MASTER IN MANAGEMENT OF TOURISM DESTINATIONS

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Sustainable tourism development in Iceland: A critical analysis of coastal and maritime tourism practices in one of Europe's most unique destinations under the aspects of Blue Tourism

FINAL MASTER PROJECT

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List of Abbreviations

CMT – Coastal and Maritime Tourism
EEA – European Economic Area
EU – European Union
ICT – Information and Communications Technology
IMD – International Institute for Management Development
IUCN – International Union for Conservation of Nature
OECD – Organisation for Economic Co-operation and Development
SAF – Icelandic Travel Industry Association
SDGs – Sustainable Development Goals
UN – United Nations
UNFCCC – United Nations Framework Convention on Climate Change
UNWTO – United Nations World Tourism Organisation

Abstract

Iceland has been one of the fastest-growing tourism markets in the last decades. With tourist arrivals quadrupling in the last 20 years, the tourism industry has become one of Iceland's most important economic sectors. With its special geographical location and distinct environment, it established itself as a unique tourism destination worldwide. Due to its nature and location, Iceland's tourism industry consists primarily of water-related tourism, with coastal and maritime tourism as a central sector. Coastal and maritime tourism (CMT) is one of the most important tourism industry sectors. With increasing human activity, rising temperatures, and sea levels due to climate change, the ocean and coastal environments are at risk. This could have fatal consequences for marine ecosystems, humans who live in coastal areas, and the CMT-related industry. This research paper aims to critically analyse the coastal and maritime tourism practises in Iceland and whether they present a risk for the ocean's ecosystem under the aspects of Blue Tourism plans and selected Sustainable Development Goals (SDGs). The main research question is subcategorised into three objectives. The first step is to analyse the tourism industry in Iceland to identify the main themes of the country's tourism sector that are connected to coastal and maritime tourism. The identified themes will then be analysed towards their sustainability and environmental impacts. The third aspect of the research compares the existing structures and their impacts on the Blue Tourism agenda. Finally, suggestions will be made for further studies and recommendations on sustainably developing Iceland's tourism sector. The research has shown that CMT and other touristic activities in Iceland can present a risk to the environment in the future. The main reasons for this are the increased touristic activity due to rising visitor numbers and increased pressure on natural sites and wildlife. Furthermore, increased cruise ship activity can accelerate pollution in the oceans and ports. However, Iceland's government, important stakeholders and the general public are sensitive to environmental issues and are planning initiatives and plans for the future to improve sustainable development. With the newest technologies and infrastructure and green energy generation, Iceland is overall on a positive path towards tackling environmental issues and maintaining a healthy ocean environment as an essential part of the Blue Economy.

Keywords: Coastal and Maritime Tourism, Sustainable Tourism Development, Blue Economy, Iceland

Chapter 1: Introduction

1.1 Research Question

Do current CMT activities in Iceland present a risk for the environment in the future under aspects of Blue Tourism?

1.2 Research Objectives:

1. To analyse the coastal and maritime tourism environment and structures in Iceland
2. To analyse the environmental impact of tourism activities in Iceland
3. To compare the existing structures and practices with the guidelines and policies of the blue tourism agenda.

1.3 Introduction:

Bodies of water and coastal areas have been particularly important for human civilisation throughout history. From the earliest settlements to big cities nowadays, humans have chosen places with proximity to water for constructing and growing communities and societies. Water has been used as an essential resource for food, a crucial way of transportation, as well as a vital factor for religion, spirituality, and leisure activities. With a constantly increasing number of leisure travelling in the last decades, coastal areas have been of special focus for the tourism industry. With more than 70% of the earth's surface covered with seas and oceans, the importance and potential of these ecosystems are immense.

Coastal and maritime tourism (CMT) is one of the most important sectors in the tourism industry. As an essential part of leisure tourism, it contributes a considerable part to the industry and is one of the main motivations for travelling. With 3.2 million people employed in this sector in the EU and €183 billion in gross value added to the European economy, it represents the biggest maritime economy sector. The Mediterranean Sea, with beach destinations and coastal areas like the Costa Dorada, the Côte d'Azur or Greek islands like Crete or Mykonos, are examples of successful beach destinations. CMT activities include swimming, snorkelling or boat cruises. Supporting parts of the industry are land-based infrastructure like marinas, sea-side resorts or restaurants along the coastlines.

However, with rising temperatures and sea levels due to climate change and increasing human

activities, many sensitive maritime ecosystems are facing severe problems in the future. These consequences could be fatal for the ocean environment and the humans living in the coastal areas. Researchers have analysed coastal and maritime tourism structures in the last decades towards their sustainability and environmental impact. Many destinations that are located at the coast have to adapt to the changing conditions, thinking about new sustainable ways of offering their touristic portfolio.

Iceland is an island state in Northern Europe between the Artic and North Atlantic oceans. The country has been of rising interest to tourists in recent years, with tourism numbers quadrupling in the last two decades. The tourism industry is one of the most important economic sectors nowadays. Because of its unique geographical location and special geology, the island is sensitive to climate changes and its consequences due to its proximity to the Arctic Circle, where polar caps are melting fast, which could lead to devastating consequences for weather conditions and ecosystems. Most of the touristic activities in Iceland are related to CMT; almost all relate directly to water in a specific form. Therefore, it is crucial to analyse the structures and practices of touristic activities in said country in order to understand the socio-cultural, environmental and economic impacts of the tourism industry and possible consequences for the future.

Over the last decade, global institutions and organisations recognised the importance of a healthy coastal environment and oceans and developed the concept of so-called *Blue Tourism.*

This paper aims to analyse the sustainable tourism development of Iceland as a tourism destination and to demonstrate if the current CMT activities present a future risk for the environment under the Blue Tourism concept.

Chapter 2: Literature Review

2.1 Introduction:

The following part of the paper concentrates on reviewing the most important literature regarding the topics discussed in this paper. It is meant to explain keywords and topics CMT, blue tourism, sustainable tourism development and the geographical region covered in the research.

2.2 Iceland:

Iceland is located between the Northern Atlantic Ocean and the Arctic Ocean, one of the most northern states in the world, just outside the Arctic circle. Of the estimated 374.000 inhabitants, 131.000, around 1/3 of the population, live in the capital Reykjavik, making Iceland the most sparsely country in Europe (Statistics Iceland, 2021).

One of the reasons for its sparse population is the island state's natural environment. 80% of the island is an unpopulated area of wild nature. Glaciers, volcanoes, mountainous plateaux and lowlands make up the landscape on the island. Iceland has some of the most active volcanoes in the world and the biggest glacier in Europe. Combined with its remote location between Greenland and Norway, it represents a unique geographical destination globally (Promote Iceland).

Image 1: *Map of Iceland*

Iceland's development into a popular tourist destination started after the financial crisis and the eruption of the volcano Eyjafjallajökull. Before this time, the country was relatively unknown as a tourist destination for the wider public. Although tourist arrival numbers have been growing since the 1990s, the growth was relatively small, with an increase from 200.000 annual visitors to around 500.000 in 2008. At this time, visitor numbers have already surpassed the population (Figure 1). However, after the financial crisis and the volcano eruption, Iceland's tourism numbers started to grow exponentially in 2011. With growth rates between 20-40%, Iceland welcomed up to 2.000.000 visitors in 2018, from around 500.000 in 2011 (Ferdamalastofa, 2021). As the global tourism industry was hit hard by the COVID-19 pandemic, Iceland's tourism industry also registered high loses in 2020. From around 2.000.000 visitors in 2019, the number of foreign tourists fell to under 500.000 in the pandemic year 2020.

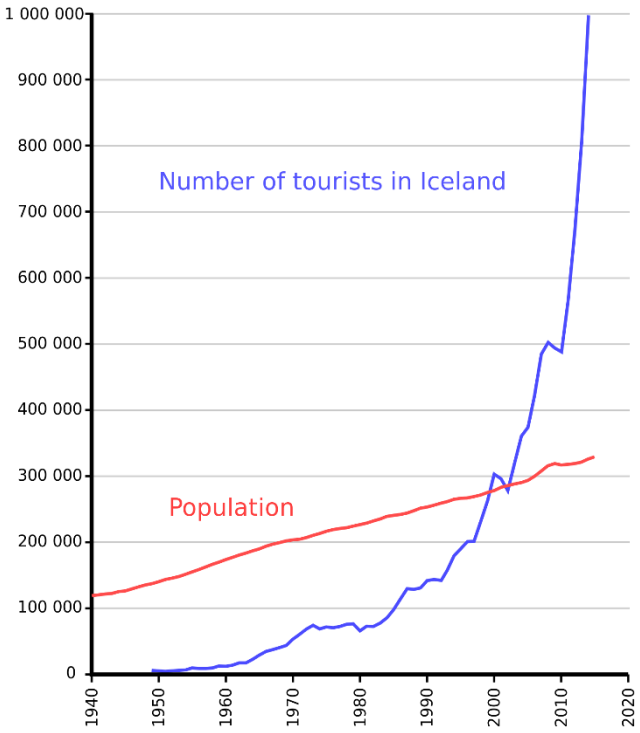

Figure 1: Number of tourists in Iceland and population

Nonetheless, the tourism industry's recovery is expected to be strong and quick, with an expected number of foreign tourists of around 1.500.000 in 2022. Although there are uncertainties like new variants of the COVID-19 pandemic and the war in Ukraine, the numbers are expected to grow to over 2.000.000 in 2024 (Íslandsbanki Research, 2022). Figure 1 visualises the development of tourism numbers from previous years and the forecast for upcoming years. The GDP of Iceland decreased by 7,1% in 2020 from the previous year.

However, according to a report from Íslandsbanki Research (2022), the economy and GDP are recovering strongly in 2021, with GDP growth of 4,3%. Forecasts for 2022 expect further growth to 5,0% from the previous year, as visualised in figure 2. The statistics underline the importance of the tourism industry to the Icelandic economy.

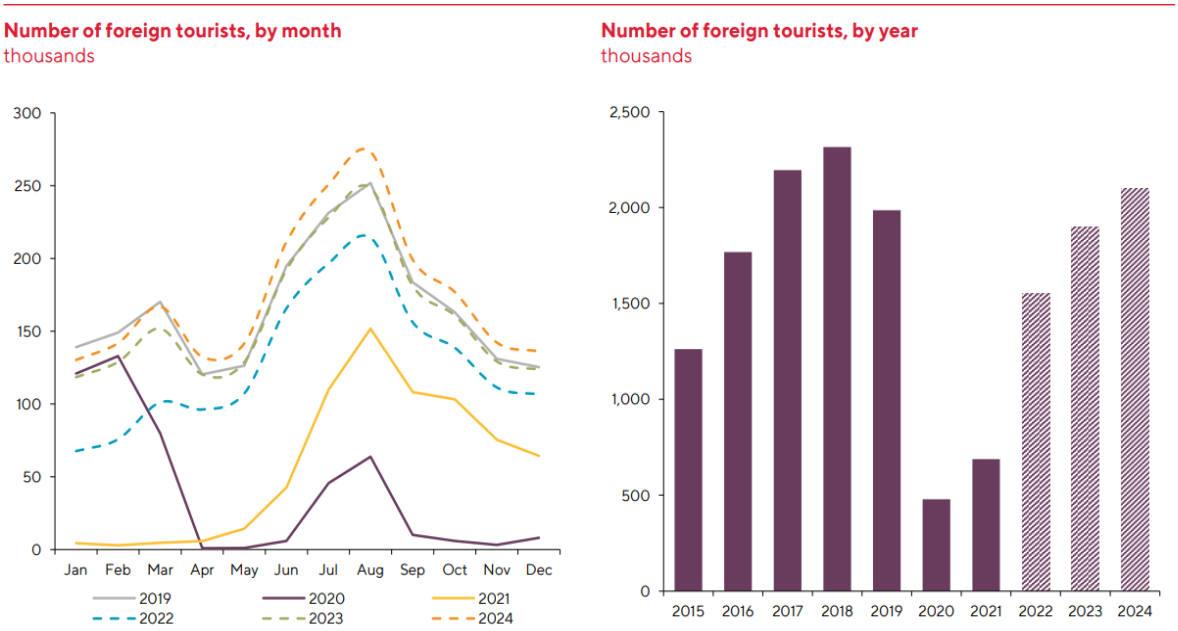

Figure 2: *Number of foreign tourists by month and year (Íslandsbanki Research, 2022)*

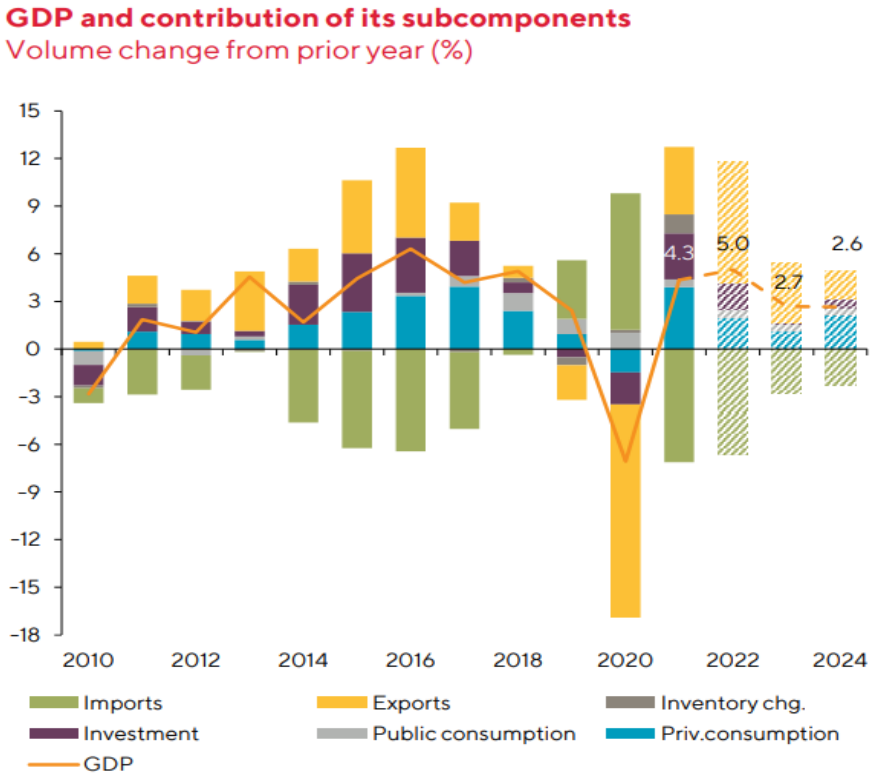

Figure 3: *GDP and contribution of its subcomponents in Iceland (Íslandsbanki Research, 2022)*

In terms of overnight stays, similar trends are visible. Figure 3 shows the overnight stays from 2019-2022. The month of July presents the highest number of overnight stays, with 1.3 million in 2019, around 800.000 in July 2020 and 1.1 million in July 2021. It is worth mentioning that in July 2020, Icelanders make up the most significant part of overnight stays. This shows the effects of the pandemic, where international travel was mainly impossible. The graph also shows the strong recovery of the tourism industry in Iceland, where overnight stays in July 2022 almost show the same numbers as in July 2019. Furthermore, the statistics show the seasonality of tourism in Iceland, with the summer months, especially July, as the leading travel months (Statistics Iceland, 2022).

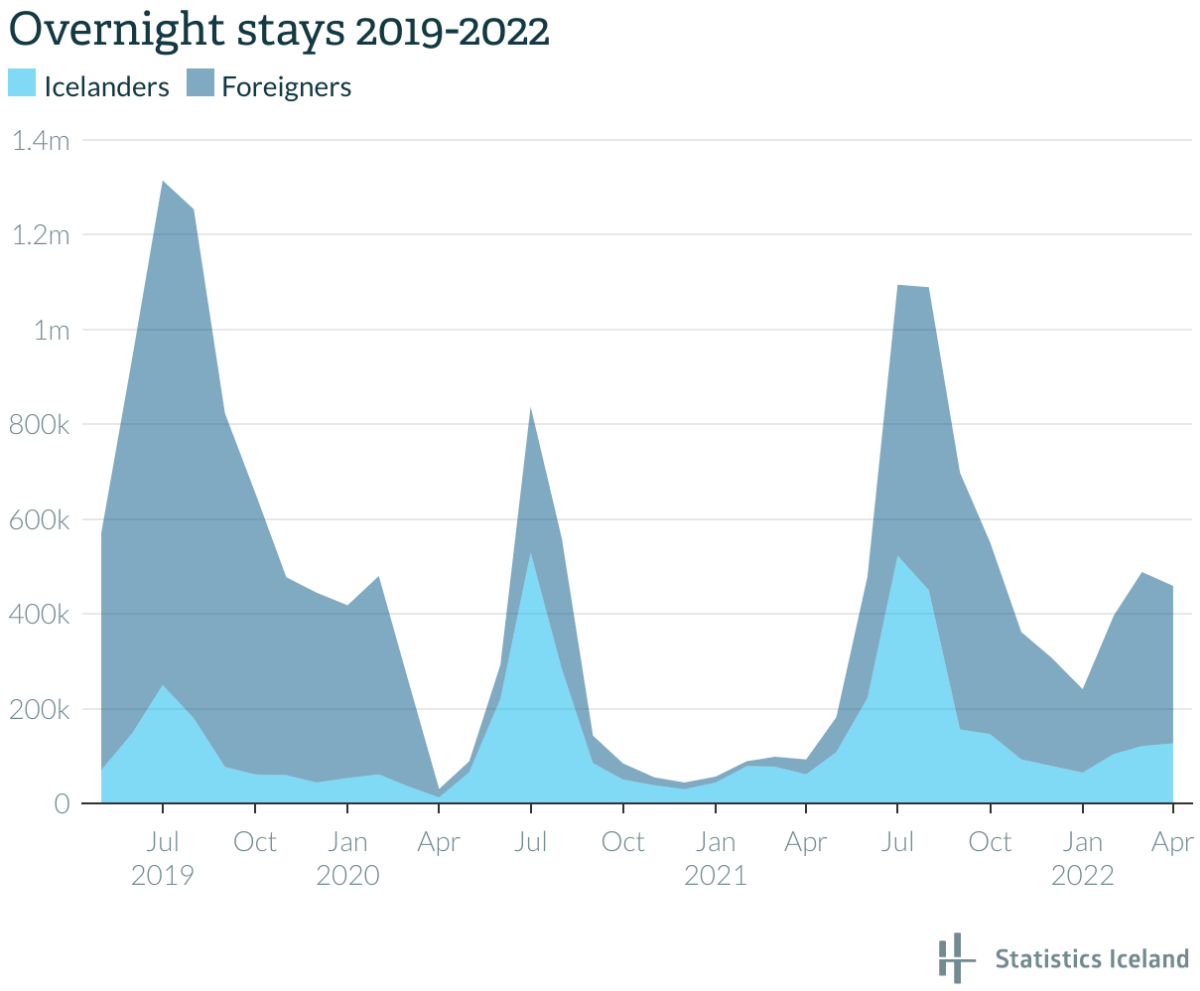

Figure 4: *Overnight stays 2019-2022 (Statistics Iceland, 2022)*

2.3 Coastal and maritime tourism:

The following section is meant to review the term CMT and establish the proper definition in the context of this paper.

Throughout history, coastal environments have been essential for human civilisation. On the one hand, the sea and its environment deliver a vital food source for communities and settlements. On the other hand, coastal areas have always been used for recreational activities (Orams and Lück, 2014).

Due to the increased activities around shores and coasts and climate change, coastal regions are identified as areas with a higher vulnerability (Moreno & Amelung, 2009).

One of the first researchers who identified CMT as a crucial tourism industry sector was Miller (1993). In his research, he highlights the importance of the ocean economy in the context of tourism and the different dimensions of how tourism can be perceived. Furthermore, he points out the environmental impact of touristic activities and the role and necessity of governmental and institutional policies to protect the natural marine environment.

The term CMT refers to all touristic activities at or close to coastal areas and the sea. Different authors and organisations have had several definitions in the last two decades.

Orams (1999) defined maritime tourism as travel away from someone's place of living towards a coastal environment with leisure-related activities.

Even though the term CMT is often used in a collaborative setting, there are differences between coastal tourism and maritime tourism. While coastal tourism mainly refers to coast-related activities, infrastructure and development around coastal waters, maritime tourism also includes activities that happen farther out on the ocean, like yacht cruising or deep-sea fishing (Hall, 2001). Activities more linked to the shore, like swimming, snorkelling, diving or coast-based ecotourism, as well as the general infrastructure such as accommodation, restaurants and suppliers, and marinas, are closely related to coastal tourism. In general, it is crucial to keep in mind that there is a close connection between the ocean and coast-related touristic activities as they are often combined and used as transport or supply chains (Hall, 2001). Therefore, combining the two areas under one common term is possible to highlight their interconnectivity.

Image 2: *Scuba Divers in Cozumel, Mexico, swimming through a coral cave*

Furthermore, it is essential to point out that due to the fast technological progress, the ocean has become more accessible in the last decades. This applies to an improved infrastructure around the coasts as well as means of transport and recreation in the offshore waters.

Beach tourism with activities like swimming and snorkelling makes up the most significant segment of CMT. In Europe coastal destinations of the Mediterranean like Costa Dorada, Côte d'Azur or Greek islands like Crete or Mykonos attract millions of visitors each year (Visit Salou, 2019; Touriscope Côte d'Azur, 2020; Statista, 2021).

Image 3**:** *Baie des Fourmis, Beaulieu-sur-Mer, Provence-Alpes-Côte d'Azur, France*

In terms of economics, CMT presents an important sector in the tourism industry, the ocean economy. According to eco-union (2019), CMT is expected to become the largest ocean economy sector, with a total share of the ocean industry of 26% by 2030 (OECD, 2016). Figure 5 shows the expected value added to the ocean economy in 2030 in the business-as-usual scenario.

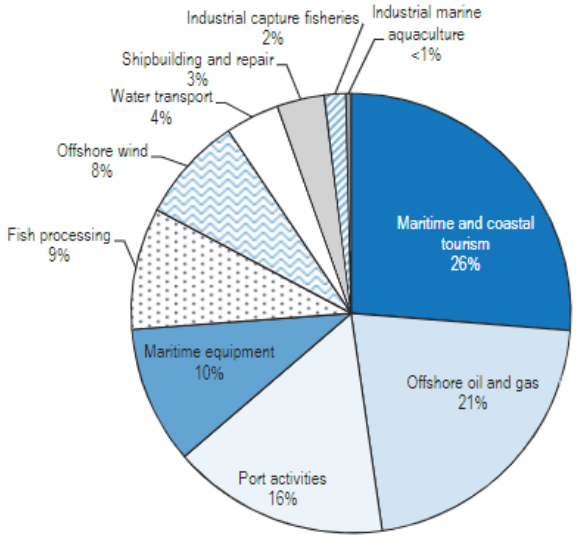

Figure 5: *Expected value added of the ocean economy in 2030 in the business-as-usual scenario*

Furthermore, it is expected to employ around 8.5 million people by 2030. In 2013 Europe CMT employed approximately 3.2 million people and added €183 billion in gross value to the European economy (European Commission, 2014). Newer numbers from the EU state that the added gross value pf CMT, the largest sector of the blue economy, increased by 20,6% compared to 2009 and maritime transport and port activities increased by 12% and 14,5% (European Commission, 2021). Over 350 million people travel to coral reefs yearly, creating an estimated value of $36 billion worldwide. In Europe, 47% of all nights in accommodations are spent in coastal areas, although coastal municipalities only make up 15% of the land area of the European Union (ESPON, 2020).

Due to its growing economic importance and high vulnerability regarding climate change, the EU has acknowledged CMT as a significant sector for sustainable development in the EU Blue Growth Agenda (ECORYS, 2018) and the EU Blue Economy studies (European Commission, 2019). Furthermore, CMT is a central aspect of the Blue Tourism agenda that was first introduced in 2019 by researchers of eco-union.

2.4 Blue Economy, Blue Growth Agenda and Blue Tourism:

The *Blue Economy* describes the sustainable use of the sea and the economic sector tied to oceans and coasts. In recent years, several researchers, organisations and institutions have recognised the importance of healthy oceans and the vulnerability of said ecosystems. World Bank (2017) acknowledged that the ocean is not just an important food source that provides the likelihood and decent work for many humans. It also plays a crucial role in trading and shipping as an essential connection for global supply chains. Therefore, the concept of a blue economy aims to use this vital ecosystem as sustainable as possible to guarantee environmental health and provide economic growth and improvement of likelihood. Furthermore, less developed countries and small island developing states are at a bigger risk when the ocean's ecosystems are being destroyed. World Bank states further that climate change and its consequences will, directly and indirectly, impact the economic sectors dependent on the sea, whether this might be tourism, transport or fishing. The European Commission publishes a yearly report on the EU's blue economy plans. According to the latest publication, a sustainable blue economy is described as a valuable mean to benefit from the ocean's resources while maintaining the longevity of the vulnerable ecosystems for the future (European Commission, 2021). The report further differentiates between two kinds of activities included in the EU's blue economy definition.

One the one hand, there are *marine-based activities* that include all activities that are directly undertaken in the ocean or at the coast. CMT is listed as a part of this section, next to transport and renewable energies. On the other hand, there are *marine-related activities.* Such activities use products and services from the ocean, like port activities and seafood processing. Some further articles and reports define the term blue economy (Middlebury Institute of International Studies) that show close similarities to the definitions of World Bank and the EU. Lee et al. (2020) define a blue economy's optimal state as an equilibrium when economic activity is balanced with the ocean ecosystems' long-term ability to maintain the activity. Further, it is important to acknowledge that there is an existing tension between the preservation of the ocean's resources and general economic growth and development. In addition, Lee et al. create a link between the blue economy and the UN's sustainable development goals (SDGs) and point out the importance of stakeholder involvement to maintain healthy ocean ecosystems and realise the SDGs in the long term.

The European Union declared the importance of a healthy blue economy as part of the *European Green Deal*, which holds the plans for a sustainable future in Europe. The EU states in their report (2021) that the blue economy in Europe is responsible for 4,5 million direct jobs, which include industries in the offshore marine environment such as fishing or energy generation but also land-based industries and sectors like ports or CMT (European Commission, 2019).

In 2012 the European Union published a paper that discusses the plans for sustainable policies and economic growth related to oceans and seas in Europe. The EU recognised the importance of healthy ocean ecosystems for the future in all aspects of sustainability. The agenda aims to analyse the intactness of ocean ecosystems, develop plans for cities and settlements along coastlines and establish plans and suggestions for the future while considering all the ocean and coast-related activities and their impacts on the economy and the environment. The EU states that oceans are an important economic driver for the whole union, a foundation of livelihood and an essential player in tackling problems of climate change and social inequalities not just in Europe but around the world. With the plans for Blue Growth, the EU plans to develop a healthy, attractive and competitive environment in the future (ECORYS, 2018).

Blue Tourism is a long-term research project developed by researchers of the eco-union. The first report was published in 2019 and explained the primary agenda of the project. In perspective to the blue economy, blue tourism focuses on the planning and management of sustainable tourism development around coastal areas. Eco-union recognises the importance of CMT as a major economic sector for nations with access to attractive coastlines. The main objective of the research project is to analyse the impacts of CMT on the natural, socio-cultural and economic environment in order to develop strategies for sustainable tourism development and environmental planning (eco-union, 2019).

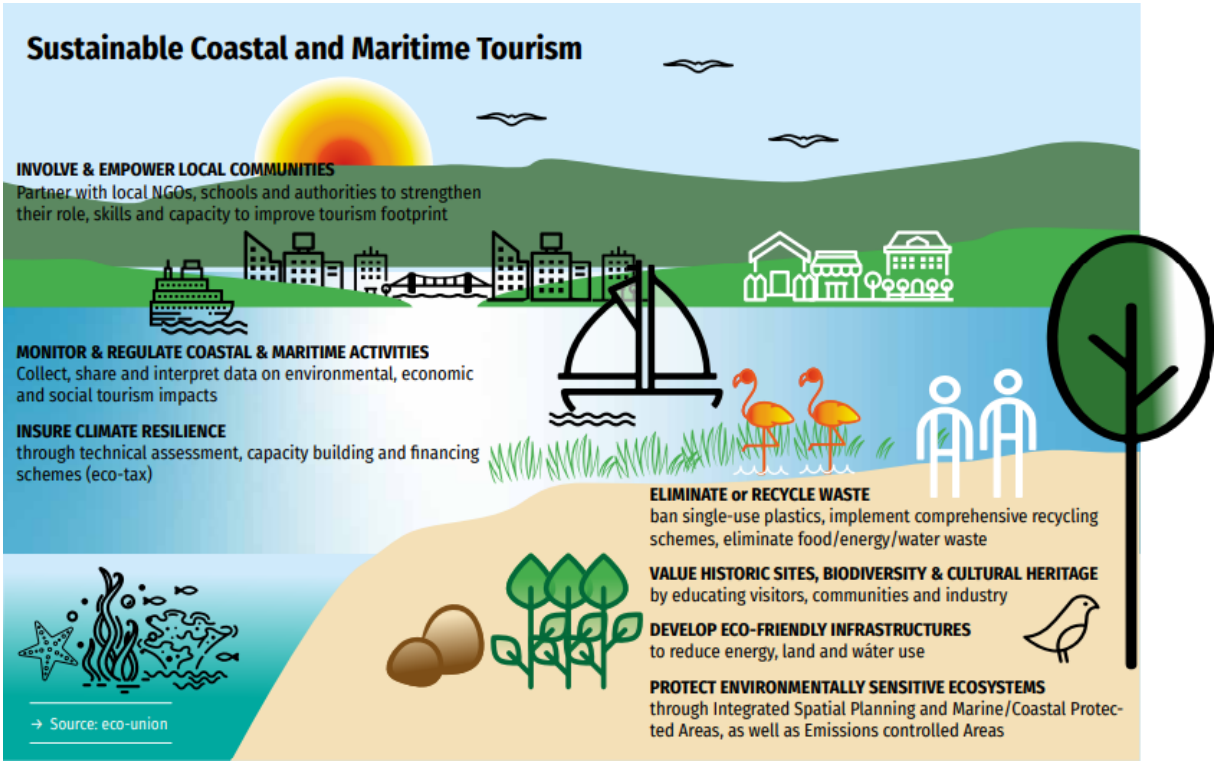

Figure 6: *Sustainable Coastal and Maritime Tourism (Eco-union, 2017).*

2.5 Sustainable Development:

Forty years ago, the ICUN mandate first spoke about what could be called the first ideas of sustainability (IUCN, 2006). Since then, the term has been widely discussed in literature and politics. One of the first definitions comes from the book 'Our common future' by Brundtland (1987), who describes the term sustainable as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.
Sustainability is, therefore, a way to maintain the status quo that uses the resources of our time responsibly, to ensure that future generations have the same opportunities and resources in a long-term process.

The terms sustainability and sustainable development are closely linked to each other. Shaker (2015) describes it as 'sustainability should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while sustainable development refers to the holistic approach and temporal processes that lead us to the endpoint of sustainability'.

The definition has been expanded since then and is nowadays commonly split up into three different sections: Economic sustainability, social sustainability, and environmental sustainability.

During the Rio declaration on environment and development in 1992, the United Nations (UN) and more than 178 countries adopted Agenda 21, which defined sustainable development principles which have been expanded in the following years. Another essential progress for sustainable development is the Kyoto protocol (1997). It is a protocol of the United Nations Framework Convention on Climate Change (UNFCCC). The aim is to fight global warming by stabilising the greenhouse gas concentrations in the atmosphere.

In 2015 the UN declared the 2030 Agenda for Sustainable Development, in which 154 heads of state or government developed 17 Sustainable Development Goals (SDGs):

1. End poverty in all forms.
2. End hunger, provide better nutrition and promote sustainable agriculture
3. Healthy lives and well-being for everyone
4. Ensure quality education and lifelong learning opportunities
5. Achieve gender equality
6. Clean water availability and sustainable water management
7. Access to clean, sustainable energy
8. Sustainable economic growth and employment, and decent work
9. Innovation and sustainable infrastructure
10. Reduce inequality within and among countries
11. Safe and sustainable cities
12. Sustainable and responsible consumption and production
13. Action to combat climate change
14. Conservation of the oceans, sustainable use of marine resources
15. Sustainable use of terrestrial ecosystems
16. Peace, justice and strong institutions
17. Global partnerships to strengthen sustainable development

(UN, 2015)

***Figure 7**: Sustainable Development Goals and Tourism (UNWTO)*

Chapter 3: Theoretical Framework

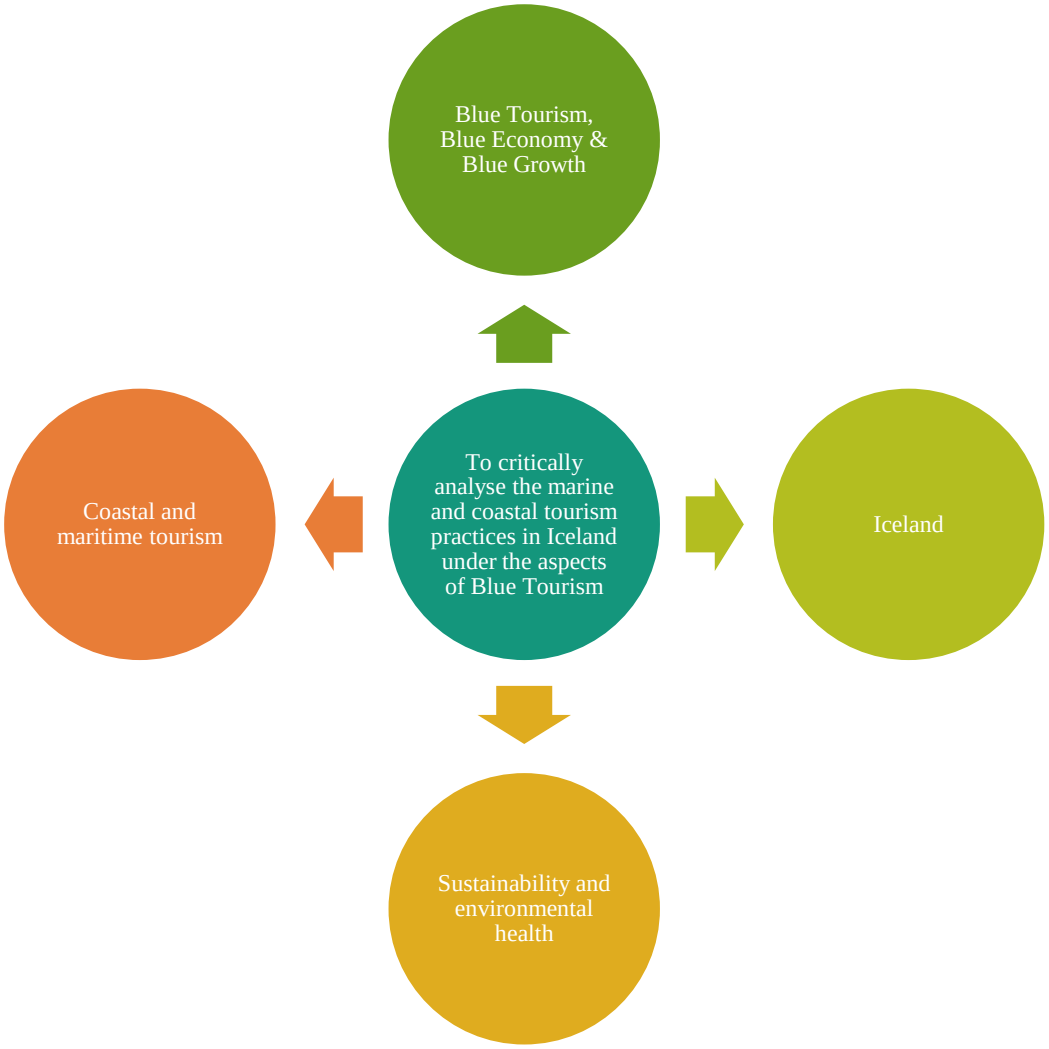

***Figure 8**: Theoretical framework*

3.1 Gaps in studies:

Coastal and maritime tourism has been a widely discussed topic in tourism research for many years. General definitions of both coastal and maritime tourism have been published, creating meanings for both terms that are often related in a similar context (Orams, 1999; Hall, 2001; Orams and Lück, 2014). In addition to general definitions and analyses of coastal and maritime practices and destinations, there has been an increasing number of studies and articles published

about the environmental impacts of these specific sectors (Davenport, 2006; Weatherdon et al., 2016).

Tourism researchers have analysed tourism in Northern Europe in recent years, with a rising interest in Nordic countries like Iceland, where tourism has become one of the most important economic sectors (Granquist & Nilsson, 2013; Holmgren & Lindkvist, 2016).
In recent years there has been an increase in studies regarding sustainable development and environmental impacts of tourism in Iceland (Owili, 2003; Martin, 2012; Strand et al., 2015; Durovich, 2018; Helgadóttir et al., 2019).
However, there is a lack of studies that connect the importance of water and coastal and maritime tourism with environmental issues and potential benefits in this geographic area. This paper aims to connect the aspects of Iceland's coastal and maritime tourism practices and their impacts on the environment under the aspects of the Blue Economy concept.

3.2 Coastal and maritime tourism:

Hall's (2001) definition of CMT is the most popular and cited definition in tourism research. In his works, he combines the aspects of coast-related tourism activities and marine tourism activities under the aspect of both being closely related to and dependent on each other. He considers all the infrastructure and activities related to tourism in his definition ranging from land-based infrastructure like marinas and ports, coastal tourism development like resorts and hotels and touristic activities at the coast or in offshore waters. Because of his general definition, which includes all the different parts belonging to the tourism sector, his definition is the most adequate and valuable for the purpose of this paper.

3.3 Blue Tourism, Blue Economy and Blue Growth:

In recent years, there has been an increasing awareness about the importance of intact and healthy oceans. Several researchers, organisations and institutions have recognised that the vulnerable ecosystems of the sea play a vital role in sustaining the planet's health and tackling problems of poverty and social inequalities. As one of the central pillars of the ocean economy, CMT plays an important role in sustainable development. For this reason, researchers have introduced the blue tourism initiative that sets out to analyse CMT's environmental impacts and evaluate sustainable solutions for the future. Because of its relevance, the report also applies to the CMT-related industry in Iceland. While analysing the nation's sustainable development, the blue tourism initiative will be used as an important guideline. The blue economy, as described earlier, is an important concept that sets out to use the ocean's ecosystems and resource capacity

sustainably for the future while maintaining economic growth. The EU blue economy report gives some important economic insights and data that show the significance of ocean ecosystems and the role of CMT. While no international laws must be applied to a country, these guidelines and reports are important as a direction toward a more sustainable world economy. Although Iceland is not a direct member of the EU, it is heavily integrated into EU policies due to being a member of the agreement of the European Economic Area (EEA) and the Schengen Agreement. It is, therefore, useful to apply some of the guidelines for the purpose of this paper since there is a close relationship between Iceland and other European countries in terms of trading, transport and tourism.

3.4 Sustainable Tourism Development:

As reviewed earlier in this paper, the UN SDGs include 17 long-term goals to create a sustainable global economy and society while protecting the environment and maintaining the earth's resources for the future. While all of the SDGs are important for sustainable development, for the purpose of this paper, only SDG 9 *Industry, innovation and infrastructure*, SDG 12 *Responsible consumption and production*, SDG 14 *Life below water*, and SDG 17 *Partnerships for the goals* will be of particular importance in this research.

3.4.1 SDG 9 – Industry, innovation and infrastructure:

SDG 9 – Industry, innovation and infrastructure sets out to reach a sustainable and inclusive industry around the globe. The goal is to build a resilient infrastructure that benefits all regions and nations. For the purpose of this paper, it is important to include it because the Icelandic economy is centred around sustainable water usage, whether in energy generation, fishing or tourism. The general infrastructure and technological innovation for sustainable usage and preservation of the ocean's resources are vital for an island state like Iceland.

3.4.2 SDG 12 – Responsible consumption and production:

One of the most significant issues when discussing sustainable development is sustainable consumption and production. Unsustainable consumption and production are one of the leading causes of climate change, pollution, and biodiversity loss. The responsible usage of the earth's resources is a central concern of SDG 12. With an increasing reliance on natural resources and continuous economic and societal growth, sustainable production patterns are crucial for reaching the UN's goals. For the purpose of this paper, this SDG is of high importance because

Iceland is heavily dependent on its natural resources and intact ecosystems, not just for the tourism industry but also as a vital source of energy and food.

3.4.3 SDG 14 – Life below water:

SDG 14 – Life below water is of special importance for this paper. Healthy marine habitats are essential for coastal and maritime tourism. It is crucial to sustainably use the ocean's resources to protect and conserve intact marine ecosystems. When discussing coastal zone management, it is crucial to include sustainable tourism development to ensure the health and preservation of the coastal and offshore environments.

3.4.4 SDG 17 – Partnerships for the goals:

Global alliances and partnerships are crucial for reaching the SDGs as the world's oceans are connected in a network of vulnerable ecosystems. Therefore, SDG 17 – Partnerships for the goals, is essential. Only with a strong alliance and responsible partnerships it is possible to tackle the issues of climate change and resource management while ensuring economic growth and paving the way for reduced inequalities. The EU's plans and guidelines toward a blue economy can only be realised if different states work closely together. This is also of great importance for a country like Iceland because of its dependency on the ocean's resources as a small island state (UNWTO, 2015).

Chapter 4: Methodology

4.1 Introduction:

Systematic research is an approach to combining existing knowledge, working up mistakes in the past and creating new results. It is essential for the outcome of every scientific study and paper. Without it, there is no guarantee that the results will be representative. It is crucial to understanding and finding new truths (Pandey and Pandey, 2015). The following section will explain how and why the research has been done and justify the sources used.

4.2 Choice of Research Design:

This paper's choice of research is based on secondary data from previous studies. Secondary research uses and relies on existing data and studies to identify new aspects of the researched topic. The reason for using secondary research is because of the vast size of the paper and the many different elements that play a role in the paper. Due to the massive number of studies regarding the topics of CMT and sustainable tourism development, it is possible to rely on those studies for this paper. The statistics and data used to give enough evidence to create a result that differs from previous research. However, it is crucial to understand and use the provided data in the right way in order to come up with a logical result. The amount of data necessary for this paper's outcome is impossible to gather on one's own. The usage of given data is a lot more cost and time-saving. (Saunders, Lewis and Thornhill, 2009).

The used data in this paper comes from different sources that are categorised as the following:

- Academic journals
- Public records and statistics
- Publications from governments and institutions (national and international)
- Trade publications
- Reports from universities, students, economists and other associations connected to the tourism industry

(Kothari, 2004)

Saunders, Lewis and Thornhill (2009) differentiate between two forms of data: Quantitative and qualitative data. Quantitative data describes the kind of data made in the forms of graphs, numbers and other statistics that help to give an overview of current or past situations and is

therefore essential to analyse structures and conditions. It is used to measure and monitor and present data in numbers. The other type of data, qualitative data, is the kind of data that is nun-numeric and results from studies and reports. It is crucial to analyse and fully understand the data used to receive analytical results. For the aim of this paper, both quantitative and qualitative data have been used. In order to analyse the tourism environment of Iceland, most quantitative data was gathered from official governmental bodies of Iceland, like Iceland Statistics, the official data institution of Iceland, and from Ferdamalastofa, the official Tourism Board of Iceland. Gathering data from official sources secures the reliability of used numbers and statistics. Furthermore, quantitative environmental data were collected from studies that measured CO2 emission, air and water pollution, and other environmental impacts that can be analysed through quantitative data collection. In terms of qualitative data, most of the secondary research was gathered from governmental bodies, the Icelandic government and the EU, as well as from researchers specialised in the field of CMT and sustainable development. Visitor surveys from the Icelandic tourism board were used to identify the motivations of travellers and analyse the most popular tourist activities and attractions. Guidelines and policies from governmental bodies like the Icelandic government or the EU were gathered and presented to complete the framework. In order to analyse sustainable development, Icelandic tourism structures and policies were compared to official guidelines and policies by the EU and the UN (Blue Tourism and SDGs). To compare features to one another and identify differences and similarities, the method of comparative analysis was used to state the current situation of Iceland's sustainable tourism development.

4.3 Construction of Method:

The secondary research used in this paper needs to undergo a schematic analysis in order to bring a reliable outcome for this paper. Therefore, it is necessary to explain the secondary research criteria.

Criteria	**Details**
Reliability of information	To guarantee the reliability of the information, academic literature published in journals and books was used in this paper. Data that other authors frequently cited helps to ensure the reliability of the literature.

Validity of the author	The validity of the author is guaranteed if the literature was published in renowned journals and used in several citations.
Data collection method	The methods used for gathering data are essential for the study's quality.
Theories and definitions	The research must show valid theories and definitions regarding the paper's topic.
Consistency of articles	The used articles have to show similarities with other studies from the same field of topic. However, different authors come up with different arguments
Used arguments	The discussions and arguments from the research need to be well-argued and justified.

Figure 9: *Assessment Schematic*

4.4 Buhalis' 6As framework:

Originating in tourism marketing and destination management, Buhalis is one of the most frequently cited authors when discussing tourism destinations. While the 6As framework was designed as part of describing a successful tourism destination and as a method to showcase the most important characteristics, it can and has been used by different authors and in different contexts to visualise and highlight the structures of destinations (Buhalis, 2000; 2013; Arif, Mardi & Nugroho, 2019). Although the 6As framework has its roots in tourism marketing and destination planning, for this paper, it will be used as a tool to visualise the most critical aspects of the tourism industry in Iceland. The visualisation helps to highlight essential characteristics in a clear, organised way that will be important for understanding and analysing the tourism structure of the island state.

4.5 PESTLE analysis:

PESTLE (sometimes PESTEL) analysis is an internationally approved tool mainly used by companies and industries to identify the macro environment of their businesses. It consists of

different sections representing external influences and factors that are important for a successful and competitive business. The letters of the word PESTLE stand for: P – Political, E – Economic, S – Social, T – Technological, L – Legal, E – Environmental factors. Analysing the macro environment can be important when considering factors that might impact a business (University of Sydney, 2022). While this is often used for marketing purposes or from a business perspective, PESTLE can also be helpful as a research tool for identifying external factors that influence a destination. PESTLE analysis has also been used by some researchers in a tourism destination management context to analyse a destination's macro environment. Because tourism exists and operates in intertwined international markets, PESTLE can be applied to private tourism businesses but also tourism destinations (Gregoric, 2014). For this paper, PESTLE will be used to analyse the touristic environment in Iceland. This method will deliver a clear overview of the different factors that play a role in sustainable tourism development. Because of its complexity, sustainable tourism development is dependent on and impacted by many different factors, and using PESTLE can help understand the interconnectivity of said factors.

4.6 SWOT analysis:

The SWOT analysis, which stands for strengths, weaknesses, opportunities and threats, is a tool used in corporate planning to evaluate how well an organisation compares in a competitive environment (Teoli, Sanvictores & An, 2019). According to Piercy and Giles (1989), using a SWOT is a simple but effective tool to analyse a business's position and delivers a valuable method for comparison. Over the years, tourism destination and marketing researchers have applied the tool to analyse the success and competitiveness of tourism destinations and businesses and used it to make meaningful strategic decisions for the future. SWOT analysis attempts to identify the advantages and disadvantages of a given tourism region by assembling and examining the available resource and estimating the destination's tourism capacity and potential. It can help providers of touristic products to gain a realistic estimation of a destination's success by analysing the internal and external factors that impact it (Ghanbari et al., 2012). In this research, SWOT is used to analyse the strengths, weaknesses, opportunities and threats of the existing CMT sector in Iceland. This analysis will give an overview of the important factors that play a role when discussing the sustainable tourism development of the island.

Chapter 5: Findings

5.1 Introduction:

The following part of the paper will use the reviewed research and definitions from the theoretical framework to analyse the current tourism industry in Iceland and its impact on the environment. In the first step, it is important to highlight the touristic portfolio of Iceland with a special focus on CMT. For this matter, Buhalis 6A's will be used to identify the most important aspects of the tourism industry in said region. Afterwards, a PESTLE analysis will be used to identify essential stakeholders and external factors of the tourism environment in the country in order to understand the tourism structure of the island further. The PESTLE analysis is an important step of the research because it will be used to analyse how well the country's plans align with the Blue Economy agenda of the EU. Furthermore, there will be an environmental analysis of researched data to identify the current state of the coastal and maritime environment and how it is impacted by tourism and climate change. After gathering and analysing all the data, a SWOT analysis will highlight Iceland's tourism industry's strengths, weaknesses, opportunities and threats. Additionally, the results will help to compare them with the SDGs discussed earlier in this paper. With the results of the SWOT analysis, it will be possible to conclude the overall situation and answer the research questions as well as serve as an important pillar for giving suggestions and recommendations for the future.

5.2 Tourism development in Iceland:

Iceland was relatively unknown as a tourist destination for foreigners for most parts of the 20th century. The island was not promoted or had any recognition in international media. In the 1960s, NASA used to train astronauts in the country because its environment seemed so unhabitable that it would represent the moon's landscapes. In the 1990s, Iceland gained more popularity due to musicians like Björk and Sigur Rós, which is considered one of the reasons why tourists firstly visited the island. Tourism numbers increased slowly from year to year in the 2000s before the financial crisis (Condé Nast Traveler, 2017). The eruption of the volcano Eyjafjallajökull in March 2010 made headlines worldwide due to the massive disruption it created in the European aviation market. After this crisis, Iceland appeared in movies and series

like Game of Thrones, bringing more and more popularity to the island state, resulting in an immense increase in tourism numbers.

It is essential to understand the political situation in Iceland and how stakeholders, like the government, tourism boards and DMOs, and the media, interact with each other on the way to a popular tourist destination. Furthermore, it is crucial to understand the contextuality of the island's economy in order to understand the significance of the tourism industry today. For most of the 20th century, Iceland had a relatively unstable economy with heavy fishing reliance. The fishing industry was essential for reaching independence from Denmark in 1944 and became the main driver for Iceland's economy.
A change happened when Iceland started to diversify their economic sectors, moving away from fishing and investing in the use and harnessing of valuable resources on the island like geothermal energy and hydropower (Jóhannesson & Huijbens, 2010). Aluminium has been another essential resource for the economy of Iceland.

Although the economic shift brought positive development to the country, Iceland was hit hard by the financial crisis in 2008. Inflation and unemployment rates went up a lot, and the country was facing a difficult time in terms of economics. The reliance on fishing, especially in the barely populated coastal areas, needed to be more and more replaced by a more reliant, economically sustainable industry. Iceland then started to go deeper in developing the fastly growing tourism industry (Antonova & Rieser, 2018). The following years were highlighted by a massive increase in foreign arrivals pushing the island's economy forward and making the Icelandic currency one of the strongest in the world. From 2011 on, the GDP increased annually by 1-6% until 2020 (Statistics Iceland, 2021). With the third quarter being the highest tourism season, the third quarter between 2015 and 2018 accumulated revenues of foreign travellers up to 200.000 Icelandic króna. In comparison, the export of marine and manufacturing products accumulated only between 60.000 and 80.000 Icelandic króna quarterly in the same period (Statistics Iceland, 2021). Numbers like this show the importance of tourism for Iceland nowadays.

Global phenomena like globalisation, climate change, and the country's history had a massive impact on Iceland. Since Iceland has been independent since 1944, governmental decisions have significantly impacted the economic environment. The Cod Wars, an economic conflict between Iceland and the United Kingdom, shaped the national identity of Iceland and still plays a vital role in tourism today, as it is represented in most of the museums in Iceland nowadays (Antonova & Rieser, 2018). Furthermore, it is possible to say that the impacts and collective

memories of the Cod Wars shaped the mentality of the Icelandic population towards geopolitical, environmental and legal issues.
Fisheries were still the most important economic sector in 2006, with foreign currency receipts of 34%, followed by aluminium production (17%) and tourism (13%) (Jóhannesson & Huijbens, 2010). After the economic crisis in 2008, several decisions of the Icelandic government led to an incremental change in the tourism industry. To understand these decisions, it is critical to know more about the business stakeholders of the Icelandic tourism industry. First of all, it is worth mentioning that tourism can be an important driver for economic diversification in the economic cultures of microstates like Iceland. Second, as Jòhannesson and Huijbens (2010) state, the Icelandic government has failed to highlight the importance of tourism as an economic driver throughout most parts of the 20th century. The national identity and the strong connection to the fishing culture can be one reason why it took Iceland a long time to decide to rely on the tourism industry. It is worth mentioning that in 2008 a new general director for the national tourism board was appointed that received massive critics from tourism businesses and professionals because the chosen director had degrees in biology and public administration but was not professionalised in the tourism industry.

Iceland has not been widely known as a tourist destination until the start of the 2010's decade. Before this time, the foreign tourist arrivals were slowly growing since the 1990s, from around 200.000 annual visitors to around 500.000 in 2008, when the financial crisis brought stagnation and a slight decrease in arrivals for the next two years. The development after this is remarkable. From 2011 until 2018, foreign tourist arrivals grew from around 500.000 up to 2.000.000 arrivals with annual growth rates between 20-40% (Ferdamalastofa, 2021). With a population of around 370.000, this increase in tourist arrivals presents major challenges for the destination's tourism industry but also many opportunities. As Iceland's energy supply is heavily dependent on water, so is its tourism industry. This includes activities related to water inside the island as well as in coastal areas and offshore regions. Due to its geographical location and being an island, CMT plays an important role in the state's tourism industry.

5.3 Coastal and maritime tourism in Iceland:

The following part will highlight the most important touristic attractions, infrastructure, and CMT practises in the region. With Buhalis' 6As framework, it is possible to visualise and order the most critical aspects in a structured way. It is important to mention that the following list does not only include CMT-related practices and structures but also features some other important aspects of the tourism industry in Iceland. Although many popular attractions and

activities are not directly connected to CMT, most are related to water activities or water in any form. This overview is meant to visualise the importance of water for the Icelandic tourism industry. The information about attractions and activities for the framework was gathered mainly from *Guide to Iceland*, the largest collaboration of Icelandic travel services. Further information for touristic activities and data for hotels and accommodations were gathered from *Ferdamalastofa*, the official Icelandic Tourism Board.

Attractions	● Natural sites not directly related to CMT: ➢ Blue Lagoon Hot Springs Strokkur, Smiður and Litli-Strokkur Geysers ➢ Vatnajökull (Biggest Glacier in Europe), Langjökull; Hofsjökull ➢ Waterfalls ➢ Volcanoes: Eyjafjallajökull; Fagradalsfjall ➢ Lakes: Kerið (Volcanic crater lake in the south); Þingvallavatn (Largest lake in Iceland) ● Important beaches: ➢ Reynisfjara Beach; Diamond Beach; Nautholsvik Beach; Solheimasandur Beach; Stokksnes Beach; Dyrholaey Beach; Ytri-Tunga Beach; Djúpalónssandur Beach; Rauðisandur Beach; Búðir Beach
 ***Image 4:*** *Reynisfjara Beach*	

Activities  ***Image 5:*** *Whale watching boat near Husavik*	• Whale watching tours: ➢ Reykjavik Whale Watching Tour; Husavik Whale Watching Tou; Akureyri Whale Watching Tour; Hauganes Whale Watching Tour; Olafsvik Whale Watching Tour • Seal watching: ➢ The Vatnsnes Peninsula in Northwest; Jökulsárlón glacier lagoon and diamond beach in Southeast Iceland; Skötufjörður in the West fjords • Arctic tours: ➢ Arctic Adventures Reykjavik; Arctic Tours Iceland; Many small tour operators offering boat tours • Cruise tourism • Scuba Diving and snorkelling: ➢ Silfra snorkelling (known for the clearest water in the world; offers from different tour operators) • Fishing: ➢ Fishing as part of Iceland's identity; Fishing tours starting from Reykjavik and Husavik and Hauganes; Public fishing spots around the island

Amenities	• 170 Hotels in total, 57 in Reykjavik, 44 in the South, rest in other parts of the island (in 2022) • 11.578 bedrooms in total, 5.424 in Reykjavik, 2.448 in the South (2022) • Accommodations ranging from luxury hotels, and eco-hotels to lower-cost hostels • More than 200 campsites in Iceland, most of them located along the main routes, some in remote places
Accessibility  ***Image 6:*** *Ring Route around Iceland with stops in: (1) Reykjavík; (2) Borgarnes; (3) Blönduós; (4) Akureyri; (5) Egilsstaðir; (6) Höfn; (7) Selfoss*	• Air: ➢ International flights: Keflavík International Airport; Akureyri Airport (Third biggest airport, mainly domestic flights but also few international flights); Egilsstadir Airport (Mostly domestic but few international flights) ➢ Domestic flights: Reykjavik airport; Isafjordur Airport • Sea: ➢ Cruise ships (188.630 passengers in 190 cruise ship arrivals in 2019; 196.911 passengers in 184 cruise ship arrivals expected in 2022) (Faxaflóahafnir, 2022) ➢ Arctic tours • Land:

	➢ Private car rental from Reykjavik (currently around 9.000 rental cars available) (Iceland Monitor, 2021) ➢ Bus tours ➢ Ring Road around the island ➢ Golden Circle – Popular tourist route in the south
Available Packages	● Around 500 licensed tour operators, most of them located in Reykjavik, over 1000 travel operators in total (Guide to Iceland) ● Most tours available from Reykjavik ● Smaller tour operators in other destinations like Höfn, Selfos, Húsavík, Kópavogur or Hafnarfjörður
Ancillary Services	● Banks, hospitals, and communication services available in Reykjavik ● Internet and cell service in all major towns and popular routes. Limited in rural areas

Figure 10: *Buhalis 6As framework*

With Buhalis 6As, it is possible to identify Iceland's most important touristic features. The international visitors mainly come from European and North American countries to visit Iceland. Most tourists arrive from the USA, followed by the UK and Germany. In 2017, the year with the second highest number of arrivals, a total of 576.403 tourists arrived from the USA, 322.543 from the UK and 155.813 from Germany (Ferdamalastofa, 2018). The latest numbers from July 2021 to June 2022 show similar numbers with 334.972 visitors from the

USA, 160.311 from the UK and 111.067 from Germany. In the same period, a total of 7.303.951 overnight stays were registered, 53% of them in hotels. The room occupancy in June 2022 reached 78,8%, the highest since the start of the COVID-19 pandemic.

When comparing the visited regions by international visitors, there is a clear trend recognisable. 92% of international visitors visited the capital region Reykjavik, the main connection for international flights and the only major city in the country. The second most popular region is the South, with 79% of all international tourists visiting the region. The region is famous for attractions like the Vatnajökull glacier and Reynisfjara Beach. The Southwest, where the famous national park and tourist hotspot Þingvellir follows in the statistic with 67%, followed by the West with 53%, popular for its natural attractions like Glymur, the highest waterfall in Iceland and other natural features like glaciers and volcanoes (Ferdamalastofa, 2022). In general, Iceland is famous as a tourist destination because of its unique natural features. According to a visitor survey from the Icelandic Tourist Board in July 2017, the country's nature is the main motivation for visiting Iceland, with 92,4% of the visitors stating it as their reason to visit. When asked to specify which natural parts in specific, the Northern lights were mentioned the most with 45%, followed by the unspoilt nature (44%), geysers (26%), the general landscapes (24%) and other natural attractions like glaciers (17%), natural baths (13%) or waterfalls (13%).

Regarding the main motivation for travelling to Iceland, 81,9% said they visit Iceland because they want to see something new that they have not seen before, and 80% stated that Iceland is a destination they have always wanted to visit (Ferdamalastofa, 2018). The survey underlines the importance of nature- and water-based tourism for Iceland. It shows that almost all international visitors visit Iceland because of its unique natural features. In terms of accommodation, Iceland has a total of 170 hotels in 2022, of which 57 are located in Reykjavik. In total, 11.578 bedrooms are available, 5.424 of them in Reykjavik (Statistics Iceland, 2022). They range from budget to luxury hotels, eco-hotels or hostels. Furthermore, there are more than 200 campsites in Iceland.

Almost all international visitors arrive at Keflavík International Airport, the main international airport close to Reykjavik. Other airports on the island are mainly used for domestic flights. In addition to flights, 188.630 passengers in 190 cruise ships arrived in 2019, and 196.911 passengers in 184 cruise ship arrivals are expected in 2022 (Faxaflóahafnir, 2022). Many visitors rent a car for their stay to go around the island. In total, around 9.000 rental cars are available (Iceland Monitor, 2021). Regarding packaging and tours, there are around 500 licensed tour operators, most of them located in Reykjavik, with over 1000 travel operators in

total (Guide to Iceland). With one of the best health care services in the world and internet and cell service available on almost all parts of the island, Iceland provides good supporting services for travellers.

5.4 Environmental impact of CMT in Iceland:

The results of the previous paragraph underline the importance of CMT for the overall tourism environment of Iceland. With the overview, it is possible to concentrate on the second objective, the analysis of the environmental impacts of CMT activities in Iceland. Even though not all of the activities happen directly at the coast or in offshore waters, it is possible to see the connections between the different touristic attractions and activities that are all related to water in some way or another. Therefore, it is important to acknowledge that the ocean's intactness is vital for Iceland's tourism industry. Furthermore, as analysed earlier in this paper, the ocean and water are of great importance to Iceland's economy and culture. With most of the country's energy supply coming from hydropower and geothermal sources and fishing still being an important economic sector as well as a crucial part of the identity of the Icelandic society, the significance of a healthy ocean and an intact marine ecosystem is undeniable. It is therefore important to analyse the environmental impact of CMT in Iceland in order to plan and manage the island state's tourism sustainably for the future. For this purpose, several environmental research papers have been analysed to identify the current state.

Iceland, and for this paper, especially Iceland's coastlines, have experienced a massive increase in visitor numbers in the last 20 years. With most of the country's vast, untouched nature, the increase of tourists creates higher pressure on the visited natural sites. The most significant issues in tourism activity are wildlife disturbance, littering and damage from high visitor concentration in fragile environments. Another significant concern is the conservation of living marine resources, which presents one of the highest priorities.

5.4.1 Disturbance of wildlife:

Whale and seal watching belong to the most popular touristic activities in Iceland. Especially whale watching is of great importance since Iceland is considered one of the best whale-watching spots in the world, with the Icelandic Sea as a habitat for different whale species such as humpback whales, blue whales and killer whales (Parsons & Rawles, 2003). With visitor numbers growing fastly in Iceland, so is the participation in whale-watching. While the number

was still small in the 1990s, from 2.200 visitors in 1995, the tourism boom in the new millennia increased the number of whale-watchers to 125.000 in 2009. The latest numbers from 2015 show that 272.000 visitors participated in whale-watching that year. 20-25% of visitors that come to Iceland take part in whale-watching trips. Most of the whale-watching trips start either from Reykjavik or Húsavík, one of the world's major whale-watching spots.

This massive increase in visitor numbers and rising sea temperatures caused by climate change present stress factors for the natural biorhythm of whales. Due to this, the Icelandic government published guidelines that propose to limit the number of boats that sail out to whale territory. Observations have shown that the number of boats sometimes exceeds the proposed number in the guidelines. However, compared to other whale-watching destinations where whales live in more vulnerable habitats, like their reproductive areas, the exposure and pressure on whales are relatively small in Iceland, which is a positive indicator for the procedures of the industry (Martin, 2012).

Another critical aspect that must be considered is the importance of whaling for the Icelandic identity and culture. Whaling has a long history of tradition in Iceland, and even though whaling stopped in Iceland in 1989, in 2002, the state re-joined the International Whaling Commission. However, participation in whaling could have a negative impact on the perception of tourists that are interested in whale-watching. Research shows that 79% of whale-watchers said they would not participate in whale-watching or even travel to a country that hunts whales. This is an important factor for the government to consider when looking at the importance of whale-watching for Iceland's tourism industry.

Another important CMT activity in Iceland is land- and boat-based seal-watching. The interest in wildlife observation has risen in recent years, and thus there has been an increase in tourists visiting spots to watch seals in their natural habitats. The most important spot for seal-watching in Iceland is the Vatnsnes Peninsula, where seals are habiting for their breeding season from the middle of May to the middle of June. Even though the area is closed for tourists during this time, many visitors arrive shortly after to observe the seal population. Studies have shown that the increased tourist activity shows signs of disturbance among seals. In times with high visitor numbers, seals tend to move out further to sea, while during low visiting times, they act and move more freely and randomly around the area (Granquist & Sigurjonsdottir, 2014; Granquist & Nilsson, 2016). The results show that the behaviour of visitors is the primary concern of seal

watching. Active and loud behaviour causes distress in the behaviour of the animals, which highlights the importance of a behaviour guide for tourists. Another finding is that seals often spot visitors before the visitors spot them, which means that even passive behaviour can cause a reaction in the seals. The studies show the importance of guidelines and education for visitors when visiting fragile environments and the risk of overcrowded places where humans and animals come together.

5.4.2 Transportation and cruise ships:

Transportation is another rising issue when discussing sustainable tourism development in Iceland. Although this paper mainly concentrates on CMT-related issues, it is essential to mention this part as an environmental impact. Since most of the tourists that come to Iceland rent a car for their trips, car rental numbers have significantly risen in recent years. Along with increased traffic congestion, this increase leads to higher levels of air pollution and greenhouse gas emissions.

Furthermore, there has been an increase in cruise ship tourism in the last two decades, with passenger numbers rising to 145.000 in 2018. Air pollution and waste management are common issues of cruise ship tourism that could also present a risk for Iceland (Saviolidis et al., 2021). Cruise ships cause pollution from oil and diesel particles that carry dangerous environmental and human health substances. While many states in the world have restricted the number of dangerous chemicals in oil around their coastline waters, in Iceland, these regulations are limited to ships that are located in the ports but not the surrounding waters. Particles from the oil do not only present a risk to the ocean's environment but also to the nature of the island since said particles travel through the air up to 400km into glacial ice, where the CO2 particles can speed up the melting process of the ice. Another important issue of cruise ships is the pollution of marine waters through sewage and waste. This could lead to fatal consequences to the fragile marine environment, which is of great importance for the Icelandic economy and culture due to fishing and marine activities. However, the Icelandic government is working on restrictions that limit the number of hazardous substances caused by cruise ships. In addition to the environmental impact, cruise ships also seem to have a negative reputation among residents (Fridriksson et al., 2020).

Image 7: *Ocean Diamond cruise ship at Djúpivogur harbour*

5.4.3 Littering:

Concerning beach and ocean littering, it is possible to hypothesise that apart from the before analysed impacts of cruise ship tourism, CMT in Iceland has a relatively low impact on the amount of litter in coastal areas. Studies that analysed waste objects in coastal waters, as well as studies that analysed the chemical components of the Icelandic Sea, came to the result that although there are some disturbances from sewage waters and waste objects from fisheries like nets and hooks, the tourism industry seems to play a relatively minor role in terms of littering (Durovich, 2018; Owili, 2013). Although Iceland has a variety of popular beaches that are being visited, the role of beach tourism is considerably small compared to warmer regions with high numbers of beach tourists. Tourists mainly visit the beaches like Reynisfjara Beach or Diamond Beach because of their unique aesthetics, like the black sand from volcanic remains, but not to go swimming or sunbathing. Beach destinations often produce littering from tourists and the surrounding tourism infrastructure, like bars or restaurants, which is not the case for Iceland. However, further studies of tourism-related littering in Iceland's coastal regions are necessary to validate this hypothesis.

5.4.4 Degradation of soil and vegetation:

Another critical environmental issue caused by tourism, although not directly connected to CMT, is soil and vegetation degradation. Natural ecosystems are being pressured by the increased visitor numbers on the island. Many of the famous Icelandic destinations are focussed on natural sites that are often sensitive to external impacts. Hiking paths that lead through these

sites are victims of recreational trampling that causes the erosion of hiking trails. This ultimately leads to the soil banks underneath the tracks being exposed to wind and water, thus causing further loss of vegetation and degradation of the natural environment.

The analysed impacts of tourism on the natural environment of Iceland show that the main reason for environmental damage is caused by the increased number of visitors that come to Iceland each year. The untouched, vulnerable nature with its popular natural sites is exposed to more tourists yearly. Due to the rapid increase of visitors, some sites are missing necessary infrastructural support and guidelines. Educational programs that teach tourists about proper behaviour and set out rules and restrictions are only partially installed and must be improved in the future. However, researchers and institutions are acknowledging said issues in recent years and coming up with solutions to deal with the increased touristic pressure.

5.5 Blue Tourism and Blue Economy in Iceland:

With the most important environmental issues and impacts analysed, it is essential to look at the organisational, governmental and political tourism environment and the existing guidelines and policies implemented to ensure sustainable tourism development. For this part of the findings, the existing structures will be highlighted and compared to existing initiatives and agendas from international organisations and institutions that aim to ensure a healthy ocean environment and sustainable CMT practices. In order to understand the macro environment of the Icelandic tourism industry, a PESTEL analysis has been conducted to point out the different stakeholders and important factors that influence the industry. With the results, it is possible to conclude whether the CMT sector in Iceland is developing sustainably, in itself and in comparison to other destinations, or if CMT presents a future risk for the natural environment.

5.5.1 PESTEL analysis:

Political:

The main governmental ministry responsible for tourism in Iceland is the Department of Tourism which is part of the Ministry of Culture and Business Affairs. Their tasks include developing and executing an official tourism policy, coordinating tourism issues around governmental bodies and developing new tourism legislations. From a political standpoint, the department is an essential stakeholder in Iceland's tourism industry.

The Icelandic Tourism Board is another stakeholder that inhabits a crucial role in the tourism management of Iceland. It is responsible for developing destination management plans in all parts of the country and coordinating tourist information systems. Furthermore, they are responsible for registering operation licenses in all tourism businesses, like tour operators and travel agencies. They also run the official quality and environmental system for Iceland tourism *Vakinn* and the board is in charge of environmental issues regarding tourism.
The ministry of Culture and Business Affairs and the Icelandic Tourism Board works closely with Business Iceland, a public-private partnership to promote Iceland as a tourism destination. They are responsible for improving the competitiveness of Icelandic companies in foreign markets and growth through export. The official destination marketing office for Iceland *Visit Iceland* is part of Business Iceland.
Another important stakeholder is the Icelandic Travel Industry Association (SAF). SAF is an association of travel and tourism companies in Iceland that represents the interests of its members. They control product and service improvement and ensure a high quality of operations.
Together these ministries, associations and institutions are responsible for the political decisions around the Icelandic tourism industry.
Another tourism business cooperation in Iceland is the Tourism Cluster Initiative. The cluster aims to develop a robust business environment with a forum of different stakeholders that concentrate on topics like competitiveness and value creation. In total, the cluster comprises 45 members from different direct tourism businesses like tour operators, hotels, restaurants, and airlines and indirect members of the tourism value chain like maintenance services, banks and law firms. The projects that the cluster is working on range from investment projects towards better quality and innovation to topics of responsible tourism, networking and regional development (Iceland Tourism, 2021).
The Ministry of Culture and Business Affairs established bodies to gather funds for tourism like the Tourist Site Protection Fund, which was established to protect nature at popular visitor spots through the development of infrastructure maintenance and to ensure tourist safety (Ferdamalastofa).
In 2015, the Ministry of Industry and Commerce started the development of the Route Development Fund. The fund aims to develop new flight routes to Iceland to distribute tourists at arrival more equally around the island. The international airports in question are Akureyri and Egilsstaðir.

Economic:

For most of the 20th century, Iceland had a relatively unstable economy with heavy fishing reliance. The fishing industry was essential for reaching independence from Denmark in 1944 and became the main driver for Iceland's economy.
A change happened when Iceland started to diversify their economic sectors, moving away from fishing and investing in the use and harnessing of valuable resources on the island like geothermal energy and hydropower (Jóhannesson & Huijbens, 2010). Aluminium has been another essential resource for the economy of Iceland. However, fisheries were still the most important economic sector in 2006, with foreign currency receipts of 34%, followed by aluminium production (17%) and tourism (13%) (Jóhannesson & Huijbens, 2010). Although the economic shift brought positive development to the country, Iceland was hit hard by the financial crisis in 2008. Inflation and unemployment rates went up a lot, and the country was facing a difficult time in terms of economics. The reliance on fishing, especially in the barely populated coastal areas, needed to be more and more replaced by a more reliant, economically sustainable industry. Iceland then started to go deeper in developing the fastly growing tourism industry (Antonova & Rieser, 2018). The following years were highlighted by a massive increase in foreign arrivals pushing the island's economy forward and making the Icelandic currency one of the strongest in the world. From 2011 on, the GDP increased annually by 1-6% until 2020 (Statistics Iceland, 2021). With the third quarter being the highest tourism season, the third quarter between 2015 and 2018 accumulated revenues of foreign travellers up to 200.000 Icelandic króna. In comparison, the export of marine and manufacturing products accumulated only between 60.000 and 80.000 Icelandic króna quarterly in the same period (Statistics Iceland, 2021). Numbers like this show the importance of tourism for Iceland nowadays.
Nowadays, the three sectors, tourism, fishing and aluminium smelting, account for the highest percentages of the total value of exports (International Trade Administration, 2022). The COVID-19 pandemic impacted the tourism market negatively, with the GDP contribution decreasing from 8,1% in 2019 to 3,6% in 2020. However, with 4,2% in 2021, the distribution of the economy is rising again (Statistics Iceland, 2022).

Social:

In terms of society, Iceland represents a unique country. With a total population of 372.295 in 2021, the European countries with the smallest total population and the least densely populated country in Europe. 133,262 people live in the capital Reykjavik alone, making up more than one-third of the total population. With its vast nature and uninhabitable terrain that makes it impossible to build infrastructure or grow crops, the demographics of Iceland are of unique existence. Because of this, a lot of the culture and customs of the island are centred around the ocean and its resources and the optimal use of water. Global phenomena like globalisation, climate change, and the country's history had a massive impact on Iceland. Since Iceland has been independent since 1944, governmental decisions have significantly impacted the economic environment. The Cod Wars, an economic conflict between Iceland and the United Kingdom, shaped the national identity of Iceland and still plays a vital role in tourism today, as it is represented in most of the museums in Iceland nowadays (Antonova & Rieser, 2018). Furthermore, it is possible to say that the impacts and collective memories of the Cod Wars shaped the mentality of the Icelandic population towards geopolitical, environmental and legal issues.

Technological:

In terms of technology, it is possible to say that Iceland is one of the best-developed European countries. According to a report from IMD in 2021 that analysed the competitiveness among the world's nations, Iceland is ranked 16th out of 63 developed countries. Although they are only ranked 56th in the category of economic performance, they are ranked 8th in both business efficiency and infrastructure (IMD, 2021). Information and communications technology (ICT) in Iceland is considered one of the best in the world. Among a comparison of digital services and development of all European countries, Iceland is ranked 4th, which underlines the excellent digital infrastructure of the state (Government of Iceland, 2022).
One tourism-related technology that has been installed in Iceland is *The Radar*. The Radar is a tool developed to increase innovation, accelerate change processes and improve the abilities to develop new products and services (Iceland Tourism, 2022).
The Icelandic Tourist Board and the Iceland Tourism Cluster have organised a technology fair called *IcelandTravelTech*, creating a platform where travel stakeholders and tech partners share common ideas, discuss issues and develop plans and solutions for the future. The main goal is to increase digitalisation in the tourism industry.

Furthermore, there is a collaboration of different businesses in Reykjavik called the Iceland Ocean Cluster. It started in 2012 with twelve companies and consists of over 70 companies representing different businesses connected to the ocean value chain. The collaboration stands for innovation and technological progress regarding ocean-related topics. It concentrates on new technologies from ocean-related sectors like fisheries or tourism and additional businesses like marketing or marine biologists (Sjavarklasinn).

Environmental:

The environmental impact of CMT-related activities in Iceland has already been analysed earlier in this paper. However, it is important to look at the country's overall environmental performance and present existing plans for sustainability in the future. As highlighted before, the economy of Iceland is heavily reliant on natural resources, whether from direct marine sources like fisheries, energy generation through hydropower or nature tourism. Because of this dependency, it is crucial for Iceland to implement policies and strategies to maintain those resources in the future. According to a performance report from OECD in 2014, Iceland's government has become more aware of environmental issues and is planning to install new policies and guidelines to improve sustainable development.
Furthermore, some plans aim toward better sustainable development, like the National Environmental Strategy "Towards Sustainable Development" from 1993 and the National Sustainable Development Action Plan of 1997 (OECD, 2014).
In addition, the Icelandic government published the *Climate Action Plan for 2023* to ensure biological diversity. The plans include actions regarding sustainable food production, sustainable energy generation and the development and innovation of green technologies. Overall, Iceland plans to reach carbon neutrality by 2040 (Government of Iceland, 2020). Other plans like the *Road Map for Tourism in Iceland* recognise nature conservation and sustainable tourism development as one of the main issues for the future.

Legal:

Iceland has implemented some marine protected areas in the Icelandic Seas that make up 0,4% of territorial waters. This trend is expected to be expanded in the future (World Bank, 2022). Iceland's government also introduced a fishery management system with individual transferable fishing quotas to help fish stocks recover and ensure the sustainable use of this valuable resource.

5.5.2 SWOT analysis:

Strengths:	Weaknesses:
- Technological development - Renewable energies - Strong governmental bodies - A strong alliance among stakeholders - Geopolitical location - Action plans for nature conservation	- Fragile environment - Distribution of tourists - Exposed to weather conditions - Although the economy is stable, it is very reliant on a few sectors
Opportunities:	**Threats:**
- Steady economic growth - Equal distribution of visitors on the island - Strong alliances with international investors - Leader in sustainability	- Climate change - Natural catastrophes (e.g., volcanoes) - Overtourism - Dependency on tourism (e.g. COVID-19)

Figure 11: *SWOT-Analysis*

5.5.3 CMT, Blue Tourism and SDGs:

After analysing the environmental impact of tourism in Iceland, highlighting the most important aspects of the macro environment and identifying strengths, weaknesses, opportunities and threats, it is possible to compare the existing structures with the guidelines from the Blue Tourism initiative and the SDGs from the UN to conclude whether the existing CMT line up with the plans or present a risk for the future.

The first objective of the Blue Tourism initiative is to involve and empower local communities. In order to sustainably plan ahead, it is crucial to create partnerships with authorities, schools and local NGOs and community involvement. This allows the participation of the local population and includes younger generations in future planning. As analysed before, Iceland created alliances among tourism businesses and initiatives for cooperation. As Iceland's business environment consists of many small and middle-sized businesses, this step is vital to plan future tourism operations. In a country like Iceland, where visitor numbers outnumber the

total population, it is also essential to respect the perception of locals towards tourism in order to prevent a negative association with visitors.

The second guideline of the Blue Tourism initiative is to monitor and regulate coastal and maritime activities. It is crucial to analyse the environmental, economic and socio-cultural impact of tourism along the coastlines further to understand the industry's effects. This part is especially important for research institutes and universities as further studies need to be conducted in the future.

Insuring climate resilience is the next part of the guideline. In order to progress sustainably in the tourism sector, it is important to promote technological progress and install policies to finance eco-friendly initiatives. Iceland is progressing quite positively in this regard because of their technological development.

In terms of waste elimination and recycling, the next important part of the Blue tourism agenda, Iceland is progressing positively as well. The government has implemented a recycling fund to tackle problems arriving from fisheries. Plans for the future are to develop more eco-friendly synthetic materials to use in fishing and limit the sewage and waste from cruise ships and other touristic activities (Fisheries Iceland; Fridriksson et al., 2020).

The next part of the Blue Tourism initiative aims to preserve the value of historical sites, cultural heritage and biodiversity. This step is mainly achievable through the education of visitors, communities and industries. Since the ocean and its resources are not only of great significance for the state's economy but are also an essential part of the Icelandic culture, this part is vital for the island nation's development. The history and importance of the ocean ecosystem are represented in the museums in the country, where visitors get educated about the significance of said ecosystem. It is crucial for the future to create a common mentality among industries, communities and visitors that ocean conservation is essential.

The Blue Tourism guideline furthermore states that the development of eco-friendly infrastructure and the sustainable use of energy, land and water is essential for maintaining an intact ocean ecosystem. This part aligns with SDG 9, *Industry, innovation and infrastructure* and SDG 12, *Responsible consumption and production.* In terms of sustainable infrastructure and innovation, Iceland has been investing and developing a lot in recent years to create a carbon-free tourism environment and the intensive usage of renewable energies like hydropower or geothermal energy. Being independent of fossil fuels and energy imports, Iceland can be considered a leader in sustainable development in these areas. Protecting environmentally sensitive ecosystems through the control of emissions and marine/coastal protected areas line up with the SDG 14 *Life below water*. Although Iceland has

installed policies like the individual fishing quotas and also implemented some marine protected areas in their territorial waters, there is much room for further improving this part. Installing better ways to monitor the environmental impact of touristic activities and increasing the amount of protected natural zones is an essential step for the future.
SDG 17 *Partnership for the goals* is another crucial step towards sustainable development. As analysed in the PESTLE analysis, the Icelandic government and business associations like the SAF, the Icelandic Tourism Cluster and the Icelandic Ocean Cluster thrive for stronger alliances and partnerships to create a more sustainable business environment that preserves nature. However, it is also important for Iceland to create international partnerships and initiatives to promote sustainable tourism development further while creating economic growth from tourism revenue.

Chapter 6: Conclusion

6.1 Objective 1: To identify the coastal and maritime tourism environment and structures in Iceland

The first objective was to identify the themes and practices of the CMT environment and structures in Iceland. With Buhalis 6As framework, it was possible to highlight the most important features of the Icelandic tourism industry regarding CMT. The observations from analysing the practices are that nearly every touristic activity in Iceland is directly or indirectly related to water. Whether these might be attractions like glaciers, geysers, waterfalls or hot springs, the touristic environment relies heavily on intact water ecosystems. Furthermore, there are popular CMT-related practises and products like whale- and seal-watching, diving or deep-sea fishing. Cruise tourism has also increased a lot, representing new issues of sewage water, waste management and carbon emissions along the coasts and territorial waters. Overall, the tourism environment in Iceland is heavily reliant on water-based activities. With the fast-rising visitor numbers, protecting the fragile environment, whether on land or CMT-related, from phenomena like over-tourism and carbon emissions will be necessary.

6.2 Objective 2: To analyse the environmental impact of tourism activities in Iceland

The second objective of the research paper was to analyse the environmental impact of tourism activities in Iceland. By analysing academic research papers that studied changes in the environment, the amount of litter and emissions in the waters and atmosphere and the role of increased touristic activity, it was possible to create an overview of the impact of tourism. First, the analysis of CMT practises like whale- and seal-watching showed that with increasing visitor numbers at observation sites and rising numbers of whale-watching operators, a slight change in animal behaviour was observable. Wildlife seemed to move further away from their natural habitat due to increased human activity. However, some restrictions are in place that limit the visitor numbers, as well as signs and templates that help educate the visitors about their impact and teach them the correct behaviour when approaching wildlife. An analysis of cruise ship tourism has shown that due to the increasing number of cruise ship

arrivals, a slightly higher amount of emissions and waste can be observed in offshore and coastal waters. Although the impact of these operations is not dangerously high yet, the increase in touristic cruise ship activity can present a risk for the future. However, the Icelandic government is trying to find policies to reduce waste and emissions through restrictions in ports and the prohibition of certain chemicals and substances in the fuel oil of cruise ships. Due to the climate conditions and the natural geology of Iceland, beach and swimming tourism is not an important factor. Nevertheless, some of Iceland's beaches are popular tourist attractions that are being visited a lot. Compared to warmer regions like the Mediterranean Sea, the amount of human littering on beaches and coastal waters was relatively small. Most of the observed litter in the coastal waters was produced by fisheries that are very active in the offshore waters.

Although not directly related to CMT, it is worth mentioning that many natural tourist spots on land face increased pressure from tourism activity. The degradation of soil and vegetation has been observed in recent years, which leaves fragile ecosystems unprotected from wind and weather, accelerating the degradation process further.

All in all, it is possible to state that increased tourist activity in the last two decades has started negatively impacting the natural environment. However, these impacts are still manageable and relatively small, and implications and limitations to certain touristic spots and attractions will be necessary to protect said ecosystems.

6.3 Objective 3: To compare the existing structures and practices with the guidelines and policies of the blue tourism agenda

The third objective was to compare the existing structure and practises of CMT in Iceland with the guidelines and policies of the Blue Tourism initiative and the SDGs developed by the UN.

First, it is possible to state that some of the Blue Tourism guidelines align with the SDGs. The empowerment of local communities, the education of visitors and residents, and the created partnerships and alliances among businesses and stakeholders can all be summed up under the socio-cultural aspects of sustainable development. Since the mentality and culture of Icelandic people are closely connected to the ocean and its resources, it highlights the importance of nature conservation. The adaption and cooperation of tourism businesses and other industries in Iceland are fundamental for reaching the guidelines of Blue Tourism and the SDGs. Collaborations like the SAF, the Icelandic Tourism Cluster or the Icelandic Ocean Cluster and governmental funds like the Tourist Site Protection Fund and the Route Development Fund

show that the awareness of the importance of partnerships is given and demonstrates the sustainable planning of the country.
In terms of infrastructure, innovation and the usage of renewable energies, Iceland is one of the leaders worldwide in sustainable development. It is essential to construct eco-friendly tourism infrastructure further and innovate the existing products to protect and conserve natural sites and respect the natural habitat of wildlife like whales and seals.
In recent years, there has been an increase in monitoring and analysing environmental impacts along the coastlines of Iceland that are caused by tourism and other industries. However, there is room for improvement in the future to conduct more studies about the environmental conditions and to ensure better monitoring of impacts.
All in all, it is possible to conclude that the Icelandic government and other stakeholders have developed an increased awareness of the potential environmental risks and that future guidelines and goals are reachable. Especially due to the technological progress and the focus on renewable and sustainable use of resources, Iceland has suitable pre-conditions to develop sustainably.

6.4 Summary and recommendations:

In the last two decades, Iceland's tourism industry has been one of the fastest growing in the world. With visitor numbers outnumbering the overall population by far and visitor numbers more than quadrupling in ten years, tourism has become one of the most important economic sectors of the country. After the 2008 financial crisis, Iceland's government decided to shift away from relying on fishing toward more sustainable industries. Even though fishing is still an important economic sector and essential for the culture and customs of the Icelandic society, the tourism industry, next to aluminium and renewable energies, is now a central pillar for the country. Iceland's reliance on the ocean and the intactness of the country's ecosystems make the state vulnerable to climate change. Therefore, it is essential to identify the most significant risks for the future.
Due to the country's geographical location as an island state and its history closely related to the ocean, CMT is one of the country's most important tourism industry sectors. After analysing the touristic structures in Iceland and analysing the environmental impact of touristic activities, while considering international guidelines like the Blue Tourism initiative, it is possible to state that CMT indeed presents a risk for sustainable development. The importance of intact oceans

has been recognised by international institutions, organisations, and the Icelandic government. Because all three dimensions of sustainability, environmental, economic and socio-cultural impacts are closely related to the ocean, Iceland has to guarantee the health of its bodies of water on the island and around the coast. With increasing tourist activity and pressure on natural sites and wildlife due to high visitor numbers, some of these systems are at risk. However, with solid governmental bodies cooperating with businesses and stakeholders, Iceland is preparing to develop sustainably. As one of the leaders in innovation, infrastructure and technology, the country shows an excellent pre-condition to be able to tackle these issues in the future. Although tourism numbers are expected to grow, Iceland seems to be aware of the environmental, economic and socio-cultural issues and prepares intensively for a sustainable future. Nonetheless, it is important to install further measures to ensure sustainable development. One of these measures is the monitoring of vulnerable ecosystems like the oceans. Further studies have to be conducted to analyse the impact of CMT, and policies and limitations must be consistently updated to ensure the ocean's intactness. When those policies are implemented correctly, and the national and international partnerships are strengthened further, it is possible to minimise the risks of CMT-related activities and reach the guidelines for the Blue Tourism initiative and the SDGs.

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