO's Convention on the Protection of the Underwater Cultural Heritage* (2001 Convention), although questions have been raised previously with regards to the clarity of what 'culture' means in this context. This is noted in *Draft Marine Bill Report* and *formal minutes by the Joint Committee on the Draft Marine Bill* in 2008, in which the lack of definition of sustainable development within the draft marine bill is questioned, particularly in the context of the objectives of the MMO, the content of the Marine Policy Statement and the associated marine plans (clauses 2, 40 and 46). The statement reads,

> [in relation to the Marine Policy Statement's 'development in the UK marine area by setting out a UK vision and objectives for the marine area and its uses, incorporating economic, social, cultural and environmental priorities'], 'it is not clear what 'cultural' might mean in the context of sustainable development: whether it refers to the cultural aspects incorporated in the Government's 'well-being indicators' or the historic cultural heritage encompassing ancient geological landscapes beneath the sea and other artefacts (e.g. shipwrecks) that compromise the accepted marine cultural heritage'
>
> *(formal minutes by the Joint Committee on the Draft Marine Bill pg.22, para 42)*

The evolution of the definition and conceptualisation of MCH in UK marine policy will be critically examined in Section 9.2.

International Agreements

The UK is a signatory to various international conventions, treaties and charters relevant for the protection of MCH including *the Hague Convention 1954, the Paris Convention (1970) World Heritage Convention 1972, International Convention on Salvage 1989, the Grenada Convention 1985, the Valetta Convention 1992, the Titanic Agreement (2003) and the Florence Convention 2000*. Although adopting the principles of *UNESCO's Convention on the Protection of the Underwater Cultural Heritage* as standard practice, the UK has not yet ratified the Convention (UK National Commission for UNESCO, 2015).

8.3.3 MCH management in literature

Of the 1,291 papers available on WOS under the topic of maritime archaeology, 54 discussed law, policy or legislation (4%) (as of April 2021). Of these articles, the primary country producing papers was the USA, followed by the UK, then China, and citations mirrored this pattern. The most common topics were: UNESCO and the 2001 Convention, the Law of the Sea, Salvage, Shipwrecks and International Law. Overall, literature discussing maritime law in relation to maritime archaeology is primarily discussing the ratification of the 2001 Convention.

Literature discussing governance of MCH in the UK has often called for a modernisation of the layered and reactionary nature of the UK's policies (Dromgoole, 1989, 2004; Martin and Gane, 2020), and ratification of the 2001 Convention (Dromgoole, 2006; UK UNESCO 2001 Convention Review Group, 2014; Roberts, 2018). Furthermore, there has been significant critique of the restrictions in policy regarding both the threats to MCH and its sole focus on shipwrecks, and the reactive designation of sites and associated overarching lack of protection of non-designated MCH in the UK as a result. Although the use of HMPAs in Scotland is an improvement on the limited

remit of the PWA in terms of both type of heritage and protection; the nature of selective designation still remains an issue when there is no blanket protection of historic wrecks in territorial waters. This consensus is not new and has been in play since the PWA was established as a temporary measure in 1973 (JNAPC, 1989, 2000a; English Heritage, 2004; Firth, 2014). The introduction of the Marine Policy Statement in 2011 represents a change in the understanding of MCH in policy and gives room for sustainable development plans to include a more inclusive definition of heritage, alike the definitions seen in international heritage conventions and agreements (see Table 32). The definition of heritage as part of the environment in planning and development policy and as an inclusive tangible and intangible entity in the Marine Policy Statement represents a shift in the UK's legislative representation of heritage, away from the outdated morals of instruments such as the PWA 1973. The changing legal environment of MCH protection in the UK raises the question, does Section 1 of the PWA 1973 remain necessary?

A further issue discussed in literature is the misguided approach to include historic wrecks within salvage laws, despite having adopted (if not ratified) the 2001 Convention (within which the key rhetoric is to prohibit the raising of archaeological materials for commercial gain), and having signed a reservation for the right to exclude 'maritime cultural property of pre-historic, archaeological, or historic interest' when joining the 1989 Salvage Convention (1989 Salvage Convention, Article 30(1)(d)). The primary objective of the use of Salvage Law is to encourage the reporting of objects lost at sea so as to be returned to the original owner. Unfortunately, as historic materials are still within this remit; the reward has acted to encourage the salvage of archaeological materials by UK-based companies and amateur divers in both terrestrial and international waters (Martin and Gane, 2020).

Despite an often negative literature base however, the last decade has seen significant moves for the protection of heritage in the UK. Notably, the DCMS has recently published plans to develop cultural and heritage capital for the valuation of heritage, which could significantly improve the protection of both terrestrial and underwater heritage (see - DCMS, 2021). Similarly to previous legislation however, 'shipwrecks' are the only provision made for the inclusion of the MCH, and no further plans appear to be in place for understanding the methodologies for cultural capital in underwater heritage.

8.3.4 MCH and environmental integration

MCH integration into environmental planning and development laws has increased its protection significantly. The UK's movements towards integrating MCH into the greater environment in legislation is particularly evident in marine planning and development. To date, MCH has legally

been defined as part of 'the environment' in two cases; in both the *Marine and Coastal Access Act 2009*, and more recently, in the *Fisheries Act 2020*. As a result, MCH must be included in the Environmental Impact Assessment process, and as such, it is possible to commission professional archaeological survey once a development has been submitted for regulatory permission (Pater, 2020). This represents a significant step towards the integrated protection of MCH in the UK, alongside the inclusion of MCH within both the UK High Level Marine Objectives (HM Government and Devolved Administrations 2009) and the UK Marine Policy Statement (HM Government and Devolved Administrations 2020). An extended analysis of the practicalities of integrated management of heritage and the environment in the UK is expanded upon in the following Chapter.

8.4 MCH in Bulgaria

Considering the limited literature available regarding the growth and evolution of cultural heritage legislation and protection in Bulgaria, the information presented in the following Section was collected from a mix of interviews with industry professionals, the EU Compendium, UNESCO monitoring reports and the works of Tepavitcharov and Zlateva. The opinions and issues discussed in the following Section are relevant up until the date of writing.

8.4.1 The development of heritage policy

The Black Sea region is host to a rich archaeological record. Early hominin activity during the late Miocene (Fuss *et al.*, 2017) has been followed by evidence of various prehistoric activities; including Mesolithic chipped stone collections from the northern Bulgarian Coast (Gatsov, 2016), the Eneolithic Varna Necropolis (Higham, 2007), and the graphite painted chalcolithic pottery sherds in Gradeshnitsa (Maniatis & Tite, 1981). Bulgaria's ancient history is punctuated by Thracians, Romans, Alani, Goths, Huns, Slavs and Ancient Bugars (Crampton, 2005) of which a distinct archaeological record has been produced in the works of Sophoulis, (2011), Strait *et al.*, (2016) and the National Archaeological Institute with Museum's annual reports. There are currently 10 UNESCO World Heritage Sites in Bulgaria and 16 sites considered on the tentative list, including The Ancient City of Nessebar, the Boyana Church, the Madara Rider, the Rock-Hewn Churches of Ivanovo, the Thracian Tombs of Kazanlak and Sveshtari. Furthermore, as party to the UNESCO Convention concerning the *Protection of the World Cultural and Natural Heritage* since 1974, around 4000 objects of cultural heritage history are protected under the status of a monument of culture (ICOMOS, 1969), of which seven are UNESCO World Heritage Sites (UNESCO 1972).

The archaeology of the Black Sea basin reflects an extensive history of European, Anatolian and Eurasian seafaring. As a result of rising sea levels, there are multiple examples of prehistoric settlements in coastal and intertidal regions. Archaeological work in the Black Sea basin and coastal plains has been documented by Hristova and Peev (2014, 2016), by Ballard *et al.*, (2001), and most recently by the University of Southampton's Black Sea Maritime Archaeology Project (Pacheco-Ruiz, Adams, Pedrotti, Grant, Holmlund, and Bailey, 2019).

The first institutional legislation aimed at the conservation and preservation of heritage artefacts was the *Discovery of Historical Monuments and Assistance to the Scientific Literary Organisations 1890*, followed by the *Law of Historical Monuments of the Kingdom of Bulgaria 1911*, both later supported in administration by the National Institute of Cultural Monuments. The base management of heritage was later stated in the *Constitution of the Republic of Bulgaria 1991*, by which state ownership of natural and archaeological reserves without restriction by ethnic-cultural or religious terms is dictated (Melone, 1998). As such the state is responsible for 'national cultural and historic heritage preservation' (The Constitution of the Republic of Bulgaria, p. 5.3.3., 1991), which remains the method for protecting the heritage of Bulgaria today (Zlateva & Zlateva, 2009). The Ministry of Culture organises its management, and within the Ministry, the Institute of Immovable Cultural Heritage issues permissions and authority over all academic involvement and conservation efforts regarding cultural heritage.

Prior to the fall of communism in 1989, cultural heritage was managed using a centralised system which had control and ownership over all heritage assets. Within the context of a democratic Bulgaria 'decentralisation' can be seen as a major theme in multiple Bulgarian heritage laws – however, echoes of this previous system are still prevalent (Compendium, 2011). Shortly after democratic reform, the 'National Strategy for Accession of the Republic of Bulgaria to the European Union' was published, stating that: 'adequate participation of our national culture in the all-European cultural space…based on the principles of decentralization and transparency of the cultural policy, equality of the cultural subject' (Europe Bulletin, p.14, 1998). The *Treaty of Accession* was later signed in 2005; with promise of serious reform with particular regards to political corruption, organised crime and human trafficking (Chary, 2011).

The *Law of Cultural Monuments and Museums 1969*, the *Protection and Development of Culture Act 1999* and the *Cultural Heritage Act 2009* now make up the legislative framework by which to protect the cultural heritage through the state. In line with the development European heritage legislation, intangible cultural heritage was introduced for the first time in 2009. The term

'cultural valuable[19]' was introduced to encompass both tangible and intangible heritage, replacing the term 'cultural and historical cultural monuments' used under the previous *Law on Cultural Monuments and Museums 1969*. Although including intangible cultural heritage was a significant move at the time, there has been criticism regarding the lack of amendments for practicalities in the law regarding intangible heritage since. Of the 230 amendments to the Law in 2009, 2011 and 2012, only 3 were dedicated to intangible cultural heritage (Mateeva, 2016).

Recent amendments to these acts have attempted to account for various conceptual discrepancies and out-dated rhetoric within previous legislation. When changing the term 'cultural heritage' to 'cultural valuables' in 2009 (Art. 5, Amended, SG No. 93/2009), the broad definition of cultural valuables was further defined to exclude various machine-minted objects of 'no research significance, exhibition value…cultural, scientific or artistic value, or are not related to any historic personality or event', or antiques or works or art that are not older than 100 years (Art. 7, amended, SG No. 54/2011). Furthermore, underwater cultural valuables were included within immovable cultural heritage (as was already included in moveable valuables (Art. 10) (Art. 9, amended, DG No. 54/2011).

The consensus of practitioners appears to suggest that in the case of conceptual discrepancy, amendments have been largely inadequate – primarily due to the rushed nature in which they were implemented, as a particular increase in archaeological discovery at the time drove a sense of urgency to override previous legislation (Compendium, 2011). The need for serious reform of the cultural heritage institutions that regulate and enforce new legislation, as well as improved police units and more severe penalty actions by courts is emphasised in the current practitioner opinion (Tepavitcharov, n.d.). This issue is particularly prominent in the protection of underwater heritage (*Garbov, Interviewed by Georgia Holly*, 2021).

Arguably, a positive by-product of a system of state authority over heritage assets is the relative simplicity of the system by which archaeological assets are excavated, conserved and shared. State archaeologists must be approved by a Council made up of academic representatives from the Bulgarian Academy of Sciences and must have several years of experience to apply for a permit. Excavation is strictly regulated and standardised, and at the end of the year all excavations and projects are fully reviewed by the state and presented in an openly accessible national archaeological report (National Archaeological Institute with Museum, 2020). Such a

[19] 'Cultural valuable/s', 'cultural value/s' are all cited as an umbrella term for both tangible and intangible cultural heritage in translated Bulgarian literature and the Cultural Heritage Act. The translated Act uses 'cultural value', but to maintain clarity between the cultural value discussed in this work, the term 'cultural valuables' will be used when discussing the intangible/tangible umbrella term in Bulgarian Law.

system means that state archaeologists are accountable for both commercial and academic archaeological excavation, which appears to have both benefits and issues. One of the primary issues is that commercial archaeology often overwhelms the workload, reducing the number of academic papers being published. Furthermore, a lack of enforcement in the commercial sector has in some cases led to the structural detriment of various heritage sites, particularly when these sites may slow down the construction process (Tepavitcharov, n.d.) *(Garbov; Batchvarov, Interviewed by Georgia Holly, 2021)*. Despite this, a benefit of the system is the overarching standardisation of archaeological practice maintained at a high level through state-wide regulations, which largely provides strong protection for archaeological materials. Furthermore, the annual presentation and open accessibility of archaeological projects maintains consistency and reliability in archaeological reporting and recording (*Garbov, Interviewed by Georgia Holly*, 2021).

The last five years have seen significant regional and foreign interest in archaeological excavation both terrestrially and underwater (National Archaeological Institute with Museum, 2020). Significant efforts in the form of public engagement, funding and research by the Bulgarian National Committee of ICOMOS has acquired World Heritage Status for a number of Bulgarian monuments; and attracted funding from the USA, UK and Japan for multiple projects such as the restoration of the rock churches near the village of Ivanovo, the Thracian sepulchre by the village of Sveshtari and the restoration of the ancient Plovdiv.

In maritime archaeology, the excavation of the Kitten Shipwreck represents the first international maritime archaeological project in Bulgaria, supported by the Institute of Nautical Archaeology and the CUA (Batchvarov, 2009). Since, international cooperation in academia has led to collaborations such as the Black Sea Maritime Archaeology Project (BSMAP) led by the University of Southampton's Centre for Maritime Archaeology (CMA) and the CUA, in collaboration with the University of Connecticut, Södertörn University's Maritime Archaeology Research Institute (MARIS) and the Hellenic Centre for Marine Research in Greece. In 2017, an Advisory Mission led by the CUA, the UNESCO Scientific and Technical Advisory Body and ICOMOS investigated the submerged remains of the Ancient City of Nessebar, with the aim to investigate the boundaries of the World Heritage Site and advise on measures to mitigate impacts to the site (2001 Convention, 2017).

8.4.2 Legislation and policy relevant to MCH

In contrast to the UK, MCH legislation in Bulgaria is an extension of terrestrial heritage law (Art.2a). Its management, regulation and inventory is delegated to the Centre for Underwater

Archaeology (CUA) alongside the National Institute for Immoveable Cultural Heritage and National Museums under the *Cultural Heritage Act 2009* (Art. 21), who act as advisor to the Minister of Culture in all cases relating to MCH. Cultural heritage is defined broadly, including all terrestrial or marine, tangible or intangible archaeological sites, objects, reserves, culturally important landscapes, gardens, plants, and ecology, and traditions, rituals, music and beliefs. Under Article 8., the conservation of the cultural heritage is a 'systematic process of searching, studying, identification, documentation, registration, conservation-restoration and adaptation'. Protection of the cultural heritage is 'a system of measures for providing its heritage in the interest of society.' Any revenues from cultural activities must be spent for activities for the protection of the cultural heritage in the form of conservation, restoration, and museum activities. This broadly defined description of cultural heritage, which applies to MCH, has facilitated a largely integrated management framework of both natural and cultural assets, described further in part two.

Relevant national legislation which makes up the legal framework for the protection of the MCH are as follows:

Law on Cultural Monuments and Museums 1969

Formed in 1969 and most recently amended 2006, the Law on Cultural Monuments and Museums outlines blanket protection of immoveable and movable material evidence of human presence and activities including all archaeological sites, structures and memorial places, and for natural processes which have scientific and/or cultural value both terrestrially and in Bulgarian waters. Furthermore, the law supports the development of museums, and education, exploration, protection and popularization relating to cultural monuments.

Individuals who find cultural monuments are obliged to declare their discovery in a week to the relevant municipality or nearby museum, and may be rewarded by order established from the Minister of Culture if important cultural information is declared. Hidden monuments may be confiscated by the state. Archaeological excavations and other such research must seek permission with the Archaeological Institute with Museum, co-ordinated with the Ministry of Culture. Similarly, if there is an indication of cultural materials during planning and development processes, the discovery must be reported and works temporarily stopped. Appropriate research must be conducted in a week, and if the project has limited resources, the Ministry of Finance should provide credits.

The most recent amendments to this Act allowed for the creation of private museums and collections and the promotion of cultural monuments under concession, where previously only the state was able to protect, preserve and promote archaeological materials. This was a major

point of contention with the majority of archaeologists at the time, as was seen as serving the collectors or treasure hunters (*Batchvarov, Interviewed by Georgia Holly*, 2021). The law also holds severe penalties for treasure hunters and smugglers.

Law on Protection and Development of Culture Act 1999

Most recently amended in 2007, this Act provides the basic principles and priorities of national policy for the protection of culture. It outlines the necessity for democratism, decentralisation, equality, preservation of Bulgarian heritage and national cultural identity, encouragement of cultural multiformity, support of the arts, training, development, and education. Furthermore, the Act outlines the role of cultural organisations and bodies for the protection of culture.

The Cultural Heritage Act 2009

In force from 2009 and most recently amended in 2016, the *Cultural Heritage Act* outlines the methods of regulation and protection of the cultural heritage notwithstanding its location or tangibility. A primary objective of the Act is for 'creating conditions for conservation of the cultural heritage, sustainable development of the policy, of its conservation, and to guarantee equal access of the nationals to the cultural valuables' through decentralization, publicity, transparency and the right to access (Art.3). The Act defines cultural heritage broadly, as both tangible and intangible, cultural and natural. The most recent amendment to the Act replaced out-dated views on 'cultural monuments' and 'cultural and historic heritage' and instead defined heritage as 'tangible and intangible, moveable and immoveable, as bearers of historic memory, national identity and which have a scientific or cultural value' (Art.2), and included 'intangible heritage, industrial heritage, underwater heritage, audio-visual heritage, landscapes, etc.' for the first time (Art.6) (Compendium, 2011).

International Instruments

The Republic of Bulgaria is party to a number of international instruments, including *the Convention on the Protection of the Underwater Cultural Heritage*, of which the state was one of the earliest adopters in 2003. Further instruments include the *Hague Convention* and Protocols *1954 and 1999*, the *Paris Convention 1954*, the *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property 1970*, the *UNIDROIT Convention 1995*, the *World Heritage Convention 1972*, the *Convention for the Safeguarding of the Intangible Cultural Heritage 2003*, the *Protection and Promotion of the Diversity of Cultural Expressions Convention 2005*, the *European Convention for the Protection of the Architectural Heritage 1987*, the *European Convention on Offences Relating to Cultural Property 1985*, the *International Convention on Salvage 1989* and is signatory to the *European*

Convention for the Protection of the Audio-visual Heritage 2001 and the *Framework Convention on the Value of Cultural Heritage for Society 2005*.

8.4.3 MCH management in literature

Only a small pool of literature exists on the effectiveness of the MCH management in Bulgaria – of which very little is translated into English. Of the papers available for translation, the primary topics focus on the state of cultural tourism (Tepavitcharov, nd.; Petkova, 2000; Zlateva & Zlateva, 2009). Through discussion with various affiliates at the CUA in Sofia, it is apparent that Bulgaria's MCH management is largely unexplored from a foreign perspective, particularly in comparison with other states. Furthermore, a lack of translation has led to research being 'hidden', with little international publication (*Garbov, Interviewed by Georgia Holly*, 2021).

Through discussions with Bulgarian cultural heritage practitioners, and assessment of the currently available literature and international assessments such as the European Compendium and UNESCO reports, it appears that the Bulgarian System for protecting both terrestrial and underwater heritage is seen as both flawed and successful in various aspects. Government recognition of the need for reform of cultural heritage legislation and management alongside a significant increase in international involvement and investment in Bulgarian cultural heritage has revived aspects of national pride and identity and increased the potential for a more comprehensive and rounded system of protection for heritage in Bulgaria (Loulanski & Loulanksi, 2014). Nonetheless, the need for stricter regulations in commercial archaeology, heritage trafficking and monitoring is recognised in recent amendments to cultural heritage law, but not yet effectively embedded into practice (Campbell, 2013). Application of these changes are too early to be properly evaluated, yet current opinions suggest that there has not been enough support to implement these changes as of yet. Furthermore, the cultural tourism industry is largely ignored, primarily due to a lack of funding – of which the only current mitigation is the provision of tax benefits for private investors (Zlateva & Zlateva, 2009). The issues discussed above are relatively well-understood and represented in Bulgarian literature, yet the mitigation strategies with which to combat these issues outside legislative reform are few. A key mitigation approach currently underway is the digitalisation of heritage management systems to allow a more effective, integrated and globalised management framework (The Decree No.36), which is particularly necessary for the effective protection of the underwater heritage. Such digitalisation is now fairly advanced, and there are multiple plans to extend this process into the future (LVI National Archaeological Conference, Plovdiv, 2017, National Archaeological Institute with Museum, 2020). The most recent UNESCO reports suggest that inventories are fully adequate,

frequently used and archived in both paper and electronic form (UNESCO, 2014) – although this is unclear for MCH.

Bulgarian representatives of UNESCO have submitted two reports monitoring these issues over the past two decades. The reports largely mirror the literature and practitioner opinions stated in this Chapter; and add that the current legislation and impact assessment frameworks are deemed adequate for the identification, conservation and protection of the cultural and natural heritage. The primary mitigation strategy outlined is the need for better enforcement of these legislations and frameworks (UNESCO, 2014). Although the legislation has since significantly improved over the last two decades, the issue of enforcement has remained the same. The implementation of international conventions into national policies is recognised, yet the potential for policies to be integrated into larger scale planning programs is deficient. Furthermore, when analysed together, the reports appear to show a decrease in public and private heritage awareness. These issues are amplified for the management of MCH. Despite corresponding terrestrial and underwater heritage laws and standards, there remains an ambiguity surrounding who should enforce these laws and how it should be implemented (*Batchvarov, Interviewed by Georgia Holly*, 2021).

8.4.4 MCH and environmental integration

Despite implementation issues with regards to the base cultural heritage policies in both legislation and management, terrestrial and underwater heritage appears to be well integrated with the protection and organisation of natural resources. Protection and awareness of cultural heritage is represented in *The Protected Areas Act*, the *Environmental Protection Act*, the *Biodiversity Conservation Act* and the *Regulation for Management Plan Protection*. Such legislation forms the backbone of frameworks to assess the conservation, management and protection of natural and cultural heritage through environmental and cultural impact assessments and strategic environmental impact assessments for Natura 2000 (European Commission, 2019a).

Although there is no official 'integrated' implementation policy between MCH and the marine environment as there is in the case of the UK, the methods by which MCH is protected in practice are similarly integrated as those on land. There are multiple likely reasons for why this is the case; a result of largely different base cultural heritage laws which better facilitate the integrated management of the MCH and the natural marine environment, and the fact that the Bulgarian management system is made up of a much smaller and thus coherent group of natural and cultural heritage managers. The extent of these differences and how they have influenced the effective protection of MCH and the environment are expanded upon in the following Chapter.

Chapter 9 MCH Valuation, Definition and Conceptualisation in the National Legislation of the UK and Bulgaria

Part 2: A comparative analysis of the integrated management of MCH and the marine environment in the UK and Bulgaria

9.1 Introduction

The following Section will set the frame of reference, rationale, and primary argument of the comparative analysis. The arguments will then be expanded upon on by a point-by-point basis.

After presenting the necessary detail for conducting a comparative analysis of integrated MCH management in the UK and Bulgaria in Chapter 8, Chapter 9 brings together the themes explored in previous Chapters, namely, the definition and conceptualisation (Chapters 5 and 6) and value of MCH (Chapter 7), to comparatively analyse the current extent and veracity of integrated MCH management in each system. In doing so, key points for the future of integrated, culture-nature marine policies are raised, which could not have been presented without examining the systems which represent either end of integrated management methodology.

Three primary arguments are explored in this Section and are used as hypotheses to comparatively analyse the systems in question. Firstly, it is hypothesised that *to integrate environmental and heritage policies, a fluent definition of heritage and the environment must be used in legal, academic and societal terminologies*. This hypothesis was constructed from the findings of Chapters 5 and 6, and is tested by assessing the definitions of MCH in both the UK and Bulgaria, against both the extent of natural-cultural integration, and associated effectiveness of the policies in question. Secondly, it is hypothesised that *the legal terminology used to integrate heritage and environmental policies (among other aspects) influences the socio-political conceptualisation of heritage in the environment, which in multiple ways, affects the implementation of these policies*. This hypothesis was constructed from the results of Chapter 6, and the works of Kähkönen and Lähdesmäki (2019). The hypothesis is tested by using expert and diver interviews to assess the current perspectives of MCH within the environment in each system, and is explored by determining how perspectives may or may not influence the effectiveness of integrated policies in the future. The final hypothesis states that *the values derived to society by engagement with both the heritage and the environment are significant both*

singularly and together, and by understanding and engaging with heritage and the environment as one, both may benefit from the other. This hypothesis was constructed using the results of Chapter 7, and Hølleland and Holmgaard (2017), and is explored by contrasting the value of heritage to society, compared to what is represented in policy. In doing so, conclusions are drawn back to the relationships between how definition and conceptualisation are used to protect heritage and the environment in each system, and how this does, or does not reflect the value of MCH to society, and the sustainable development of the ocean.

9.1.1 Frame of reference

Integrating the protection of MCH into the realm of environmental policy has been proposed as the future of underwater heritage management for a number of years (Chapter 4). Over the last decade we have seen integration of this kind encouraged on international platforms, such as in the UNESCO *Policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention* (UNESCO, 2015), with the *UN Decade of Ocean Science* (2020), and various heritage networks which aim to explore the multiple aspects of MCH which connect the environment to the heritage and ultimately, to society (see Chapters 3 and 10). We are also now beginning to witness the active integration of MCH into international frameworks; such as MSP and ICZM, influenced largely by UNESCO's SDGs. With growing evidence to support the benefits of such methods and a growing body of examples by which this may be achieved, the following Section aims to analyse two case studies to understand the scale by which MCH protection may be achieved by this method, and to decipher some points of consideration for the future.

9.1.2 Rationale

The legal contexts of both the UK and Bulgaria show protection of MCH through integration with the environment; yet considering the contrasting methods by which this is achieved in practice, it is argued that these systems represent opposing ends of the integrated management scale. Furthermore, although there is a significant amount of literature regarding the protection of underwater heritage in the UK (referenced in the previous Chapter), comparatively there is only a small pool of work regarding Black Sea MCH policy. Internationally, only a small portion of this research looks into the integration of MCH management with environmental values, management and legislation, with most work focussing on the implementation of inter-regional frameworks such as MSP and ICZM.

9.1.3 Primary Arguments

To effectively cross-analyse these case studies, it is important to understand the contextual differences in how MCH is defined, conceptualised (Chapters 4 and 5) and valued by each system (Chapter 7), and how or if this is represented in the corresponding integrated legislation (Chapter 6). As such, the following Section will comparatively examine these cases through the lens of *definition*, *conceptualisation* and *value*, and judge the outcome by a standard of effectiveness derived from the local MCH practitioners.

Argument 1. Definition: To integrate environmental and heritage policies, a fluent definition of heritage and the environment must be used in legal, academic and societal terminologies. The UK and Bulgaria have adopted differing methods by which to do this, which reflects the political motives, history, and biases of each state. Both states have recently adopted these terminologies, so we may begin to track the influence of these methods on the effective protection of MCH now, and propose how this may evolve into the future.

Argument 2. Conceptualisation: The legal terminology used to integrate heritage and environmental policies influences the socio-political conceptualisation of heritage in the environment, which in multiple ways, affects the implementation of these policies (Kähkönen and Lähdesmäki, 2019). How MCH has been conceptualised by the stakeholders (including the public) has shifted throughout the history of the discipline, of which two separate conceptual camps are represented in Bulgaria and the UK. If these conceptualisations reflect the motives of the international treaties by which both states are a signatory to, this may shed light on the effectiveness of the methods of each state.

Argument 3. Value: Discussing the 'value' of MCH can have two meanings, and it is important to emphasise that any value discussed in this work is referring to the multiple benefits that engaging with tangible and intangible heritage can have for individuals or society a whole. The values derived to society by engagement with both the heritage and the environment are significant both singularly and together (Hølleland and Holmgaard, 2017); and by understanding and engaging with heritage and the environment as one; both may benefit from the other (Chapter 7). Only a small amount of literature exists on the value that MCH provides for society, and how this is translated into the policies which protect it (Claesson, 2011; Firth, 2015). This is particularly relevant as we increasingly integrate heritage and the environment, by which arguably, understanding and representing values separately and together is essential. The UK and Bulgaria represent value in their heritage policies very differently, and this is further reflected both in political and public spheres. By dissecting the fluency between the values MCH provides for the people most associated with it, and how this is represented in policy, we may better understand

the true values of protecting MCH; and how these values need to be translated within integrated policies.

9.2 Definition: the semantics of MCH and the marine environment in integrated systems

9.2.1 Introduction

Regional and international definitions of cultural heritage influence the categorisation, administration and development of heritage policies (Blake, 2000; Ndoro, 2009). The various legal and academic definitions of cultural heritage in international frameworks, academia and policy have been touched upon in Chapters 3, 4 and 5, and the importance and influence of how heritage is defined has been expanded upon in Chapter 6. When looking specifically at the integration of MCH into environmental policies and mindsets, it has been shown that a coherent understanding of both resources can benefit both the environment and heritage (Chapter 7).

Although academically disputed, most policies, frameworks and legislation which encompass both culture and the environment adopt a dualistic approach, assuming separate definitions of both cultural heritage and the environment (Linnell *et al.*, 2015). Such definitions often include separative links such as 'or', evidenced in the World Heritage Convention and the Millennium Ecosystem Assessment, suggesting a distinct difference between the fundamental definitions of each resource (Table 32) (Larsen and Wijesuriya, 2017). Since the conception of these frameworks however, the conceptualisation of heritage has evolved to encompass the complex interconnectedness of nature and culture (Lowenthal, 2005), and so more 'integrated' definitions have been adopted in some cases, such as: '*sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historic, aesthetic, ethnological or anthropological point of view'* (World Heritage Convention), introducing the concept of 'mixed sites' and the 'cultural landscape' into international frameworks (Larsen and Wijesuriya, 2017).

The interconnectedness between heritage and the environment is particularly apparent underwater, perhaps most clearly demonstrated by tangible aspects such as the effect of ocean dynamics on the structure, integrity and location of cultural heritage sites in short periods of time (Oxley, 2001). This is recognised in the *Convention on the Protection of the Underwater Cultural Heritage* which specifies protection for 'sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context', and refers to 'assessment that evaluates to the significance and vulnerability of the Marine Cultural Heritage and the surrounding natural

environment'. As a result, the ecology and natural environment surrounding MCH is taken into account and afforded equal protection alongside the heritage.

9.2.2 UK and Bulgaria

Nationally, integrated policies which encompass these philosophies in the marine environment are relatively new; and the nature-culture definitions represented by these policies are determined by the way in which the policy developed (European Commission, 2019a) (Tables 30 and 31). In the case of reform or the development of new core, protective legislation, the definitions of both the environment and heritage are often expanded to overlap each other as seen in the Bulgarian *Cultural Heritage Act 2009*. In the case of supplementary policies which govern different stakeholder activities and accessory protections, one resource is commonly incorporated into the other for the specific purposes of the policy (such as heritage becoming part of the environment for the purposes of permits) while the base dualistic definitions remain, as seen in the *Marine and Coastal Access Act 2009* in the UK.

Bulgaria and the UK's recent implementation of integrated protection for MCH and the marine environment represent the core differences between the above methodologies. While the UK has recently made moves to include heritage within the 'environment' for planning and development purposes (*Marine and Coastal Access Act 2009*, the Marine Policy Statement *2011*, and the *Fisheries Act 2020* – see Table 30); the legal definition of cultural heritage in Bulgaria has been broadened to include a diverse array of natural, cultural, tangible and intangible concepts (the *Cultural Heritage Act 2009* – *see* Table 31), making it easier to protect as a single but multifaceted entity, alongside the environment.

Similarities may be drawn between the Bulgarian definitions of heritage and the definition of the historic environment within the UK Marine Policy Statement. Although it could be argued that the redefinition of 'cultural heritage' to 'historic environment' is, in the case of the Marine Policy Statement, an overlapping of cultural and natural definitions, this policy does not go so far as to include the natural environment within the definition of the historic environment as in the Bulgarian *Cultural Heritage Act 2009*. Nonetheless, it does present the closest understanding of MCH to the relevant UNESCO conventions (Table 32) in UK policy.

Both definitions of heritage and the environment are significant movements towards more integrated and coherent policies between the natural and cultural environment; and are in line with the aims and objectives of the UNESCO Sustainable Development Goals which both countries are a party to (Chapter 8). However, both methods of re-definition work in different ways.

Table 30: Relevant legislation relating to MCH in the UK, and associated MCH definitions

Act	**Definition**
Protection of Wrecks Act 1973	jetsam, flotsam, lagan and derelict found in or on the shores of the sea or any tidal water
Ancient Monument and Archaeological Areas Act 1979	a building, structure or vessel of public interest
Protection of Military Remains Act 1986	military aircraft or vessel
National Heritage Act 2002	including any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof
Marine and Coastal Access Act 2009	any site (including the remains of any vessel, aircraft or marine structure) which is of historic or archaeological interest
Fisheries Act 2020	the marine and aquatic environment includes features of archaeological or historic interest
Marine Policy Statement 2011	The historic environment includes all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged. Those elements of the historic environment – buildings, monuments, sites or landscapes – that have been positively identified as holding a degree of significance meriting consideration are called 'heritage

	assets'. (Significance is the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic.)

Table 31: Relevant legislation relating to MCH in Bulgaria, and associated MCH definitions

Act	**Definition**
Law on Monuments and Museums (1969)	immovable and movable authentic material evidence of human presence and activity and for the processes in nature, which has scientific and/or cultural value and has public importance.
The Cultural Heritage Act (2009)	'cultural valuables' are tangible and intangible, moveable and immoveable, are bearers of historic memory, national identity and have a scientific or cultural value. This may include archaeological or historical sites, as well as landscape, garden or natural values

Table 32: Definitions of cultural heritage in relevant UNESCO Conventions

Convention	**Definition**
Hague Convention (1954)	movable or immovable property of great importance to the cultural heritage of every people, such as monuments of architecture, art or history, whether religious or secular; archaeological sites; groups of buildings which, as a whole, are of historical or artistic interest; works of art; manuscripts, books and other objects of artistic, historical or archaeological interest;

	as well as scientific collections and important collections of books or archives or of reproductions of the property defined above
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transport of Ownership of Cultural Property (1970)	specifically designated by each State as being of importance for archaeology, prehistory, history, literature, art or science
World Heritage Convention (1972)	monuments, architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science, groups of buildings ... works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view
Convention on the Protection of the Underwater Cultural Heritage (2001)	all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as: sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context
UNESCO Convention for the Safeguarding of Intangible Cultural Heritage (2003)	the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage

9.2.3 Cross-analysis

Redefining the environment to include heritage for planning and development purposes is a major step forward for the protection of British MCH. As a result, heritage must be considered in any offshore development processes, and funding opportunities have been opened up for the conservation of archaeological sites. This definition of the environment has recently been reiterated as part of the *Fisheries Bill* 2020, which raises significant hope for the continuation of such an inclusive definition (Honor Frost Foundation, 2020). Although a useful tool to integrate the consideration of heritage in the planning and development process, the potential uses of this definition appears underused in UK policy. In particular, heritage is not included in the 'environment' for place-based management tools such as Marine Conservation Zones (MCZs), which otherwise have all the tools available to protect heritage alongside the environment, in compliance with the 2001 Convention (*Pater, Interview with Georgia Holly*, 2021).

When it comes to Sustainable Development plans, the UK presents a much more inclusive understanding of MCH in the form of the historic environment. The UK Marine Policy Statement recommends a spatial planning methodology for the marine environment, based on an ecosystems approach which 'recognises the protection and management needs of marine cultural heritage according to its significance' (UK Marine Policy Statement, pg. 12, 2020). The integration of MCH in this statement is particularly interesting, from both the point of view of the ecosystem approach, and the UK's significance criteria for underwater heritage. Often, an ecosystems approach to managing cultural heritage understands it only as an entity to measure the value of the natural environment, and it has been shown that the management of heritage within these systems can be detrimental if not properly addressed (Chapter 6). Yet, the use of 'significance' moves the statement away from this understanding, by placing onus on the significance of the heritage itself. As identified by Pater (2020), significance defined by the English Heritage Conservation Principles (as reiterated in the Marine Policy Statement) suggest:

> 'those elements of the historic environment—buildings, monuments, sites or landscapes—that have been positively identified as holding a degree of significance meriting consideration are called 'heritage assets'', and 'significance is the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic'.
>
> *Pater (2020)*

The inclusion of significance presents an inclusion dichotomy between how heritage is included within sustainable development plans, compared to within planning and development processes.

Where only limited 'heritage assets' appear to be defined within planning and development legislation (such as the *Fisheries Act 2020*), there is suggestion that although significance must be demonstrated, non-designation is not as relevant within the Marine Policy Statement, and the protection afforded (in the form of inclusion within Sustainable Development Plans) should still be widely applied to the historic environment, where included by that definition. The translation of this approach depends on the application of the associated marine plans developed by the MMO, a study of which is yet to be conducted.

In Bulgaria, redefining heritage to include the environment reflects the motivations and priorities of the government at the time; to represent the various different types of cultural heritage in Bulgaria and provide the greatest span of protection possible (*Dimitrov, Interviewed by Georgia Holly,* 2021). A result of this redefinition was an increase in the protection of heritage sites both terrestrially and offshore (2001 Convention, 2017), a result not yet reflected in the UK's Marine Policy Statement. This largely different method of redefinition in Bulgaria may highlight the difference between reactionary and preventative policy making when compared to the UK. Conversely, it may also shed light on the power of commercial pressure for change.

In the case of the UK, the pressure of significant plans for offshore development has led to small, but significant movements towards the integrated protection of heritage as part of the environment offshore. In the case of Bulgaria, significant reform of cultural heritage laws in 2009 and again in 2016 expanded the definition of cultural heritage as one with the environment; perhaps in foresight of the increasing use of integrated management internationally, or more likely, because this method is a tried and tested tool for the effective protection of heritage and the environment in practice. For example, the EU LIFE programme has funded multiple projects with the explicit aim of interlinking the protection of cultural heritage and the natural environment throughout Europe, and has gained conservation status through integrated management programs for sites in France, Germany, Greece and the Republic of Ireland (World Heritage Centre, 2013; European Commission, 2018). The ERDF and INTERREG have funded multiple projects to restore and enhance integrated nature-culture sites and have used these sites to promote tourism and economic growth in Hungary, Austria, Slovenia, Albania, and Serbia (European Commission, 2019a). In the marine sphere, the EMFF promotes the economic benefits of culture and nature in the fisheries sector by monitoring the interdependencies between MCH and natural sites, and their roles in supporting tourism and recreation in the Wildsea Atlantic Ocean Heritage Route (European Commission, 2019a). All of these sites are monitoring and reporting the multiple benefits achieved both socially and environmentally from integrated protection in practice.

The representation of the historic environment in the UK's Marine Policy Statement reflects a considerably more inclusive definition of MCH in the UK, in line with global heritage and sustainable development conventions. The use of a 'significance' criteria within future Sustainable Development Plans may be used as a useful tool to prioritise heritage within the greater marine environment, and as part of an inclusive ecosystems approach. Within the context of international conventions such as the 2001 Convention, the use of significance may be seen as room for neglect – as British MCH selective legislation has previously been accused of.

9.2.4 Conclusions

Both definitions of heritage and the environment in the UK and Bulgaria have begun to achieve integration in different ways, and further integration in policy is likely in both case-study areas (*Pater; Dimitrov, Interview with Georgia Holly, 2021*), which raises the question as to how suited each system is for the integrated management of resources in practice. Ultimately, the importance of legal semantics is intertwined with the national perception and conceptualisation of MCH, how these concepts are embedded, valued, and enforced, as well as the way in which MCH is perceived by different stakeholders will play a part in the effectiveness of these methods in practice.

9.3 Conceptualisation and perception in practice

9.3.1 Introduction

Exploring the theme of 'concept' in this Section will be used to develop the theme of 'definition', to understand how MCH has been conceptualised as a result of the various policies in place in each country. As is the case in international frameworks (Chapter 3), the definition of cultural heritage in national and international law has taken on various meanings throughout time; and as such, the scope of meaning of cultural heritage is varied (Frigo, 2004). The legal terminologies and socio-political context over time significantly influences the conceptualisation of cultural heritage both in government and in the public, and as such is reflected in the evolution of new policy, funding streams and overall public and political engagement (Ferrazzi, 2020). MCH has often suffered with a dichotomy between public, academic and political conceptualisation, as different motives reflected in the history of the discipline have shaped opinions (Forrest, 2003). As we enter a movement towards integrating heritage and environmental policy, it is important that the concept of MCH is consistent with the goals of internationally agreed upon agendas such as the UNESCO SDGs and in the case of MCH, the 2001 Convention.

9.3.2 UK and Bulgaria

The UK is seen as ahead of the game for integrated heritage laws; yet it is argued that these have occurred as a result of limited base heritage protection (*Firth, Interviewed by Georgia Holly,* 2021). Although Bulgaria has no explicit integrated policy, it has created a legal system which encourages the integrated protection of both natural and cultural resources through broadening the latter's legal definition. These two different methods of the integrated management of heritage and the environment conceptualise MCH in different ways; in the UK, it is argued that selectively defining heritage as part of the environment only in offshore development and fishing conceptually represents heritage only as a barrier to development when part of the environment, rather than an asset to it. Furthermore, a vast spectrum of 'mixed spaces' such as prehistoric landscapes (*Momber, Interviewed by Georgia Holly*, 2021) and intertidal cultural landscapes (*Barrie-Smith, Interviewed by Georgia Holly,* 2021) remain undervalued. Conversely, by creating a more inclusive concept of cultural heritage in the base Bulgarian heritage legal system; it is argued that both natural and cultural practitioners are encouraged to see similarities instead of differences (*Dimitrov, Interviewed by Georgia Holly,* 2021), and mixed spaces with both cultural and natural value have a better base by which they may be protected.

9.3.3 Cross-analysis

The legal terminologies and resulting conceptualisations of heritage bleed into national understanding, perception, engagement and thus effectiveness of the policies themselves (Linnell *et al*., 2015; Ferrazzi, 2020). In the UK, there is a conceptual fracture between the scuba diving community - who are likely to encounter MCH tangibly the most out of any stakeholder (in a study of 615 divers conducted for this work, 65% of divers encountered MCH either weekly or monthly) - and the policies which represent them. Considering the direct cause and effect patterns of policy and public engagement (Katsonis, 2019); it is argued that the different standards for the protection of the underwater natural environment and the cultural heritage in the UK in terms of access and information sharing has resulted in different standards for diver perception and engagement with these resources. UK scuba divers have specifically hidden potentially new archaeological sites from heritage professionals with the fear that they will be prevented from visiting (Survey Data, 2021); yet will actively seek marine protected areas to dive in, and will share information on the natural environment they encounter there (Hermoso *et al.*, 2021). Furthermore, the scuba diving community has commented that as a community they feel 'censored', and that MCH is reserved only for inaccessible academic research, rather than public enjoyment (Survey, 2021).

Unsurprisingly, this lack of dialogue is mirrored between natural and cultural agencies; interviewees discussed that a lack of clarity between the methods and language used between disciplines has made it difficult for cultural heritage managers to assert themselves in the practicalities of implementing integrated policies *(Pater; Robertson; Dunlop, Interviewed by Georgia Holly, 2021).* This may be an issue caused by the long-standing academic and philosophical boundaries between these disciplines (*Firth, Interviewed by Georgia Holly,* 2021), but it is also likely that different definitions of heritage and the environment for different stakeholders has further blurred the national concept of MCH.

By bringing a fragmented conceptualisation of heritage into environmental policy, we neglect the key morals represented in international heritage treaties such as to 'promote public awareness regarding the value and importance of Marine Cultural Heritage' (2001 Convention, Art. 1) and lose the potential for policy to adapt to and encourage the multiple benefits heritage can provide for the environment and society. It is clear that these movements towards practical integrated policies are the future of heritage management, and defining heritage as part of the environment is potentially an effective way in which to do this, but it is vital that this progress is represented throughout all heritage policies; so the public and political interpretation of MCH remains fluent and in line with international rules and regulations.

In Bulgaria, the public perception of heritage management is largely positive. Although a similar study is yet to be done on the Bulgarian scuba diving population, interviews with various heritage practitioners suggest that there is a good relationship between divers and heritage managers – a feat that was not reciprocated in the UK interviews (*Georgiev, Interviewed by Georgia Holly*, 2021). Furthermore, and potentially as a result of a smaller, more connected system; natural and cultural professionals in Bulgaria consistently work together on both academic and industry projects, and the concept and perception of MCH appears to be coherent between policy, industry, the public, and natural and cultural practitioners (*Dimitrov, Interviewed by Georgia Holly,* 2021).

Similarly to the UK, the perception of MCH as a barrier to development is represented in Bulgaria; but this is a result of the associated costs of halting development for excavation purposes (*Batchvarov; Garbov, Interviewed by Georgia Holly, 2021*), rather than the more philosophical issue of how the resource is represented (and therefore communicated) in policy. Where the UK has expanded the definition of environment to include heritage in planning and development policies, but so-far left the outdated base protection of MCH without reform; Bulgaria's all-encompassing definition of cultural heritage has maintained consistency throughout all heritage protection, environmental protection, and planning and development. Expanding the definition of

cultural heritage as one with the environment has eliminated the need to selectively integrate heritage-environment laws and instead fully commits to the interconnectedness of both environments. Although conceptually consistent, however, the practicality of implementing such a system is less clear, and needs significant funding and expertise to properly implement into all associated industries. There are multiple examples of interdisciplinary research, industrial activity, and public engagement which have benefited from the use of this system in the last decade, but it is still too early to determine how effective this method is for the protection of heritage and the environment singularly, and together in Bulgaria (*Dimitrov, Interviewed by Georgia Holly,* 2021).

9.3.4 Conclusions

Ultimately, the UK and Bulgaria have broadly different national conceptualisations of heritage; partly influenced by the legal terminology, but largely constructed around their respective political histories. The fall of a communist government in 1989 catalysed significant re-evaluation of the Bulgarian legal system, which is now focussed on de-centralisation and re-building nationhood. Significant work has been conducted to engage the Bulgarian society in national heritage, and as a result there are largely positive perceptions of heritage management methodologies. If a similar re-evaluation of policy were to occur in the UK on this scale, it would be necessary to determine the values MCH provides for society to not only bridge the communication gap between the scuba diving community and the policies which represent them, but to determine the value MCH provides to the greater population (Firth, 2015). To facilitate the protection of cultural heritage and the environment in base heritage policy; a method to comparatively measure the tangible and intangible values each resource presents for society, and comparative indicators by which they may be monitored would need to be developed (*Firth, Interviewed by Georgia Holly,* 2021). The following Section will build upon the elements discussed above to determine how and if the value of MCH is represented in current integrated policies, and if this reflects the true value of MCH for society.

9.4 The value of MCH in the marine environment

9.4.1 Introduction

Cultural heritage value has been discussed in academic literature for the past century, with one of the first explorations of the topic by Riegl in 1903 in the *Modern Cult of Monuments*, in which heritage was split into two theoretical values: historic and artistic (Riegl, 1903). Since, the term has expanded to encompass the multiple benefits and meanings individuals or groups receive from cultural heritage both tangibly and intangibly, often classified by social, economic or

aesthetic, (among many others, see Claesson, 2011; Dümcke and Gnedovsky, 2013; Parsons *et al.*, 2014; Wright and Eppink, 2016; Bonenberg, 2019), and often measured and monitored through economic concepts such as Willingness to Pay (Whitehead and Finney, 2003), or more recently, cultural indicators (Nocca, 2017). The methodology by which this is achieved varies widely between countries and frameworks (Labadi, 2013). More recently, the benefit of heritage for the public has been recognised as a vital contributor to the value of cultural heritage, and is represented in multiple works on 'social value' (Sánchez-Carretero, 2013; Jones, 2017). As such, over the last couple of decades the morals of cultural heritage for society have been introduced into multiple international instruments and frameworks, and some regional heritage policies (Klamer, 2013). Recently, UNESCO's Culture 2030 Indicators have been published with the explicit aim of measuring and monitoring the contribution of culture to sustainable development to inform national and local policies and actions. The 22 indicators include economic and social themes such as 1: Expenditure on heritage, 7: Cultural employment, 14: Cultural knowledge and 20: access to culture (UNESCO 2020).

The theme of cultural heritage value and indicators is still largely unexplored below the high-water mark, for which the benefits to society past the scuba diving population, which only represent a small percentage of society, and are largely white, male, middle-aged and middle-class (SFIAs 2019 Scuba Diving Participation Study and DEMA's Scuba Diver Socio-demographic Profiles) are less clear, and not defined in policy (Firth, 2015). Furthermore, the values MCH provides for the marine environment and vice versa are largely unknown and understudied. Conversely, the value of the marine environment for society has been largely unexplored; recently evidenced by popular science books such as 'Blue Mind' encouraging regional and international frameworks to incorporate the vast social value of actively engaging with the ocean into policy; for the benefit of both society and the environment (Nichols, 2014). The role MCH may play as part of this value, is yet to be implemented.

9.4.2 UK and Bulgaria

The UK has recently published interest in engaging with the themes of cultural heritage values and indicators in the form of cultural heritage capital. The Cultural and Heritage Capital Portal (DCMS, 2021) aims to bring together 'research, guidance and estimates to help government and private organisations consider the value of culture and heritage capital', to 'help organisations make a stronger case for investment in culture and heritage assets'. As part of this work, the DCMS has constructed a preliminary framework similar to that used for natural capital, using cross disciplinary economic valuation and heritage science methodologies to estimate the value of

culture and heritage for society. This represents a significant move towards the more effective management of cultural heritage in the UK (*Firth, Interviewed by Georgia Holly,* 2021).

Cultural capital is likely to be a useful tool to integrate the protection of culture and the environment by providing comparable indicators by which these two resources may be measured and monitored. Although further integrated protection methods are likely to be incorporated into British policies in the near future (*Pater, Interview with Georgia Holly*, 2021), there is little evidence of research into the complex interconnections between the values of these disciplines in the DCMS's Culture and Heritage Capital Framework. Of the information currently available, the only discussion of this issue is the need for research into how to disentangle natural and cultural values, as to avoid 'double counting'. This theory is contradictory to the significant research efforts of the last few decades regarding the specific natural-cultural values which define society's experience with the environment (Milton, 1997; Milfont and Schultz, 2016), and reiterates the out-dated separation of disciplines represented in the philosophical rhetoric of the previous century. Further research which connects cultural and natural capital, indicators and values are necessary for the development of integrated protection; particularly in the case of the marine environment, a system which is arguably more connected due to the inherent properties of the medium it is within (*Firth, Interviewed by Georgia Holly,* 2021) (see Appendix A: a call of integrated indicators in the DCMS Culture and Heritage Capital framework).

Despite there being currently no move to develop official cultural heritage indicators based on evidenced values in Bulgaria, the base heritage laws lend themselves towards many of the core heritage values presented in international recommendations such as UNESCO's Cultural Indicators 2030, of which integrated management with nature is a key rhetoric. Furthermore, a form of value is implemented within the Cultural Heritage Law in Art. 3: '*any movable and immovable authentic material evidence of human presence and activity and the processes in nature that have scientific and / or cultural value and has social significance*'. A method to effectively measure this form of value has yet to be determined.

9.4.3 Cross-analysis

Despite significant potential for forward-thinking with the establishment of Culture and Heritage Capital in the UK, the philosophical values currently represented in the policy and management of MCH still lend themselves towards the outdated morals of historic salvage in base heritage laws (such as the PWA) and - although a step forward for the protection of MCH in British waters - as barriers to development in integrated laws such as the *Marine and Coastal Access Act 2009* and *Fisheries Act 2020*. For the purposes of this Chapter, the need for significant reform of the state of

MCH protection in the UK may be highlighted by the morals presented in Bulgarian Heritage law. The *Cultural Heritage Act 2009* actively references MCH as an integral part of national heritage and creates '*conditions for preservation and protection of the cultural heritage, sustainable development of its preservation policy… to ensure equal access of citizens to cultural values*'. To do so, the law denotes equal treatment of various types of cultural heritage, decentralisation of management and financing of cultural heritage activities, openness and transparency, the right of access to cultural heritage and the opportunity to use cultural values by providing physical or intellectual access to them, and equal access of any person to cultural values.

Although the process of implementing the morals of Bulgaria's *Cultural Heritage Act 2009* is still in its early stages, the foundation for development is clear. As such, it is arguably an easier process for practical implementation of integrated policies to occur in the Bulgarian system, as multiple internationally agreed natural and cultural values are represented in both natural and cultural legislation. The differences highlighted in this Section raise the question: can the development of a framework such as Cultural Capital further patch over the issues represented in British MCH law, or should the base MCH law be updated to reflect the recommendations of internationally agreed upon standards as to more effectively use Cultural Capital in MCH management frameworks? Furthermore, is Cultural Capital an effective tool to further integrate the protection of heritage and the environment in the UK?

9.4.4 Conclusions

The comparison between the Bulgarian and British systems suggests that although cultural heritage capital and indicators are likely a useful tool for integrated protection, modern heritage values in alignment with UNESCO's SDGs and heritage conventions (such as in the World Heritage Convention) are already inherently integrated by definition (Table 32). Adopting the terminologies of these structures are likely to provide a better base for using tools such as Cultural Heritage Capital and indicators for integrating heritage and the environment. To effectively implement this in the marine sphere, further work needs to be done to understand the interconnectedness between the MCH and the marine ecology and environment to better represent the benefits and values derived from these connections into policy.

9.5 Lessons learned

The primary points extracted from the above analysis of the British and Bulgarian integrated systems are as follows.

1. *A key aspect of integrated management is a consistent definition of both heritage and the environment throughout all associated legislation and policy.*
    a. This point has been drawn from comparing how the fragmented evolution of integrated policy in UK legislation has led to contrasting legal definitions of heritage and the environment for different policies, to the legally consistent and conceptually broad definition of heritage in Bulgarian cultural heritage law. Although there are no officially integrated cultural heritage-environment legislation in Bulgaria, the definition of heritage in the Bulgarian *Cultural Heritage Act* has facilitated a widely integrated management system irrespective of the protective laws governing these resources.
2. *How MCH is conceptualised by different stakeholders will determine the effectiveness of implementation. This is the case irrespective of officially 'integrated' laws, or not.*
    a. This is based on discussions with practitioners in the UK who implement these policies and the scuba diving population who encounter the heritage. When discussing planning and development, it appears that fundamental philosophical differences between the methods, languages and data used by natural and cultural managers often hinders the implementation of integrated projects. In the general public sphere, the consensus of the scuba divers suggests that the values and morals of this community are not represented in the current policies protecting MCH, and as such, there are different attitudes towards engagement with MCH compared to the marine environment.
    b. When compared with interviews with Bulgarian participants, it appears that the conceptualisation of heritage is consistent throughout the policy, practitioners and the public; potentially because the Bulgarian management system is more integrated between MCH and the environment already, even without official integrated laws.
3. *Determining the value of MCH and its associated indicators is essential for the effective management of MCH alongside the natural environment. For the effective implementation of such a system, the base MCH legislation needs to be up to date with the current recommendations for sustainable development and MCH protection.*
    a. This is partly based on an analysis of the representation of value in the base cultural heritage laws in Bulgaria compared to the UK, and partly on the opinions of interview participants and the scuba diving community. It is clear that the multiple benefits divers receive from engaging with MCH is not represented in the MCH policy. Furthermore, the UK's new preliminary framework for assessing Cultural and Heritage Capital currently calls for research into how to further

separate the benefits derived from culture and the environment; with no apparent research representing the interconnectedness of the values of these resources.

b. Comparatively, the sustainable development of cultural heritage value is represented clearly in the base Bulgarian heritage laws. Although there are no current plans to implement a system to measure cultural capital, it is argued that the practicality of such a system would be better suited to the consistent and inherently integrated protection framework of Bulgaria, than the UK. To be able to effectively implement Culture and Heritage Capital for MCH, it is argued that the base heritage laws such as the PWA need significant reform as to align with the broader statements as those seen in the Marine Policy Statement, and to represent the morals of international frameworks such as the SDGs and 2001 Convention.

9.6 Conclusions

Definition, conceptualisation and value (in the way these terms are being used in this work) are only the building blocks to properly investigating the role of heritage in integrated policies. Although these are effective tools to compare and contrast the mechanisms of different states; they are in no way all encompassing. Further work needs to be conducted on the practical methodologies of implementing integrated systems, and in the case of the UK and Bulgaria; more practical analyses may be conducted as these policies evolve further. Studying the inclusion of MCH in cross-border systems such as MSP and ICZM is a useful tool in which to analyse practicality (Chapter 3), but ultimately the concept of the integrated protection of MCH and the environment is still relatively new both in policy, and in the minds of the public. As such, definition, conceptualisation and value have been used in this Chapter to highlight the necessary building blocks by which to foster the sustainable development of MCH protection, ultimately, for the society to which it belongs.

Part 3 Bridging the Gap Between Theory and Practice

Part 2 of this thesis addressed the first two research questions regarding the themes of definition, conceptualisation and value. Part 3 of this thesis will address the final research question: *how can underwater heritage be practically integrated into existing marine resource management frameworks, and who is responsible for overseeing this process?*

Research Question (1) *How does the definition and associated conceptualisation of heritage in integrated frameworks affect the practicality of its management,* was explored in a case study of the Millennium Ecosystem Assessment (Chapter 6). The limited representation of heritage in the MEA methodology was evidenced as a primary reason for its ineffectiveness, and similar patterns were identified in succeeding integrated platforms. A social valuation experiment was conducted to identify whether links existed between the perceived value of MCH and the marine environment as a whole (Chapter 7) in answer to Research Question (2) *what is the value of underwater heritage as part of the marine environment*? This experiment showed that as awareness and understanding of MCH increases, so does the perceived value of the natural marine environment. This information may be used as incentive for the representation of MCH in integrated marine resource frameworks.

Chapters 8 and 9 applied the themes of definition, conceptualisation, and value to a legislative context, in the UK and Bulgaria. A comparative analysis of the differing methods of integrated management between these two cases provided novel insights into integrated management in practice. In doing so, key lessons were learned, including the necessity for consistent definitions of both heritage and the environment throughout integrated legislation and policy; how integrating the values of stakeholders into integrated policies are necessary for success; and how base heritage laws need to be in line with international standards, before implementing integrated frameworks into practice.

The final research question: *(3) How can underwater heritage be practically integrated into existing marine resource management frameworks, and who is responsible for overseeing this process,* is designed to link Parts 1 and 2 of this thesis to Part 3: Bridging the gap between theory and practice. The final Part of this work translates the results of Chapters 6-9 into international, regional and national governance frameworks. Recommendations for UNESCO's Convention on the Protection of the Underwater Cultural Heritage and methodologies for the EU's MSP Directive are addressed in Chapter 10, and indicators for the UK Government's Culture and Heritage Capital Framework are presented in Appendix A. Finally, the aims, objectives, and research questions are

re-addressed in Chapter 11. In this concluding Chapter, Parts 1, 2 and 3 are brought together as a set of final findings.

The following Chapter thus proceeds by using the knowledge gained in Part 2 to adapt the EU MSP Directive Methodology for the more effective management of MCH alongside the natural marine environment. Onus is placed on UNESCO's 2001 Convention to provide an incentive and platform for such development, communicated in the form of recommendations to support the Convention's implementation.

Chapter 10 The Management of MCH in Marine Spatial Planning Frameworks, and the role of UNESCO's Convention on the Protection of the Underwater Cultural Heritage

10.1 Abstract

This Chapter argues Marine Spatial Planning (MSP) provides a logical and necessary place-based approach to MCH management. Although the protection of MCH is addressed within the MSP EU Directive (Article 8), there is limited evidence of this in practice. Knowledge gained in the previous Chapters of this thesis is used to develop a preliminary translation of the current EU MSP Directive Methodology for the integration of MCH. The benefits for the inclusion of MCH management within the 'vision and aims' stage of the EU MSP Methodology Cycle are further discussed and placed in the context of the UNESCO Sustainable Development Goals (2030) and Decade of Ocean Science (2021-2030), and are communicated through Recommendations to the 2001 Convention.

10.2 Introduction

As evidenced throughout this thesis, the management of the Marine Cultural Heritage (MCH) is internationally fragmented in legal and policy frameworks aimed at its protection. A growing recognition of the value of MCH for the understanding of our past and the sustainable development of our futures has encouraged multiple ratifications with the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage (herein after, the 2001 Convention), which passed its 60th ratification in 2019. Although the 2001 Convention aims to connect its States Parties with shared guidelines; it is becoming clear that ratification and efforts at implementation are not enough (MacKintosh, 2018; Martin, 2019). International frameworks for integrated, place-based management of ocean resources such as Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM) are entering the forefront of marine resource management. Despite the clear recognition of MCH within the rhetoric of these systems, MCH is underrepresented in both planning process and overall spatial planning methodologies. The lack of MCH representation in spatial planning is mirrored in the UN's Decade of Ocean

Science (2021-2030) (herein after, the Decade), which represents an ideal platform by which an awareness and understanding of the global value of MCH could be presented to marine policy advocates.

There is a growing body of literature discussing how to apply heritage management methodologies to spatial planning frameworks such as MSP. These are currently in the spotlight with regards to the ongoing EU MSP Directive. Codes of conduct (Vallega, 2003), theories for new, integrative methodologies (Khakzad, 2015), and simple five step approaches for the integration of MCH (Papageorgiou, 2018) have been proposed to overcome the legislative and technical issues associated with the integration of MCH into MSP.

A similar, but smaller body of literature exists for the inclusion of MCH into the Decade, most recently and successfully added to by the establishment of the Ocean Decade Heritage Network in 2019, with the primary aim of raising awareness of the Decade in the field of maritime archaeology. As part of this initiative, next steps for the integration of MCH in the Decade were proposed (Trakadas *et al*., 2019) which largely complimented the steps proposed by Papageorgiou (2019) for the integration of MCH into MSP.

This Chapter will build upon the growing body of literature on the incorporation of MCH into MSP by expanding upon the above issues and providing recommendations as to overcome them. This will be largely aimed at the UNESCO 2001 Convention as an extended response to the most recent Convention Evaluation Key Findings (UNESCO IOS Evaluation Office, 2019). This work aims to propose a potential method to:

a. overcome some of the methodological issues associated with the integrated management of MCH by applying the results of previous Chapters to the MSP Framework
b. build upon the next steps that are presented in recent literature by providing a preliminary translation of MCH within the current EU MSP Directive Methodology, and
c. provide recommendations to the 2001 Convention with regards to this issue.

This work has been developed in answer to the final Objective of this thesis: To implement the results of Part 2 into practical recommendations and proposals across multiple levels of governance, including UNESCO's Convention on the Protection of the Underwater Cultural Heritage, the EU MSP Directive, and the UK Government's Culture and Heritage Capital Framework (see Appendix A). To do so, the research question: *how* can underwater heritage be

integrated into existing marine resource management frameworks, and *who* is responsible for overseeing this process; is structured as part of the following research.

The following 'methodological issues associated with the inclusion of MCH in MSP' have been selected using the most common topics extracted from an examination of the literature (Chapter 3), or, are hypothesised from identifying gaps in the literature and viewpoints deducted from previous Chapters within this thesis (Chapters 3 and 5). The issues examined in the following Section are used as the rationale for the proposal for adapting MCH to fit within the MSP valuation methodology, and succeeding Recommendations to the 2001 Convention.

Sections 10.3, 10.4 and 10.5 will provide an introduction to the role of MCH within MSP, the current methodological issues associated with integration, and the current responsibilities of the 2001 Convention. In Sections 10.6, how to define, conceptualise and value MCH within MSP is discussed. Sections 10.7 and 10.8 examine how MCH within the MSP framework is an integral aspect to both the UN's SDGs and Decade of Ocean Science. Finally, section 10.9 provides extended recommendations for the 2001 Convention, in line with the most recent Convention Evaluation Key Findings.

10.3 Marine Spatial Planning and MCH

UNESCO defines MSP as:

> "a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process. Characteristics of marine spatial planning include ecosystem-based, area-based, integrated, adaptive, strategic and participatory"
>
> *(IOC, 2009)*

The key goals of MSP include reduction of conflicts and creation of synergies, encouragement of investments through predictability, transparent and clearer rules, increased cross-border cooperation and the development of coherent networks of protected areas, and protection and preservation of the environment (IOC, 2009).

The increasing presence of MSP, exemplified by the MSP EU Directive established in 2014 (Directive 2014/89/EU), represents a shift from sectorial to place-based resource management using Ecosystem Service (ES) concepts to integrate the management of multiple services within

one framework. The implementation of MSP is monitored by the MSP program of UNESCO, which states that there are around 70 countries implementing a form of MSP at time of writing (IOC-UNESCO, 2020), of which the most drive is currently in Europe. Considering this, the EU MSP Directive will be the primary focus when discussing MSP methodologies in the following Sections.

The EU MSP initiative is part of the wider integrated maritime policy (CEC, 2007) to achieve good environmental status (EPC, 2008) and the Blue Growth strategy (CEC, 2012). The Directive requires all Member States to prepare plans by 2021 (EPC, 2014) using an ecosystem-based approach. Information and good practice is documented using the European MSP Platform and presented at the IOC-UNESCO Conference.

The Directive directly specifies MCH as an invaluable resource which must be integrated into MSP Frameworks, and lists MCH promotion as a Key Goal (Article 8). The placement of MCH within current MSP attempts is, however, questionable. Considering the application of MSP is relatively new, there is already a consensus warning of the apparent disregard of MCH within its framework (Agapiou *et al.*, 2017; Agapiou *et al.,* 2017; Papageorgiou, 2018). Recently, Papageorgiou (2018) devised a simple five-step system for integrating MCH into MSP, as follows:

1. 'Register and evaluate MCH sites and objects (according to their socio-economic value)
2. Identify ways to upgrade/enhance the economic value of MCH
3. Select the most appropriate type of protection and/or management zoning
4. Provide regulations and restrictions for activities within the MCH protection and management zone
5. Ensure integration and cohesion of the planning adopted in the MCH buffer zone with the spatial/sea-use planning adopted in the wider marine area'

The above five steps represent a clear base for the integration of MCH within MSP frameworks. The first step: to be able to properly register and evaluate MCH sites and objects; is currently hindered by the lack of available methodology for MCH evaluation within the MSP framework (Papageorgiou, 2018). A likely reason for this is the focus of MSP on *ecological* indicators, promoted by a late adoption of socio-economic valuation methods.

Methodologies to measure the socio-economic aspects of MSP were initially slow to develop, as focus was largely on environmental conditions and maritime activities. Currently, the movement towards socio-economic value has largely focussed on sector growth and employment, and only with the increased uptake of Blue Growth with the EU Directive, has the market and non-market benefits of Cost-Benefit Analysis (first adopted as a strategy by the UK) become an integral

component of MSP plans (Jay, 2017), opening a door for the inclusion of MCH valuation for Blue Growth.

Currently, the EU MSP platform guides MSP practitioners to use the *Social Ecological Accounting Framework* within the 'vision and aims' stage of the MSP Methodology Cycle (European MSP Platform, 2020). The aim of the framework is to "*isolate human system aspects of the interaction with ecological systems, enabling a direct comparison of the sort required by cost-benefit analysis. This reconfiguration also supports accountability within human systems*". The system proposes a Driver – Pressure – State – Welfare – Response (DPSWR) strategy to determine the value of the relationship between ecological systems and human systems.

Despite the clear difficulties with the unrepresentative definition of '*ecological* systems', this method does provide opportunity for MCH to be valued socio-economically during the first stages of the MSP Methodology Cycle. A method to translate the DPSWR system for the inclusion of MCH is proposed in the following Section. The responsibility of defining and encouraging this inclusion lies both with the practitioners of MCH, and official bodies which represent MCH, such as the 2001 Convention. The current and future role of the 2001 Convention in this partnership is discussed in Section 10.5.

10.4 Methodological issues associated with the inclusion of MCH in MSP

Although there have been multiple papers discussing the lack of MCH representation in MSP and various how-to guides for the application of heritage management concepts to MSP (Agardy, di Sciara and Christie, 2011; Agapiou, Lysandrou, and Hadjimitsis, 2017; Gee *et al.*, 2017; Papageorgiou, 2018, 2019; Noon, 2019; Garcia-Onetti *et al.*, 2021), often, a discussion on *why* MCH has not been included and *if* MCH should be included is missing. Potentially, an understanding of these topics would aid in the development of a methodology more likely to be implemented within the MSP framework. The following points are categorised into direct and indirect factors, or factors which may be inhibiting the inclusion of MCH within the MSP methodology, and factors which may be further muddying the waters regarding the inclusion of MCH in the field of marine resources, respectively.

10.4.1 Direct Factors

There are a number of reasons why MCH has not been properly integrated into place-based management approaches such as MSP. Firstly, although there are several examples of MCH

valuation methodologies, measuring the value of heritage against natural resources is still cited as one of the main difficulties in prioritising MCH in spatial planning (Jobstvogt *et al*., 2014; Khakzad, *et al.*, 2015; Agapiou *et al.,* 2017; Papageorgiou, 2018; Trakadas *et al.,* 2019). MCH is affected by the same environmental parameters as natural resources, (including climate change, natural processes such as coastal erosion, natural disasters such as earthquakes, and anthropogenic disasters such as oil spills), but the multiple intangible cultural and social benefits of MCH are often deemed difficult to value using the traditional market valuing system applied to natural resources (Wright and Eppink, 2016; Papageorgiou, 2018; Benhamou, 2020).

Secondly, spatial planning systems are derived from ecosystem service (ES) methodologies, and although cultural ecosystem services are included within its scope, there is little incentive for already integrated environmental management systems to undertake the complex task of integrating cultural heritage into already functioning systems (Chapter 5). A similar sentiment is reflected in cultural heritage management literature, in which the complications with Ecosystem Service style framework integration have led to a negative rhetoric around the subject (Hølleland *et al*., 2017). Furthermore, there is the risk that the increasing pressure to incorporate MCH protection into protective frameworks without proper understanding or incentive will lead to the nominal inclusion of MCH, as has occurred in the Millennium Ecosystem Assessment (Chapter 6).

10.4.2 Indirect Factors

There are various indirect issues which add complexity to the uptake of MCH protection in integrated policies and frameworks. A primary issue is the stark difference between jurisdiction (and therefore protective) powers of sovereign states for MCH compared to natural resources. Although general sovereign rights extend over the continental shelf, the LOSC states that rights over MCH extend only to the Contiguous Zone (Papageorgiou, 2018). According to the Annex of the 2001 Convention, beyond the contiguous zone MCH is claimed using the coordinating state system, and if not claimed, is left to the 'benefit of mankind'. This system has often been deemed as vague and continues to be one of the key reasons why multiple states are yet to ratify with the 2001 Convention (Dromgoole, 2006). Similarly, there is no singly recognised methodology for the international implementation of MSP, creating an added layer of complexity to the management of MCH within its framework (Jay, 2017).

Finally, the issue of how to manage and protect *intangible* cultural heritage within the realms of MSP has been largely ignored by both environmental and cultural heritage literature. As such, although intangible cultural heritage has a strong presence in heritage and environmental

management, it's integration into MSP and other place-based systems has been consistently disregarded (Gee *et al.*, 2017). The proper representation of intangible MCH in MSP represents a gap in literature which, if disregarded, will result in an unbalanced inclusion of MCH in MSP and other marine policies. The environmental, social, economic and cultural importance of intangible MCH, alongside its fundamentally place-based context, makes it an ideal and necessary component of MSP, and so should be catered for within MSP methodologies to properly integrate MCH.

10.5 The 2001 Convention and MSP

10.5.1 UNESCO 2001 Convention Evaluation

The 2019 Convention Evaluation is an intra-UNESCO assessment of the Convention's activities so far. Multiple surveys, interviews and questionnaires of inter and intra-UNESCO bodies were used to assemble fifteen key findings regarding the Convention's progress and future. The final finding, '*Existing partnerships have been underutilized and potential ones unexploited*' (UNESCO IOS Evaluation Office, Finding 15, pg.2, 2019), highlighted the unexplored potential for integration with multiple culture and environmental bodies and frameworks necessary for the continued sustainable development of MCH protection. To combat this, the associated recommendations suggest further partnerships within the culture sector and stronger collaboration with the Intergovernmental Oceanographic Commission (IOC) for the implementation of MSP and marine scientific research. The recommendations were accepted accordingly, with extensive examples of current and future plans for cohesion with the culture sector. The lack of MCH representation in MSP was addressed by introducing the recently established IOC-CLT committee, which aims to address the presence of cultural heritage in MSP and the Decade of Ocean Science. No further information on this platform was given (UNESCO IOS Evaluation Office, 2019).

10.5.2 The role of the UNESCO 2001 Convention in MSP

The role of the UNESCO 2001 Convention in the integration of MCH within MSP frameworks has not yet been defined; and presents a potential reason for the disregard of MCH within current MSP frameworks. The most recent Convention review discussed a collaborative committee between UNESCO culture sectors and the IOC, which provides promising potential for action on this issue (UNESCO IOS Evaluation Office, 2019). A key aspect of this partnership should be to address the primary issues identified in literature (Section 10.4), as to be able to properly address

Papageorgiou's first step towards inclusion: defining a method to properly register and evaluate MCH within the MSP framework.

Considering the direct and indirect issues associated with the inclusion of MCH in MSP, a way in which a number of these issues may be combatted; including the lack of incentive, economic valuation issues and the disregard of intangible heritage, may lie in:

1) a translation of MCH using the *same ecosystem-service style definitions concepts used within MSP currently*; with functions and services that can be interpreted as ecosystem service market values to facilitate integration with environmental marine frameworks and bodies,
2) and by providing a translation of the methodology used within the MSP system itself; with a *means to value and manage MCH within the first phase* of the MSP Methodology Cycle.

The justification of the above points are based in the findings of Chapters 6-9. Firstly, it has been made clear that a fluent definition of MCH across natural and cultural policy is essential for its consistent integration in practice (Chapters 6, 8 and 9). Secondly, incentive needs to be provided by integrating the values of heritage alongside those of other ecosystem services, which largely depends on the conceptualisations of heritage between stakeholders (Dominica, Black Sea/UK). The first step to enable this in MSP is to provide a coherent and agreed upon translation of MCH as an ecosystem service (ES), incorporating its contributions to sustainable development and other services, which can easily be placed in the context of current MSP implementation strategies with few changes to the strategy itself.

10.6 A preliminary translation of MCH for MSP

10.6.1 How to define and conceptualise and MCH as an Ecosystem Service

The way in which cultural heritage is currently used and conceptualised within the field of ES is a likely reason for the growing pool of speculatory literature as to how to value it as a service (Hølleland *et al.,* 2017, Chapter 6). Cultural heritage is a subcategory of cultural ecosystem services, which embody both intangible and tangible cultural heritage and its connection with the environment and humanity. Yet, in ES publications, cultural ecosystem services are primarily referred to as the intangible cultural benefits humans receive from natural ecosystem services (Chapter 6). As such, it is likely that this lack of conceptual clarity derived from the Ecosystem Approach is contributing to why no single method to value heritage against other ecosystem services has been adopted in MSP.

The success of an integrated culture-nature system relies on a well-defined concept of cultural heritage as an ecosystem service. First, the functions and services must be defined, of which there doesn't appear to be an internationally agreed baseline. In 1998, 2009 and 2012, UNESCO developed a set of cultural indicators (or functions) to measure stocks of cultural capital and flow of the services they provide (UNESCO, 2012). The document suggested that the broadest definition of culture which spread throughout all features of society both modern and past could be measured as part of the five-part culture cycle; which begins with creation (or for heritage, registration/protection), production, dissemination, exhibition/reception/transmission, and ends with consumption/participation (Figure 17). This very broad method of measuring culture as cultural capital may provide a baseline for measuring MCH within MSP and should be built upon by developing dimensions which link MCH to the environment.

10.6.2 How to value MCH as an Ecosystem Service

The market valuing system used to prioritise ES relies upon a measure of market or extractive values, which apply to what may be physically taken from resource; and non-market or non-extractive values, which apply to the socio-cultural benefits of a resource. Both in turn depend upon finiteness. These methodologies are mirrored in most place-based resource management frameworks (Claesson, 2011). The characteristically finite and socio-cultural nature of MCH alongside its inherent connection with the environment and economy should make MCH an ideal candidate for ES style market values, but there has been much speculation as to how to properly value cultural heritage on its own, alongside other ecosystem services, and within other frameworks, (Samuels, 2008; Firth, 2015; Fish *et al.*, 2016) . Nonetheless, there are examples available of MCH management alongside coastal industry and environments (Douvere, 2008; Khakzad *et al.*, 2015; Börger *et al.*, 2020), literature regarding how to value MCH using environmental economics (Claesson, 2009, 2011), and definitions provided by the UNESCO FCS regarding the economic functions of culture (Figure 17; UNESCO, 2012).

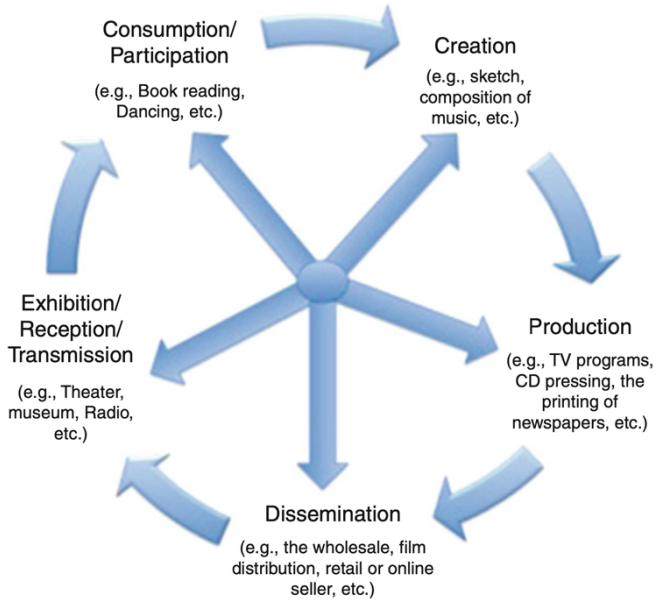


Figure 17: UNESCO Cultural Indicators (UNESCO, 2012)

The plethora of papers on methods to value heritage in integrated systems often provide how-to guides for ecosystem services practitioners on how to value heritage using heritage management techniques, but often do not provide examples of *how to fit these techniques into already established integrated frameworks*, and how fitting them into these systems can *positively contribute to the management of other environmental services* (Chapter 5).

An example of the successful management of MCH using natural resources methodologies is given by Khakzad *et al.* (2015), who proposed guidelines for evaluating MCH for MSP and ICZM using integrative complexity theory, which evaluates the political, economic, social and environmental values of a resource, a method already used to assess the value of natural resources. Khakzad provided clear evidence that cultural heritage as defined in this study could be managed using a cultural-natural impact friendly methodology. What was not evident, was why this wasn't already being used in integrated frameworks such as MSP or ICZM. A potential reason for this, may be that its use depends on the adoption of a methodology completely different to the one already in use. Additionally, the intricacy associated with the theory is likely a discouraging factor. Nonetheless, the example provides the needed evidence for successful, mutually beneficial integrated management. Considering this, it may be more appropriate to adapt the *current methodologies* used for MSP and ICZM to better fit MCH, to further encourage its successful adoption.

10.6.3 MCH within the MSP methodology

The original definition of an Ecosystem Service and its subsequent functions and values was translated for cultural heritage in 2011 (Claesson, 2011). An ecosystem function was previously described as "*the capacity of natural processes and components to provide goods and services that satisfy human needs, directly and indirectly*" (De Groot, 1992), and was adapted to "*the primary set of values that society imbues or associates with cultural heritage*" as a function, and "*the direct and indirect benefits that society derives from cultural heritage*" as a service. The definition of functions and services then allows the resource to be assessed using traditional ecological economic measuring systems such as the Total Economic Value (TEV) framework, using Willingness to Pay (WTP) or Willingness to accept loss (WTA). Most modern valuation frameworks use both tangible and non-tangible (or market and non-market) valuation methodologies and can be directly translated for the value of a cultural resource. A common valuation strategy for cultural heritage is Contingent Valuation (CV), in which a hypothetical scenario is presented where an individual identifies a WTP or WTA economically, for the preservation or loss of a cultural heritage resource (Claesson, 2011).

Currently, MSP is being implemented using different valuation methodologies depending on the regional legal characteristics and predominant maritime industries and activities of the area (Jay, 2017). There is not a single, official process for the implementation of MSP, thus making the definition and coherent presentation of functions and services even more important for MCH; a resource with multiple legislative translations depending on region (Perez-Alvaro, 2019). As discussed in Section 10.3, the EU MSP Directive recommends the use of the Social Ecological Accounting Framework in the early stages of MSP implementation, using the Driver-Pressure-State-Welfare-Response cycle (DPSWR), and as such, the following suggestions will address this system (Figure 18).

Overcoming the clear difficulty in assessing MCH as an 'ecological system' can be addressed by changing the protocol to a more inclusive terminology such as 'resource systems' to encourage the inclusion of non-ecological services. The methodological issues associated with MCH in MSP may be addressed by establishing an ES-style definition of MCH and providing an adapted strategy to measure MCH within the MSP methodology. A simple translation of the DPSWR Framework for MCH can be done by applying the Claesson concept and the UN's five-part culture cycle to the overall visualisation of the framework (Figure 18). ES functions of MCH may be derived from the multiple examples of cultural heritage defined and valued in literature (Claesson, 2011). Finally, to further cement MCH within the context of MSP at this stage, the definition needs to be cohesive with other ecosystem services and the benefits to the sustainable development of the ocean need to be clear and presented in line with the SDGs (Section 10.7).

The particular issues specific to MSP (Section 10.4), namely: valuation, incentive, jurisdiction and intangible heritage, are addressed to some extent in the following framework. The latter two issues are only addressed indirectly, as with jurisdiction: a single ES-style definition allows the adoption of a single MSP methodology, and as such, can overlook the complexities of regional MCH protection and jurisdiction to some extent. Intangible cultural heritage has been addressed within the framework both in terms of valuation and incentive; however a deeper investigation on its lack of representation in MSP is necessary to fully address, and raise awareness on the issue.

The following Section will discuss how the contribution of MCH to sustainable development should provide incentive for both MCH and other marine resource practitioners to fully adopt MCH within the proposed MSP methodology, and how the connections between the issues in MCH management in MSP directly relate to the lack of MCH presence in the Decade of Ocean Science.

10.7 Limitations

The primary limitation of this work is that is depends upon significant action and cooperation between cultural and environmental bodies. Nonetheless, various steps have already been taken; including the establishment of the new IOC-CLT committee, the recent instructive literature on the topic, and the considerable effort of multiple heritage bodies to raise awareness of the issue. The next step is for simple, coherent actions to be established by international authorities such as the UNESCO 2001 Convention, using the available literature on the topic and the STAB, to encourage and instruct international bodies towards the protection of MCH as part of MSP.

10.7.1 Note: the economic valuation of MCH

It is important to note that expressing the value of MCH economically may appear as an oxymoron when considering the role of the 2001 Convention against the economic exploitation of MCH; but using market and in particular, non-market methodologies of valuation which take into account the complex socio-economic benefits a resource provides to humankind, is a key aspect of cohesive integration with other ecosystem services. The economic incentive to recover MCH and the economic valuation of MCH for integrated protection are two entirely different things, shown best by the economic valuation theory relating to cultural value : “an asset that embodies a store of cultural value, separable from whatever economic value it might possess; in other inputs the asset gives rise to a flow of goods and services over time which may also have cultural value” (Rizzo and Throsby, 2006).

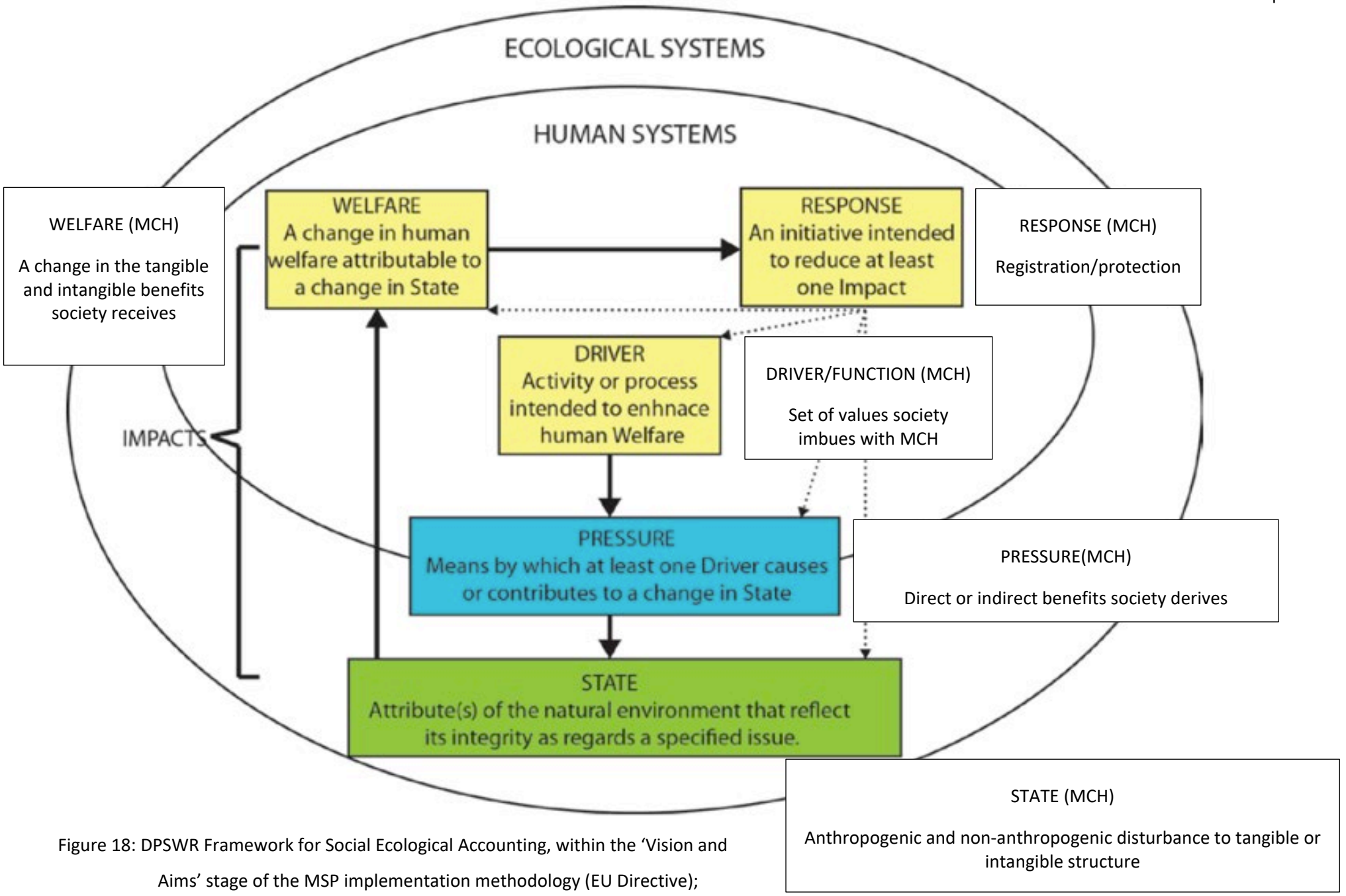


Figure 18: DPSWR Framework for Social Ecological Accounting, within the 'Vision and Aims' stage of the MSP implementation methodology (EU Directive); adapted to incorporate MCH

Table 33: Extended rationale for the adapted DPSWR methodology (above), discussing the changes made, how they can integrate with other services in the framework, and the incentive for doing so.

Category	Commentary for MCH adaptation	Integration	Incentive
Driver/Function	Adapting 'activity or process intended to enhance human welfare' to a 'set of values society imbues with MCH', derived from the Claesson adaptation of cultural heritage as an ES, allows both tangible and intangible heritage to be defined by the societal benefits associated with it, rather than only as a tangible activity.	The socio-environmental values derived from an awareness of MCH directly links humans with the ocean space. Thus, a further driver of MCH is the connection between society and the ocean environment.	The drivers of MCH are directly linked to a society's understanding of the ocean and ocean values.
Pressure/Service	Adapting 'means by which at least one driver causes or contributes to a change in state' to 'direct or indirect benefits society derives' (derived from Claesson) directs the primary agent of change towards the value society derives from a cultural resource		By measuring pressure as societal value, we can better understand the contributions of MCH to SDGs 4, 11, 13, 14 and 17 – discussed further in Section 10.7.
State (of change)	By adapting 'attributes of the natural environment that reflect its integrity as regards to a specific issue' to 'Anthropogenic and non-anthropogenic	MCH is affected by similar anthropogenic and natural pressures as the natural environment, and so it's	The state may also be used retrospectively to apply cultural context to the state of change. This applies to both cultural and

	disturbance to tangible or intangible structure', the measurement of change is translated from physical damage to a natural structure, to any form of natural or anthropogenic influence over both tangible and intangible heritage.	protection often presents similar direct and indirect (see incentive) goals. Nonetheless, the state of change should be measured to take into account both tangible and intangible damage (linking with the above rationale for the Driver and Pressure factors).	natural resources, for example, by understanding how a changing environment has affected human society throughout time, and how it may affect society in the future.
Welfare (diminution of welfare)	Adapting 'a change in human welfare attributable to a change in state' to 'a change in the tangible and intangible benefits society receives' does not necessarily change the meaning of the original definition, but draws the user towards the socio-economic values derived from MCH, such as awareness, value, perception, tourism, research, presence, and accessibility.	The change in the tangible and intangible benefits society receives directly links MCH protection to that of the natural environment. An increased awareness of MCH can increase the public value given to the marine environment, thus improving public compliance and involvement with environmental regulations (Chapter 6).	

Response	By changing 'an initiative intended to reduce at least one impact' to simply 'registration/protection' (derived from the UNESCO culture cycle), the next steps towards tangible place-based action are made clear.	Here, Papageorgiou's final step: 'cooperation and cohesion…with wider marine area' becomes relevant, as place-based protection for MCH will need to incorporate the values derived from other ecosystem services, and visa versa.	The incentive rationale of the above Sections is translated in terms of contribution to the SDGs and other services in this step, thus making the inclusion of an incentive Section at each stage a necessary component of the valuation process.

10.8 Incentive: MCH in the SDGs

In 2003, Vallega gave evidence of the clear interconnectedness of MCH and the environment, but suggested that MCH is prevented from being considered within the perspective of integrated management as it is largely seen as separate to Sustainable Development. This was written in the early years of the UN's SDGs, which cultural heritage is now widely included within, and 11 years before the 2001 Convention was accepted, who have since discussed the role of MCH in SDG reports. Research into the deep connections between cultural heritage, the environment and sustainable development has advanced significantly since this work; although this interconnectedness is not yet fully represented in marine policy. The 2001 Convention has produced multiple documents on the contribution of MCH to the achievement of the SDGs; particularly, SDG 4, 11, 13, 14 and 17 (UNESCO, 2018), (although many argue that MCH is relevant to all SDGs (Trakadas *et al.*, 2019; UNESCO IOS Evaluation Office, 2019)) knowledge of which, should provide incentive for the uptake of MCH management in MSP (Table 34).

Table 34: The contributions of the MCH to the SDGs (UNESCO, 2018)

SDG	Contribution

SDG 4: Education	the promotion of a culture of peace through ocean literacy and heritage adds to the cultural education of both coastal and non-coastal areas.
SDG 11: Sustainable Cities and Settlements	Increasing the sustainability of coastal societies is necessary both for the protection of their cultural identity, as well as promoting cultural tourism for urban development.
SDG 13: Climate Change Action	Understanding how human populations have been affected by, and adapted to, changing climates in the past adds significance to Climate Change Action. Furthermore, it provides us with a poignant record of the effects of sea-level change on coastal populations.
SDG 14: Oceans	An understanding of the Marine Cultural Heritage is a significant and necessary aspect of our record of the past, and should be used as a way to connect society to the ocean, and the ocean to other SDGs.
SDG 17: Sustainable Development through Global Partnerships	By building public, private and civil society partnerships in MCH research and awareness, states can better access and understand their shared past.

An understanding of culture, peace and prosperity; the hallmarks of sustainable development, would be impossible without the understanding of our Marine Cultural Heritage. Furthermore, an understanding of MCH can increase the positive perception of other marine resources (Chapter 7), and so represents a strong, positive, socio-environmental connection between people and sustainable development, necessary for the successful development of MSP.

10.9 Incentive: MCH in the Decade of Ocean Science

The Decade of Ocean Science for Sustainable Development (2021-2030) provides a platform for the ocean sciences to support the management of the oceans, with the ultimate aim of achieving the 2030 Agenda for Sustainable Development. In particular, the Decade aims to coordinate ocean stakeholders, which, in turn, ties integrated ocean frameworks such as MSP into its context (IOC, 2018). Although the integration of MCH into marine resource policies and frameworks can clearly impact the sustainable development of the ocean, MCH is not featured in the official Decade of Ocean Science rhetoric. In response to this, there has recently been significant work to incorporate MCH into the Decade, including the creation of the Ocean Decade Heritage Network established in 2019, which aims to raise awareness on these issues in the field of maritime archaeology (Trakadas *et al.*, 2019). As part of this initiative, next steps to improve MCH integration with the Decade were established:

- The need for a map of the various institutions involved in MCH both internationally and nationally, to allow clearer communication with marine science bodies.
- To generate capacity and representation actions, and encourage maritime archaeologists to engage with science-policy discussions
- To develop 'essential heritage variables' which are described as 'basic metrics to help characterise the state of knowledge, condition, and the value of marine cultural heritage around the world'
- To construct a 'vision' for ocean heritage within the Decade; particularly how heritage will affect ocean sustainability
- And to prepare a statement on engagement with the public and policy makers, for the integration of marine archaeology with the marine sciences

The next steps indicated by Trakadas *et al.* (2019) largely compliment the five-step process for implementing MCH into MSP presented by Papageorgiou (2019) (Section 10.3). To build upon the complimenting literature above, the adapted DPSWR cycle (Figure 18) and following 2001 Convention recommendations aim to highlight the importance of the inclusion of MCH in MSP for sustainable development and the Decade of Ocean Science. How the translation of MCH for MSP facilitates cohesion between, and provides an answer to, a number of the proposed steps by Trakadas *et al.* (2019) and Papageorgiou (2019) is exemplified in Figure 19. The resulting cycle was used to form the following recommendations to the UNESCO 2001 Convention.

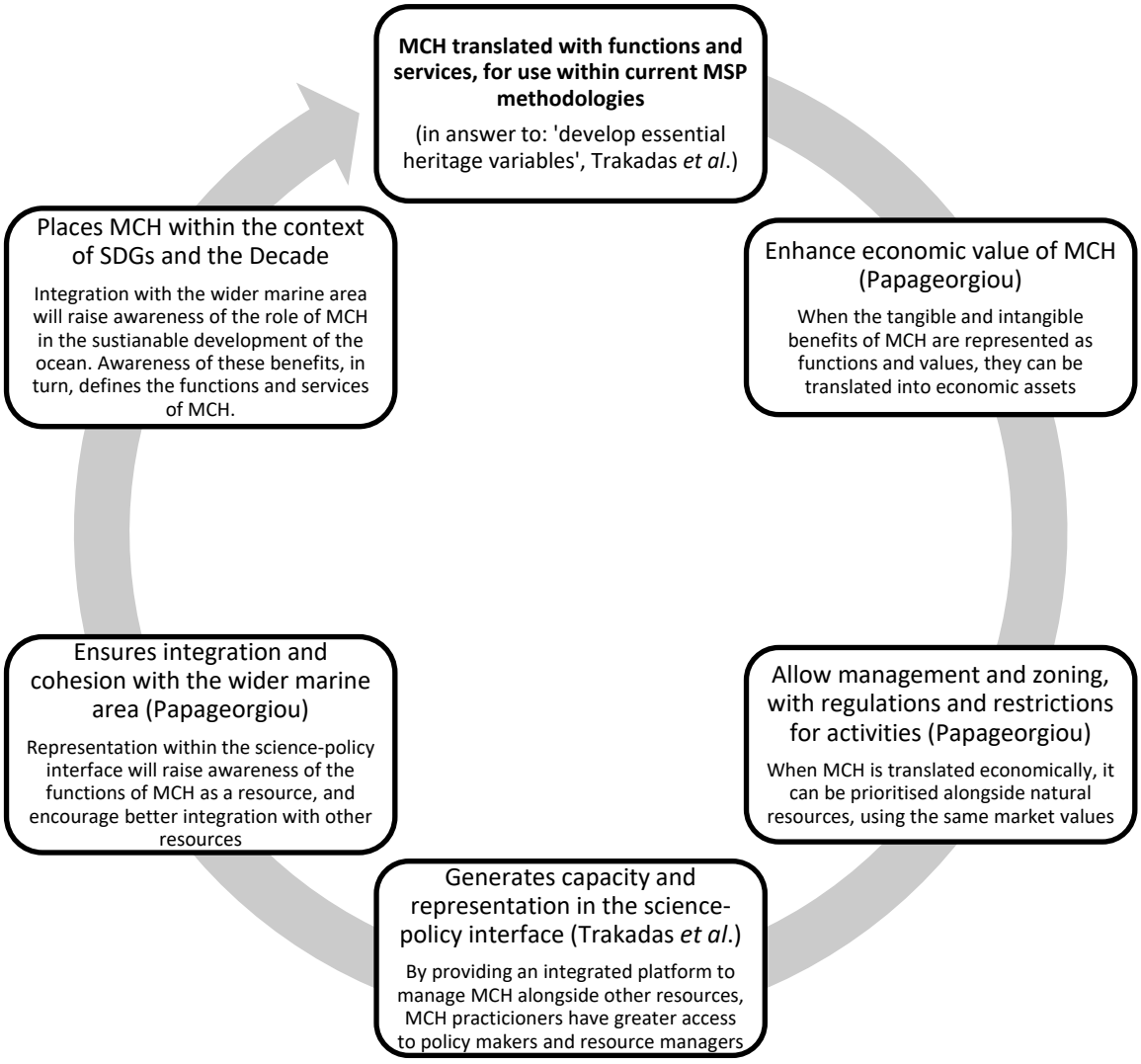


Figure 19: Cycle of rationale demonstrating how the translated MSP framework for MCH adopts and answers the next steps presented in recent literature, and how this methodology can connect MCH to the SDGs and Decade of Ocean Science (created by author)

10.10 Recommendations to the 2001 Convention

The following recommendations are in response to the most recent review of the 2001 Convention and have been created in coordination with the issues and actions proposed in recent literature and previous Chapters of this thesis. The rationale for the extended recommendations is demonstrated in Figure 19.

Table 35: Recommendations to the 2001 Convention

Original Recommendation (Convention Review, 2019)	Extended Recommendation
For the Marine Cultural Heritage Unit	
Recommendation 2: Revise the discourse around the 2001 Convention in view of broadening the outreach of the instrument and adapt UNESCO's communication materials accordingly.	In addition to broadening the Convention Discourse in terms of highlighting the benefits derived from implementation, a discourse regarding the role of the Convention in the implementation of regional MSP should be communicated with relevant policy bodies and marine resource stakeholders.
For the Scientific and Technical Advisory Body	

Recommendation 7: Clarify the archaeological concepts of the 2001 Convention such as in-situ preservation and consider revising the Operational Guidelines in view of increasing the understanding of terms and concepts. Collaborate with the MCH Unit to produce communication materials thereon.	As part of the next revision of Operational Guidelines, a translation of tangible and intangible MCH for use in place-based management such as MSP and ICZM should be developed and communicated.
Recommendation 8: Broaden the scope of STAB missions to cover legal and environmental issues in view of strengthening recipient countries' systems of protection.	Communicate a specific team of experts which may be consulted during the uptake of MCH in MSP, which may be promoted in key circles such as the Ocean Decade Heritage Network.
For the Meeting of the States Parties	
Recommendation 10: Advocate for strengthening the integration of the protection of MCH into the Roadmap of the UN Decade of Ocean Science. In particular, facilitate the cooperation between the MCH Unit and the Intergovernmental Oceanographic Commission in the implementation of the Roadmap.	In the early stages of the agenda for the IOC-CLT committee, a translation of the functions and services of MCH and their integration with other marine services should be established.
For UNESCO's Culture Sector	

Recommendation 14: Ensure the regular representation of the MCH Unit in UN Oceans and any other global coordination mechanisms in ocean-related matters in order to clearly reaffirm the contribution of the protection of MCH to the 2030 Agenda. Regular programme resources should be allocated for this work in order to allow for continuity.	The IOC-CLT committee should discuss the establishment of an awareness raising programme regarding the socio-economic and environmental connections between MCH and the marine environment for both public and private capacity.
Recommendation 15: Integrate the protection of MCH and awareness of the 2001 Convention in the mechanisms of other Culture Conventions and UNESCO programmes (e.g. Man and the Biosphere Programme) such as in their site management and conservation plans, broader safeguarding policies, regional consultations, trainings and meetings of statutory bodies. Collaborate with the IOC in integrating MCH into initiatives such as marine spatial planning, marine scientific research and capacity building.	Cooperating with the STAB to translate and promote ES-style MCH functions and services will facilitate a productive collaboration with environmental bodies and sciences.

10.11 Conclusion

This work has highlighted the ongoing direct and indirect issues which continue to restrict the integration of MCH within MSP frameworks, and suggested that an understanding of these is essential for the establishment of a methodology to manage MCH within MSP. When reviewing the body of literature on this topic, a key finding was that although multiple examples of guidelines for how to manage MCH in place-based frameworks were available, there were no examples of how to translate these directions into the current MSP methodologies. As such, a preliminary example of the current MSP methodology (in its initial phase: vision and aims) translated for the management of MCH was created, using information collected from consensuses within the literature, and the results of Part 2 of this thesis.

To further incentivise the adoption of MCH within the MSP framework, examples were given regarding the benefits MCH would provide to the SDGs, Decade of Ocean Sciences, and other marine resources if integrated into the MSP system. Furthermore, recommendations to the 2001 Convention were presented with the aim to provide context and direction as to the responsibility of international bodies to facilitate this movement.

A useful addition to this work would be the establishment of a map of institutions involved in MCH both nationally and internationally as proposed by Khakzad *et al*., which in turn could be built upon by generating a map of national and international policy and legislation affecting the protection and management of MCH, and how this overlaps with natural resource policy and legislation. Identifying the connections and gaps in these systems could further simplify the integration of MCH into place-based management systems.

Chapter 11 Thesis Discussion

The integrated management of heritage within the marine environment is key for the sustainable development of marine resources (Chapter 3). Yet, despite a steady increase in literature calling for further integration between the disciplines, the practical implementation of MCH in marine resource frameworks, systems, and policies, remains largely theoretical. To address this issue, this work identified gaps in the knowledge base of the field (Part 1) and developed research questions to target these issues (Part 2), with the aim of bridging the gap between theory and practice for the more effective protection of the MCH within integrated systems (Part 3).

A network analysis of the current literature was conducted to determine the key research gaps and connections and their influence on the development of policy (Part 1). On analysis, it was clear that a lack of communication and capacity building between natural and cultural practitioners had affected the management of MCH within integrated frameworks. In particular, the themes of integrated definitions, conceptualisations, values, and implementation were highlighted as key areas for further development. As such, these themes were developed into the following research questions, which formed the backbone of this thesis:

1) How does the definition and associated conceptualisation of heritage in integrated frameworks affect the practicality of its management?
2) What is the value of underwater heritage as part of the marine environment?
3) How can underwater heritage be integrated into marine resource management frameworks, and who is responsible for overseeing this process?

The research questions were explored using a collection of thematic and geographical case studies and experiments. This Section discusses the primary findings of these studies, structured in answer to the above questions. The findings presented may be applied to multiple cases, as evidenced in its application to both regional (UK and Bulgaria) and international (MSP and UNESCO) examples.

11.1 How does the definition and associated conceptualisation of cultural heritage in integrated frameworks affect the practicality of its management?

The theme of definition and conceptualisation was first explored in the qualitative and quantitative literature reviews in Chapters 4 and 5. After analysing the semantics and definitions

used to describe and assess different natural and cultural resources in literature and management frameworks in Chapter 4, it was apparent that the definition of 'cultural heritage' had a significantly higher level of variation than the definition of 'environmental resources', a somewhat surprising result considering the respective sizes of each field. Conversely, when assessing the scope of cultural heritage in frameworks, it was apparent that the primary definition of 'cultural heritage' was siphoned to 'tourism and recreation' (Chapter 5). It was argued that this pattern suggested that the broad scope of heritage definitions in literature was contributing to a muddied definition of heritage in practice.

In Chapter 5, a network analysis was conducted between cultural and natural resource management research to further understand the highly varied definitions of cultural heritage in literature, compared to the restricted translation of cultural heritage in integrated frameworks. Although the overarching theme of sustainability was coherent between the two disciplines, the themes of value, framework and governance were not. Considering this alongside the results of the qualitative literature review, it was argued that although both disciplines had the common goal of sustainable development, the semantics relating to measuring and monitoring the resources where largely different, and were not being integrated coherently into practice (Chapter 5). As such, it was suggested that future work should determine mixed valuation methods which take into account and translate the interconnections between natural and cultural services.

In Part 2, the power of semantics in practice was assessed using a case study of the Millennium Ecosystem Assessment (Chapter 6); an integrated framework which has influenced the most common definitions and conceptualisations of natural and cultural resources in practice. As mirrored in the literature, although cultural services had a broad definition in theory, in practice it was overwhelmingly translated as tourism and recreation. It was argued that the ineffective management of heritage in the MEA alongside the results of Chapters 4 and 5, show that the lack of conceptual clarity and translation of cultural heritage resources is significantly impacting its effective management in integrated frameworks.

This issue was also mirrored in the analysis of integrated marine legislation. When assessing the effects of definition and conceptualisation of MCH in the UK case study (Chapter 9), it was deduced that the selective semantics used in planning and development policy in the UK, as well as the layered protective legislation in place offshore, had led to different understandings of heritage and its protection by practitioners and divers. Comparatively in Bulgaria, inclusive terminologies adapted from international frameworks are used in both natural and cultural

protective, planning and development policies. Through discussion with the practitioners which work alongside these policies it was deducted that this system has resulted in more coherence between stakeholders. Considering the collective results of Chapters 4, 5, 6 and 9, the succinct answer to Research Question 1 is as follows (Box 9).

Box 9: Research Question 1) How does the definition and associated conceptualisation of cultural heritage in integrated frameworks affect the practicality of its management?

Different definitions of cultural heritage in integrated systems have resulted in an inconsistent conceptualisation of cultural heritage as part of the environment. When we look at the few examples of when cultural heritage is defined coherently and in alignment with international standards and regulations (within an integrated system); we see a more consistent and effective protection of the heritage as part of the environment.

This finding is relevant to both policy and practical frameworks in the stages of both novel construction and reform. Furthermore, it is applicable to both cultural and natural systems. In light of this work it is suggested that the definition of cultural heritage in policy and framework settings should be constructed in collaboration with both natural and cultural resource practitioners and academics. To eliminate the threat of nominal inclusion, both cultural and natural resource definitions should be expanded to allow for an interconnected interpretation of these assets from both disciplines, and to encourage interdisciplinary capacity building. The semantics used to describe the resources should be comparable and should be referenced from international frameworks and recommendations such as the 2001 Convention. A guide for how to define MCH in the MSP example is provided in Section 10.6.1.

As the semantics of integrated management are further analysed, it may be appropriate to adapt international frameworks to reflect these ideas. Furthermore, as more integrated policies are constructed, a greater study of semantics in regional legislation and policy should be conducted to assess the effectiveness of integrated semantics in practice for both cultural and natural resources across multiple levels of governance.

11.2 What is the value of underwater heritage as part of the marine environment?

Considering the theme of value was highly researched in both natural and cultural resource management literature, and yet remained conceptually inconsistent (Chapter 5), it was deemed necessary to explore the direct value of cultural heritage within integrated frameworks for both the protection of heritage and the environment. Current research regarding the benefits of cultural heritage within the marine environment primarily focus on the environmental services rhetoric of 'human interactions with environmental resources', or tourism (Hølleland *et al*., 2017). Although understanding and monitoring such human interactions is an essential aspect of the influence of culture in the environment, research into the value of the Marine Cultural Heritage in its own right; *for* the natural marine environment *and* the society for which these resources are protected for, is not clearly evidenced or incentivised. Despite multiple works on the value of heritage (Claesson, 2011; Dümcke and Gnedovsky, 2013; Labadi, 2013; Firth, 2015; Wright and Eppink, 2016; Jones, 2017), the values and benefits of MCH remain underrepresented in integrated practice. As such, the value of protecting the MCH for the benefit of the marine environment was introduced in Chapter 6 and tested in Chapter 7 to explore an incentive for capacity building within these frameworks.

It was argued within the MEA case study (Chapter 6) that the restricted inclusion of cultural heritage within integrated frameworks and policies is detrimental not only for the protection of cultural heritage, but also for the natural environment. This point is built upon in Chapter 7, which explored how MCH education and awareness can positively impact the social value given to the natural marine environment. If we assume the connection between social value and adherence to protective policies (Potts *et al.*, 2016; Walker-Springett *et al.*, 2016; Benham and Hussey, 2018; Kelly *et al.*, 2018; Thomas *et al.*, 2018; Avelino *et al.*, 2019), this result can be used to show that an understanding and awareness of MCH can significantly impact the protection of the marine environment as a whole. Although this may not be surprising to cultural heritage practitioners, this study was designed in reaction to papers which argued for the exclusion of cultural heritage from integrated management frameworks (Kirchhoff, 2012, 2019).

The practicality of how value is interpreted into policy and legislation was further explored in the UK and Bulgarian case studies (Chapters 8 and 9). As neither country currently have an official comparative method of economically or socially valuing the MCH, resource value is derived from the available legislation and is translated into the management powers of the respective heritage

agencies. In the UK, MCH is integrated with the environment in planning and development policy. On study of the system and through multiple interviews with heritage practitioners, it was argued that although the integration of MCH into certain environmental laws is a significant and forward-thinking move for the effective management of heritage in the UK, this move is so-far underused. If looked upon negatively, it may be argued that by only defining heritage as part of the environment in development, the multiple interdisciplinary and interconnected values of heritage within the marine environment are underrepresented in policy and the waters are further muddied with added MCH definitions in legislation.

In comparison, the interdisciplinary definition of heritage, the natural environment, and associated values in Bulgarian legislation appears to encourage fluid interpretations between resource managers. The value of heritage in the environment is within the rhetoric of the base cultural heritage and natural environment policies, which inform the management of the underwater heritage in both planning, development, and protection. Although this is not a robust integrated policy in the way in which the UK has developed (which is currently largely unique), it plays a significant part in facilitating integrated practice in management. As a result, further integrated policies similar to that of the UK could be implemented without changing or adding to the semantics of the core legislation. Considering the importance of maintaining coherence throughout the integrated semantics governing these processes; it is argued that integrated values should be proposed within base heritage legislation, as to maintain consistency, fluidity and coherence in management priorities and resource values. By taking into account these findings, an answer to Research Question 2 is proposed as follows (Box 10).

Box 10: Research Question 2) What is the value of underwater heritage as part of the marine environment

The multiple social and economic values of heritage are represented in the works of Claesson, (2011); Dümcke and Gnedovsky, (2013); Labadi, (2013); Firth, (2015); Wright and Eppink, (2016); and Jones, (2017). This thesis has aimed to add to this body of literature, by assessing the MCH values in integrated frameworks and policies. To provide incentive for integration, a simple study exemplified that a basic awareness and understanding of MCH can increase the social value of the natural environment (Chapter 7). Further work exemplifying the benefits of protecting the MCH for the sustainable development of the marine environment is essential to emphasise this connectedness, alongside increased capacity building and information sharing between disciplines.

With regards to the representation of MCH value in integrated culture-nature policy and legislation, the results of Chapters 6 and 9 suggest that inserting a fluid value of heritage within the environment in the semantics of both natural and cultural legislation is likely to encourage capacity building and integrated management practice within planning, development and protective policies, as exemplified in the MSP example in Section 10.6.2. Furthermore, as exemplified by the Bulgarian case study; the interdisciplinary definitions which relate to value do not appear to have to be specific, but can remain relatively ambiguous. In this case, such a definition aims to provide room for growth and sustainable development, if monitored and guided by international treaties and agreements.

The findings of this work provide evidence to back the growing academic disillusion associated with the current state of the integrated management of MCH within natural and cultural resource management frameworks such as the MEA (Kirchhoff, 2019). However, to evolve this argument, evidence for the socio-political benefits of MCH within the marine environment are used to incentivise capacity building between disciplines. As such, the findings aim to be relevant to the integrated management of heritage in both international frameworks and regional policies and legislation.

When viewed alongside Research Question 1, it is clear that integration in practice is facilitated by representing the interconnected values of heritage within the environment in base legislation and policy. The methods by which to make these adaptations may be guided by international conventions such as the 2001 Convention, as is exemplified in Bulgaria.

11.3 How can underwater heritage be integrated into existing marine resource management frameworks, and who is responsible for overseeing this process?

The practicality of effectively integrating MCH into existing marine resource frameworks was studied from the international perspective of MSP in Chapter 10. It was determined that the primary issues currently limiting MCH management in MSP partly mirrored the findings of the regional case studies (Chapters 8 and 9), with reference to the translation of MCH value for natural environment practitioners, and a lack of incentive to catalyse the integration of heritage into already functioning systems. Indirectly: issues such as the jurisdictional differences between the protection of MCH and natural marine resources; no singularly recognised methodology for international implementation; and the limited research regarding the integration of intangible cultural heritage were deemed to play a part in the current situation (Chapter 10).

Although current steps for integration are published in the works of Khakzad *et al.*, (2015), it was suggested that a heritage management style 'how to guide' may act to further solidify the philosophical separations between natural and cultural practitioners. Rather, the results of this thesis suggest that conceptual translations of heritage in the marine environment should be explored using the current MSP methodologies to provide interdisciplinary methods for interdisciplinary practice. Furthermore, capacity building between natural and cultural stakeholders would eliminate the need for the 'how to guide' by heritage practitioners, considering it may not be a heritage management-style fix that is needed (Box 11).

Box 11: Research Question 3a) How can underwater heritage be practically integrated into marine resource management frameworks, and b) who is responsible for overseeing this process?

a) Considering the above, a preliminary translation of MCH for MSP was proposed using the Driver/Pressure/State/Welfare (DPSWR) methodology, alongside methods and incentive for integration with the natural marine environment. Furthermore, rationale and methods for capacity building between stakeholders were presented by incorporating the previous points made by Papageorgiou (2018) and Trakadas, (2019) into the recommendations suggested in this study.
b) An argument was made for the 2001 Convention to be the responsible party to oversee this process, considering the incentive of the Decade for Ocean Science (2020-2030) and the SDGs. To facilitate this development, recent recommendations to the Convention were analysed and added to regarding the newly appointed agenda for the IOC-CLT committee, of which integrating heritage into initiatives such as MSP was already recommended.

Further work to translate the gaps and connections between international marine policy and legislation governing the protection and management of heritage and the environment would be useful to overcome the jurisdictional issues of cross-boundary protection for frameworks such as MSP. Considering this work relies on cooperation between cultural and environmental bodies, a map of national and international policy and legislation affecting the protection and management of MCH, and how this overlaps with natural resource policy and legislation could be as a tool to oversee and collaborate in international implementation. A system such as this would likely raise further questions regarding the translation of trans-national and trans-disciplinary definitions, values, and other such methodological tools, which could be integrated into the system over time.

11.4 Conclusions

In both academia and the public and private sectors, understanding the relationships between culture and nature are now more important than ever. Multiple sources suggest that we are at an environmental tipping point, upon which the ocean and its resources are the most at risk. Of the IUCN's 10 most threatened ecosystems, 9 are in intertidal and offshore oceans, wetlands and estuaries, and this is largely a product of over-exploitation and human developments (IUCN, 2018).

This work does not claim that the Marine Cultural Heritage should be prioritised at the same level, or ahead of such environmental issues. What it can conclude, however, alongside the works of Claesson, (2011); Firth (2015); Blue and Breen (2019); Henderson (2019); Papageorgiou (2019); Trakadas *et al*., (2019); the UNESCO IOS Evaluation Office (2019); and Pater (2020), is that MCH is an essential aspect of the sustainable development of the ocean, society, the economy and the environment. This thesis builds upon this platform by presenting novel research regarding the current and future management of MCH. It has been found that the limited integration of MCH within these systems is not a product of institutional prioritisation, or in need of a heritage management how-to guide, as previously speculated in literature. Instead, this thesis has provided evidence for the use of interdisciplinary translations and alternative valuations of MCH which take into account the valuable interconnections between MCH and the marine environment. Methods by which to do so have been exemplified in MSP and in the Culture and Heritage Capital Framework in the UK. Onus has been placed upon the UNESCO's 2001 Convention on the Protection of the Underwater Cultural Heritage to facilitate and monitor this process.

Considering the process of integration is not universal, future work needs to be conducted using the integrated analysis tools of definition, conceptualisation, and valuation, within the methodologies of other ocean frameworks such as ICZM and MPAs, and integrated policies such as Blue Growth and the Blue Economy. Further capacity building needs to be done to communicate incentives for environmental frameworks to move towards more inclusive methodologies. Furthermore, as international integrated ocean policy continues to develop, it is likely that these patterns will be mirrored in regional legislation. It is key that reactionary policies are not layered upon outdated systems. Instead, international integrated management standards need to be developed within the base heritage and environmental policies; standards which are likely to evolve as the popularity of integrated ocean management continues to rise.

This challenge is perhaps the rigid dependence on the norms of existing bodies and protocols. As such, significant work is being conducted to implement the results of this thesis outside of academia. The author is in communications with the UNESCO's 2001 Convention on the Protection of the Underwater Cultural Heritage regarding submitting recommendations to the newly appointed IOC-CLT platform for the integration of MCH into MSP; the EU Commission's Maritime Forum for MSP to determine a translation of MCH within the first stages of the DPSWR Framework; and has submitted proposals to the DCMS's Culture and Heritage Capital Framework to develop an 'integrated indicator' for measuring the interdependencies between natural and heritage capital in the UK.

Overall, the methods regarding how to measure and translate the role of MCH in integrated marine frameworks presented in this work have been designed to be used as tools in the early stages of integration. As the protection of heritage within these systems becomes more effective in practice, these methods will evolve, and new challenges will need to be addressed regarding the role of heritage in the global oceans. The next stages for this research are to further disseminate the results between the natural and cultural resource management fields, to encourage the evolution of the methodologies in practice.

Appendix A The DCMS Culture and Heritage Capital Framework

On Research Topic 6.3: Dealing with overlaps between natural capital and culture and heritage capital

11.5 Executive Summary

The following proposal is relevant to the DCMS Culture and Heritage Capital Framework; **Research Topic 6.3: Dealing with overlaps between natural capital and culture and heritage capital.**

Considering the results of recent findings regarding the integrated values of cultural and natural assets[20], it is proposed that resources with particular natural and cultural/heritage value should be measured and monitored using an integrated methodology which assesses their combined socio-environmental values; rather than attempting to disentangle distinct benefits, as currently suggested.

As such, this proposal suggests the establishment of integrated guidance for measuring the value and accounts of 'overlaps' between natural and cultural/heritage capital. The guidance presented in this proposal are part of the results of a PhD thesis on the integrated management of Marine Cultural Heritage, and have been adapted to fit within the rhetoric of the DCMS's Culture and Heritage Capital Framework for both on and offshore resources.

[20] An advanced search on Web of Science revealed that of the 7,312 papers discussing cultural heritage management, policy, protection or value, 1,176 of these papers were discussing the distinct links between natural and cultural resources. Of these papers, 52% recommended a more integrated approach to managing natural and cultural assets. The remainder were primarily discussing technical examples within the environmental sciences, geosciences, green sustainable science technology, geography and ecology.

11.6 Introduction

Valuing Culture and Heritage Capital: a framework towards informing decision making

Research Topic 6.3: Dealing with overlaps between natural capital and culture and heritage capital

'There are many examples where natural capital and culture and heritage capital come into close proximity and are difficult to separate; parks with monuments, historic houses with gardens and canals with industrial heritage to name a few. *It is important that the value from the culture or heritage asset and natural asset can be valued distinct from each other so that the natural capital and culture and heritage capital avoid double counting across the capital accounts.* Case study examples will be used to attempt to disentangle the benefits of natural capital and culture and heritage capital.'

This brief is wholly in support of the DCMS' work towards using Culture and Heritage Capital to better value, fund, and manage culture and heritage in the UK. Nonetheless, it has come to the attention of various heritage professionals that the current proposal to minimise double-counting between cultural and natural capital is problematic. The use of the word 'double-counting' within research topic 6.3 suggests a distinct separation between the benefits and associated values derived from natural, versus cultural assets. This is in conflict with the current academic consensus regarding the interdisciplinary and integrated natural-cultural values which define society's experience with the environment, and the cultural heritage (see Milton, 1997; Batista *et al.*, 2015; Ferretti and Comino, 2015; Milfont and Schultz, 2016; Enemark *et al*., 2018). The integrated management of cultural and natural assets is growing internationally as a result of this consensus, funded in part by the EU LIFE programme; which explicitly aims to interlink the protection of cultural heritage and the natural environment in practice. The programme has successful examples of such management practices in France, Germany, Greece, and the Republic of Ireland, among others (World Heritage Centre, 2013; European Commission, 2018).
Considering the academic consensus and current international movement towards the integrated management of cultural and natural resources, it is argued that by disregarding the combined value of cultural and natural assets together, we risk under-valuing these assets, rather than over-

valuing. Research into the connections between cultural and natural capital, indicators and values is necessary for the sustainable development of these resources.

The following proposal is part of the results of the author's PhD thesis: *Integrating Marine Cultural Heritage into Marine Resource Management Frameworks*, within which the author undertook significant work into understanding the connections between natural and cultural resources. The author compiled a list of recommendations as to how to define, conceptualise, value and implement integrated natural-cultural marine management frameworks, the results of which are adapted as follows to propose an integrated valuation sub-framework to supplement the current Culture and Heritage Capital methodology.

11.7 Approach

The current methodology outlines of the Culture and Heritage Capital Framework (accessed from https://assets.publishing.service.gov.uk on 17/05/21) have been adapted to account for the overlap between natural and cultural assets, as theorised in Research Question 6.3. Benefits from natural assets have been added as an additional affect to both stock and flows. As value is projected across an asset's life, it is proposed that a combined natural-cultural benefit is added to the asset's net value over time. This would result in the total value of the asset equalling the overall cultural and heritage asset value, plus the integrated natural-cultural value (Figure 20).

In this case, 'Integrated Value' should be added as an additional sub-type of Value to the Individual (Figure 21). Forms of 'Integrated Value' may be seen in other methods of natural and cultural resource management, such as the DPSWR Framework for Social Ecological Accounting (used in the MSP methodology), and within the 'Cultural Services' of the Millennium Ecosystem Assessment. The morals of 'Integrated Value' may be extracted from the UNESCO policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention.

Figure 20: The Culture and Heritage Capital Framework, adapted for overlaps between natural capital, and culture and heritage capital

Developed from D. Throsby and Natural Capital Logic Model (Natural England, 2018)

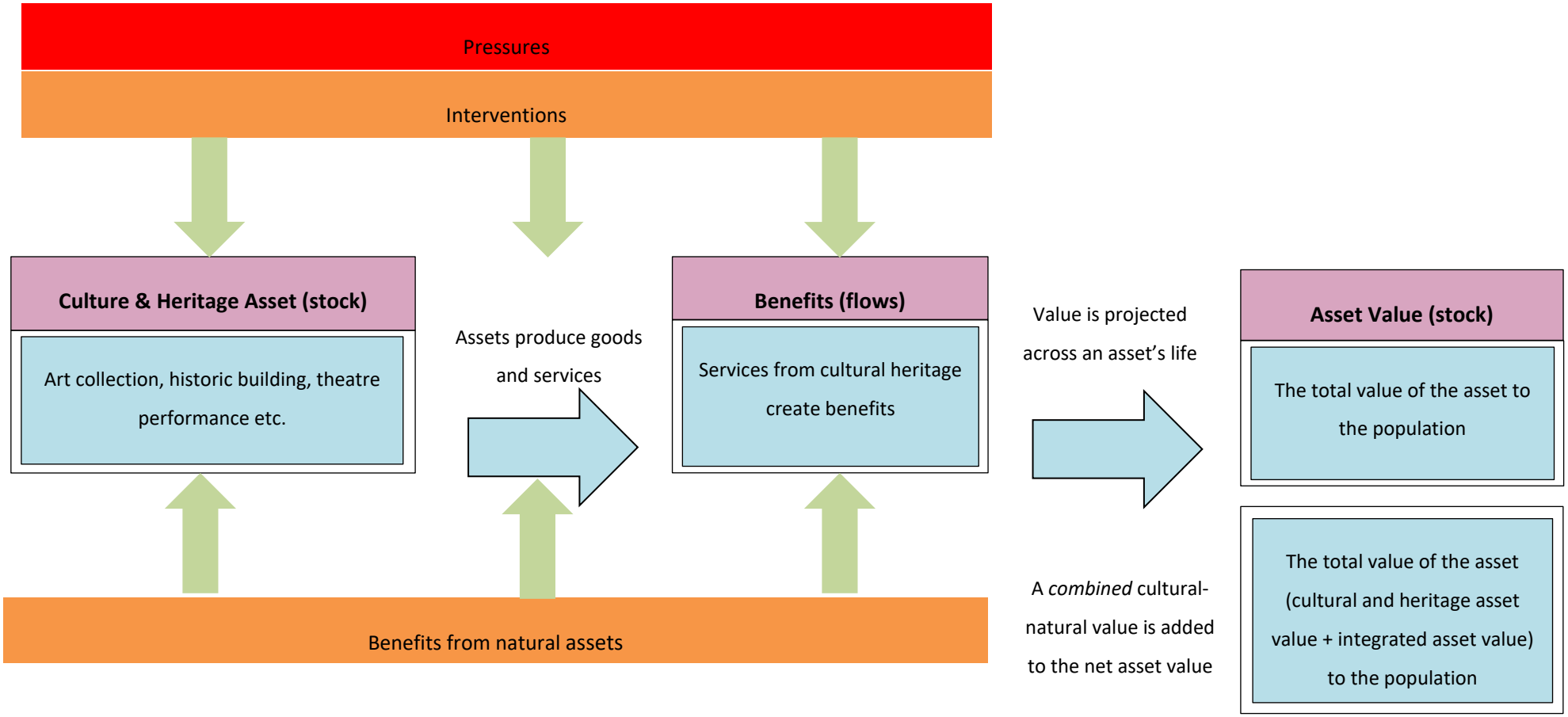
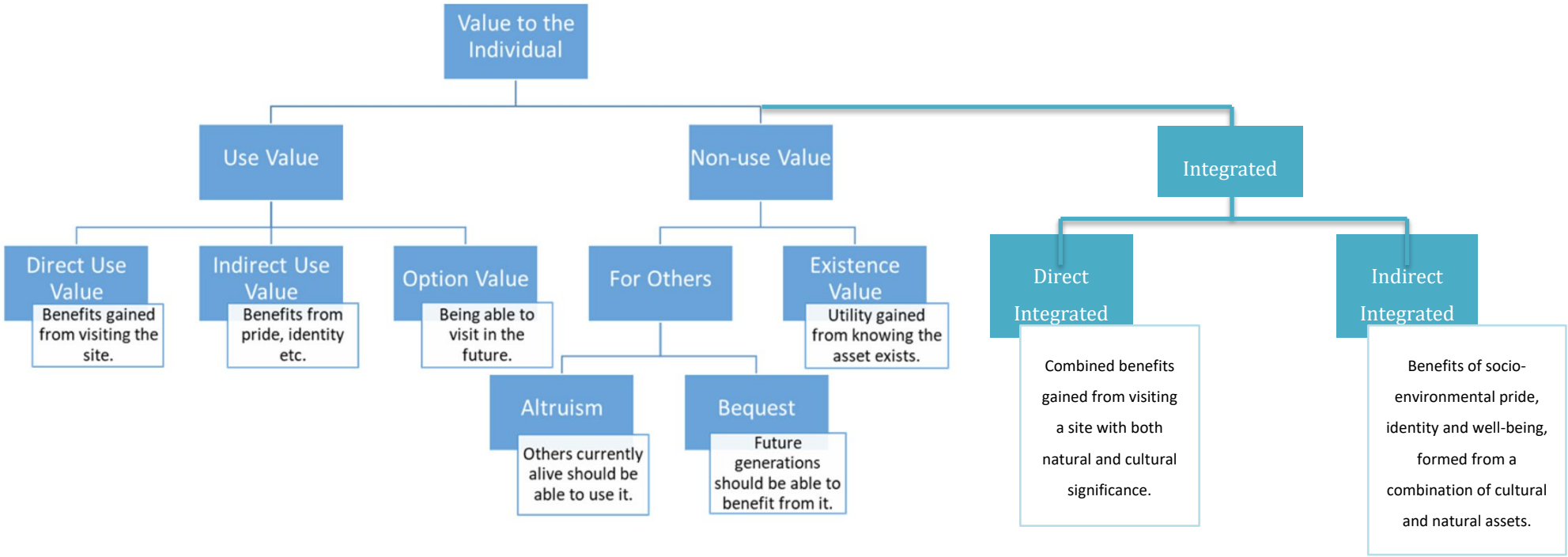


Figure 21: Types of Values for Cultural and Heritage Assets for an individual, adapted to include integrated value



11.8 Recommendations and Next Steps

The above diagrams represent the base outline of accounting for the crossovers between natural and cultural value, in line with the current Culture and Heritage Capital Framework and the international standards for Sustainable Development[21]. **It is suggested that an additional and separate measure of 'Integrated Value' should be taken into account in the early next stages of forecasting monetary value of the cultural and heritage flows, as to avoid undervaluing these assets.**

The next steps towards the addition of this measure should include an assessment and catalogue of integrated services and associated asset values, similar to those used for natural assets in the UN Statistical Commission's recently adopted *System of Environmental-Economic Accounting – Ecosystem Accounting* (SEEA EA) (UN Statistical Commission, 2021). Following this, the overall contribution to the final asset value could be determined proportionately using the established methods already stated in the Culture and Heritage Capital Framework such as Contingent Valuation, Choice Modelling and Hedonic Pricing. The 'double-counting' argument stated in Research Question 6.3 will thus be made redundant by the establishment of a separate 'Integrated Service', which is defined not by re-counting natural and cultural assets and their value, but by defining these assets as an autonomous and theoretically distinct category.

11.9 Suggested Sources

Further reasoning for establishing integrated methods of natural and cultural service valuation can be found in the works of Speed *et al.*, 2012; Hirons *et al.*, 2016; Jacobs *et al.*, 2016; 2018; and Paracchini *et al*., 2018. A context for establishing integrated methodologies, including extended literature reviews, case studies, and methodologies, may be found within the (unpublished) author's thesis.

[21] The Assembly of European Regions (AER) and the European Commission suggests an integrated approach to the SDGs when implementing the recommendations into policy: 'Many SDGs are interconnected with each other; an integrated approach implies managing trade-offs and maximising synergies across targets' (Committee News, AER, 2019) (European Commission, 2019b; United Nations Sustainable Development Group, 2019). Both natural resource and cultural resource conventions and programmes have cited 'integration' between natural and cultural services as a future target for achieving the SDGs by 2030 (The MAB Strategy, 2015-2025, pg. 11; World Heritage Convention's World Heritage and Biodiversity Report, 2020, pg. 13).

11.10 Author Details and Disclaimers

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Appendix B **Semi Structured Interview Questions used in Chapters 8 and 9: Integrated Marine Management in the UK and Bulgaria**

The following questions will form the basis of the discussion for interviews. A semi-structured approach has been chosen to provide the most flexibility for the participants within the process, and will allow the participant to influence the conversation depending on their breadth of knowledge. Before undertaking the interview, the participant will have read the participant form and signed the consent form. There will be a brief period of a few minutes before recording to welcome the participant and set up the interview process.

Interview Structure:

Q1: (If consent has been acquired) Please repeat your name, position and a brief summary of your experiences within the heritage industry/ heritage management

Q2: There are a couple of topics I would like to discuss with you today, of which you have seen an outline of in the participant information sheet. Firstly, I would like to discuss the role of (insert here depending on role) in the management of Marine Cultural Heritage in the UK/Black Sea.

Q3: In your opinion, what are the benefits and negatives of the UK/Black Sea's methods for managing MCH?

Q4: Do you believe these methods could be improved, how?

Q4: Within your role, is there much communication with natural marine resource managers, and by this I am primarily referring to the natural environment; and if so, do you have any positive or negative examples of this

Q5: Do you believe communication with natural resource managers, and integration with the natural environment is necessary for the successful protection of MCH?

Q6: Do you have any experience with integrated resource management frameworks such as MSP or ICZM in the UK or otherwise? If so, do you have any positive or negative examples of this in practice?

Q7: Do you believe MCH is sufficiently integrated within these systems, and why?
Q8: Do you believe it is necessary for MCH to be integrated within these systems in the UK, and why? What benefits would it achieve? Would it be complicated/achievable?

Thank you so much for your time and interest in this work. If you would like a copy of the transcript and the final report please let me know at G.Holly@soton.ac.uk I will be happy to forward it to you.

Post interview, the audio recording will be stopped and the participant will be thanked and any final questions or discussions will be answered.

Appendix C **Managing the UK's Underwater Heritage: a Survey for Scuba Divers**

1. Please check 'Yes' below to indicate that you have read and understood the information provided, are aged 18 or over and agree to take part in this survey.
   - Yes
   - No
2. Where are you based in the UK?
   - England
   - Scotland
   - Wales
   - Northern Ireland
3. How often do you dive in the UK?
   - Weekly
   - Monthly
   - Seasonally
   - Yearly
4. How often do you visit Marine Cultural Heritage sites such as shipwrecks?
   - Often
   - Rarely
   - Never
5. If you answered 'never', are you interested in diving on a cultural heritage site?

   -Yes

   - No
6. If you have dived on a heritage site, what are you interested in most? Tick all that apply
   - The challenge of the dive
   - The history of the site
   - The archaeology
   - The objects around a site
   - The natural environment around the site

- All of the above
- Other

7. Are you aware of any rules relating to diving on historic sites in the UK?
   - Yes
   - No
8. If you answered 'yes', can you briefly describe these rules in the box below?
9. Do you think there should be any rules relating to diving on heritage sites in the UK?
   - Yes
   - No
10. Can you briefly elaborate on your answer to the above question in the box below?
    - Free text
11. Have you ever raised artefacts (anything historic) from the seabed/seen others raise artefacts in the UK?
    - Free text
12. If you have raised, or seen something raised from a site, what was it?
    - Free text
13. Did you/they report it to the Receiver of Wreck?
    - Yes
    - No
    - I don’t know
14. Do you believe MCH is managed effectively by the UK?
    - Yes
    - No
15. Please provide details as to why you feel this way in the box below.
    - Free text

Appendix D **Quiz for Scuba Divers**

16. Where are you based in the UK?
    - England
    - Scotland
    - Wales
    - Northern Ireland
17. Are all shipwrecks protected in the UK?
    - Yes
    - No
18. I can dive on any shipwreck I want without the need for a permit.
    - True
    - False
19. I am able to raise and keep any artefact I want from non-protected underwater heritage sites
    - True
    - False
20. How many shipwrecks (according to the Historic England Archive) are we likely to have in UK territorial waters?
    - 40
    - 400
    - 4000
    - 40,000
21. How many of these shipwrecks are currently protected by the Protection of Wrecks Act (1973) in the UK?
    - 6
    - 62
    - 673
    - 6320

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