



BEYOND THE PERFECT WAVE: ENVIRONMENTAL AWARENESS OF SURF TOURISTS

A CASE STUDY OF PENICHE, PORTUGAL

Sarah Springwald

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Sarah Springwald

A dissertation submitted to the School of Tourism and Maritime Technology of Polytechnic Institute of Leiria in partial fulfilment of the requirements for the Master's Degree in Sustainable Tourism Management

Dissertation conducted under the supervision of Professor João Paulo Conceição Silva Jorge

2018

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DECLARATION

I hereby certify that this dissertation has been composed by me and is based on my own work, unless stated otherwise. No other person's work has been used without due acknowledgement in this thesis. All references and verbatim extracts have been quoted, and all sources of information, including graphs and data sets, have been specifically acknowledged. I further cede copyright of the thesis proposal in the favor of the School of Tourism and Maritime Technology of the Polytechnic Institute of Leiria.

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And to all my friends – May the force be with you!

ABSTRACT

This dissertation was conducted in fulfillment of the requirements for a Master degree in Sustainable Tourism Management at the School of Tourism and Maritime Technology of the Polytechnic Institute of Leiria in Peniche, Portugal.

The sustainability of surf destinations has gained considerable attention over the last decades and surfers have been identified as key stakeholders for the planning and development of sustainable surf tourism. In order to achieve changes in people's behavior, it is important to gain insights into their beliefs and values and how these influence their decisions.

Therefore, the purpose of this study is to assess surf tourists' environmental awareness by using the revised NEP scale (Dunlap et al. 2000) and additional questions, and thus, simultaneously enlightening the contradictory relationship between the representation of surfers and the environment, and further contribute to sustainable surf tourism planning and development.

A quantitative method was applied to this study by conducting a questionnaire amongst 145 surf tourists in Peniche, Portugal. The results show, contrary to other studies and the representation throughout media, that surf tourists do not identify with the term environmentalist. Nevertheless, they have a strong ecological worldview, meaning that they have an environmental awareness in a broader sense. The majority of the respondents display a mid-ecological to pro-ecological attitude. However, when it comes to surf related issues and the environment, it seems that there is a lack of awareness. Further, it shows that there is a high willingness to advocate for the environment, however, it became also evident that there is a lack of knowledge on how to advocate for the environment amongst most respondents. Thus, the findings suggest that there is a need to educate and engage surf tourists.

Keywords: Sustainable Surf Tourism, Surf Tourists, Environmental Awareness and Attitude, Pro-environmental Behavior, New Ecological Paradigm, Measurement.

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Table of Contents

Acknowledgements	iii
Abstract	iv
List of Tables	viii
List of Figures	viii
List of Abbreviations	ix
CHAPTER 1. INTRODUCTION	1
1.1. Study Framework	1
1.2. Research Purpose, Aim and Questions	2
1.3. Thesis Outline	5
CHAPTER 2. LITERATURE REVIEW	6
2.1. Introduction	6
PART I SURF TOURISM	7
2.2. Surf Travel and Tourism Growth	7
2.3. Defining Surf Tourism	9
2.4. The Origin and Rise of Surf Tourism	10
PART II SUSTAINABLE SURF TOURISM	13
2.5. Sustainable Development	13
2.6. Tourism and Sustainable Development	14
2.7. Surf Tourism and Sustainable Development	15
2.7.1 Economic and Socio-Cultural Impacts	16
2.7.2 Environmental Impacts	18
PART III ENVIRONMENTAL AWARENESS WITHIN THE SURF COMMUNITY	21
2.8. Environmentalism	21
2.9. Environmental Awareness and Behavior	22
2.9.1 Socio Psychological Theories for Environmental Awareness and Behavior	24
2.9.1.1 Theory of Planned Behavior (TPB)	24
2.9.1.2 Value-Belief-Norm Theory (VBN)	25
2.9.2 Measurement Scales for Environmental Awareness and Behavior	27
2.9.2.1 Ecological Attitude-Knowledge Scale	27
2.9.2.2 SEU Scale	28
2.9.2.3 The New Ecological Paradigm Scale (NEP)	28
2.9.2.3.1 Criticism of the NEP Scale	31
2.9.3 Socio-Demographic Factors	32
2.10. Environmentalism in Surfing	34
2.10.1 The Rise	34

2.10.2 Surfers and the Notion of being Environmentalists.....	35
2.11. Summary	39
CHAPTER 3. STUDY AREA AND METHODOLOGY	40
3.1. Introduction	40
3.2. Study Area	41
3.2.1 Location and Geography	41
3.2.2 Surf Tourism in Peniche - Portugal	42
3.3. Methodology	44
3.3.1 Research Philosophy, Approach, and Strategy	44
3.3.2 Questionnaire, Data Collection, and Sample	45
3.3.3 Measurement and Data Analysis	46
3.3. Summary.....	47
CHAPTER 4. RESULTS	48
4.1. Introduction	48
4.2. Surf Tourists Profile	51
4.3. Potential Impacts of Surf Tourism on Surf Destinations	51
4.4. Environmental Advocacy and Awareness.....	52
4.5. Ecological Attitude (Worldview).....	55
4.5.1 NEP Scores	55
4.5.2 Comparing Means	59
4.6. Summary.....	61
CHAPTER 5. DISCUSSIONS AND CONCLUSIONS	62
5.1. Introduction	62
5.2. Concluding Discussion	63
5.3. Conclusions	67
Limitations to the Research.....	69
Future Research.....	70
References	71
Appendix A. Questionnaire	83

List of Tables

Table 1 The five facets of an ecological worldview. Source: Dunlap et al. (2000).	30
Table 2 Surf Tourist Profile.	49
Table 3 Respondents Opinion about what makes a surfer environmental friendly.	53
Table 4 NEP Items with Frequency, Mean and Standard Deviation of responses.	57
Table 5 Environmental attitude scores according to NEP subscales.	58
Table 6 Descriptive statistics for the NEP score variable.	58
Table 7 Ecological attitude scores according to categories.	58
Table 8 Gender and NEP subscales.	59
Table 9 Age and NEP score.	60

List of Figures

Figure 1 Early model of pro-environmental behavior by Burgess et al. (1998). Source: Kollmuss & Agyeman (2002).	23
Figure 2 Theory of Planned Behavior (TPB) Source: Ajzen (1991, p. 182).	24
Figure 3 VBN model for environmental behavior. Source: Stern (1999).	26
Figure 4 Location of Peniche. Source: Adapted from Weltkarte.	41
Figure 5 Location of Berlenga Islands. Source: Adapted from Haliotis.	41
Figure 6 Surf Spots in Peniche. Source: Adapated from Municipality of Peniche.	42
Figure 7 Graphical representation of the variable 'Country'.	50
Figure 8 Respondents perception of potential impacts of surf tourism on surf destinations.	51
Figure 9 Respondents Environmental Advocacy.	52
Figure 10 Respondents willingness to pay an accommodation tax.	53
Figure 11 Respondents self-appraisal about being an environmentalist.	54
Figure 12 Age and NEP categories.	60

List of Abbreviations

AC – Awareness of Consequences

AR – Ascription of Responsibility

ASP - Association of Surfing Professionals

BZM - Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung

CO₂ – Carbon Dioxide

DSP - Dominant Social Paradigm

ISA - International Surfing Association

NEP – New Ecological Paradigm

PEB – Pro-Environmental Behavior

PNG - Papua New Guinea

SEU - Das Skalensystem zur Erfassung des Umweltbewußtseins

STOKE – Sustainable Tourism Operator’s Kit for Evaluation

TPB – Theory of Planned Behavior

UNEP - United Nations Environment Programme

UNWTO – World Tourism Organization

VBN – Value-Belief-Norm Theory

WCED - World Commission on Environment and Development

WSL – World Surf League

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CHAPTER 1. INTRODUCTION

1.1 STUDY FRAMEWORK

Since the middle of the twentieth century, as surfing gained more international prominence and popularity, as well as due to globalization in general, the global surf tourism industry has grown exponentially. With the increased global interest in surfing, which was evoked by the image of the surfing culture and the quest for the perfect wave in un-surfed areas around the world (Laderman, 2014), surfing has become a multi-billion dollar industry, including the manufacturing of surfboards, surf clothing and travel; and has converted whole coastal destinations into surf enclaves (Borne & Ponting, 2017).

Mainly in developing countries the surf tourism industry is becoming progressively important, as it can have profound impacts on underdeveloped areas (Baker, 2006). Therefore, the impacts caused by surf tourism in developing countries have been the focus by several studies. Whereby the growing number of surfers continues on the quest for the perfect wave by travelling to the most remote places in the world, surf tourism entails negative impacts on the host environment and local communities (Ponting, 2008). Therefore, the sustainability of surf destinations has gained abundant attention over the last years.

As surfing is considered to be an “important recreational and cultural use of the coastal zone” (ASBPA, 2011), surfers have been identified as a key stakeholder group in order to better understand and manage surf sites more sustainably (ASBPA, 2011; Scarfe et al., 2009; as cited in Martin & Assenov, 2014). Therefore, surfers play an important role to identify, preserve and mitigate surfing resources and promote the basic principles of sustainability.

The rise of environmentalism in the 1960s had a big influence on the practices of sustainability and in the rise of environmental activism within the surf culture, leading to the emergent of a great number of influential surf related NGOs such as, The Surfrider Foundation, Surfer Against Sewage and Save our Surf (SOS).

It is commonly argued, that surfing can encourage a deeper attachment with the natural world and thus, can lead to more environmental awareness (Bartlett, 2008). Moreover, what can encourage surfers to act as protectors of the ocean and to have more pro-environmental behavior is the fact that surfers experience first-hand pollution from sewage, urban runoff and marine plastic pollution (Martin & Assenov, 2012). Depending on the natural resources (Reis & Jorge, 2012), protecting and preserving should be in their best interest. The representation of surfing is closely linked with romantic conceptions of nature and surfers as a community self-identify as having a keen sense of environmental awareness (Hill & Abbott, 2009a).

However, studies show (Hill & Abott, 2009a; Eddy, 2015), while surfers identify themselves as environmentally aware, their actions and activities mostly do not correspond to this representation, and show a conflicting relationship between surfers and the environment. Surfers commune with nature on surfboards made of poisonous polymers, wearing wetsuits made of oil, use indefinite amount of petrol for the endless search for the perfect wave, either travelling long distance or just driving from beach to beach to check the wave conditions. Studies show that surfers have a 50% higher carbon footprint than the average citizen, mainly due to the amount they travel (Schultz, 2009; Butt, 2015).

Other studies (Frank, 2015; Mass, 2016; Moore, 2011), however, found out that surfers tend to have a strong ecological view, whereby behavioral models suggest that a number of factors such as sociodemographic attributes can influence environmental awareness and pro-environmental behavior.

This research examines the surf tourists' environmental attitude in Peniche, Portugal and seeks to contribute to sustainable surf tourism planning and development through an clarification and understanding of the environmental awareness of surf tourists, and simultaneously enlightening the contradictory relationship between the representation of surfers and the environment.

1.2 RESEARCH PURPOSE, AIM AND QUESTIONS

The act of surfing in itself does not affect the natural environment, however, the surf industry and sector of surf tourism, as any other form of tourism, have direct and indirect negative impacts on the natural environment. Coastal destinations are critical and vulnerable environments, and increasingly face concerns over the protection and sustainable management of limited resources and habitat (Weaver, 2001), therefore it is crucial to minimize the negative impacts.

Surfers have been identified as a key stakeholder group in the planning and development of the sustainability of surf tourism, and further, it was indicated that they are more likely to inherent pro-environmental behavior. However, the level of consonance between surfers and nature has been increasingly questioned due to increasing number of surfers worldwide, the damaging methods of surfboard production and the seemingly lack of a conservation philosophy among some individual surfers.

Therefore, it is important to investigate the links between surfers and pro-environmental behavior/environmental awareness, and it requires further observance in that matter. An understanding of environmental attitudes and beliefs among surfers can help the development of sustainable surf resource management.

The research on identifying and understanding the environmental awareness and pro-environmental behavior of surf tourists in Portugal, particularly in Peniche, is essential because Portugal has prioritized surf tourism at the national level and according to STOKE Certified CO-Founder, Carl Kish (2017), “Peniche is a glowing example of the country’s potential to become an international leader in sustainable tourism and surf resource management”.

Peniche is known as the wave capital of Portugal, and the small coastal town is home to the MEO RIP Curl Pro – Surf World League Tour since 2009, boosting its economy and its international recognition. Surf Tourism has become a significant economic driver and attracting an increasing number of surf tourists during all year round, and is therefore, exposed to negative environmental impacts.

Previous research, related to surf tourism, has been conducted in Peniche, focusing for instance on the motivation and destination choice of surf tourists (Reis & Jorge, 2012). A recent study (Afonso, 2017) focused on the adoption of sustainable surf tourism principles in Peniche.

However, no research has been conducted within the context to identify and understand the environmental awareness and pro-ecological behavior of surf tourists in Peniche. As mentioned before, within surf tourism research it has been acknowledged that surfers are a key stakeholder group when it comes to the development of sustainable surf resource management. Therefore, the study aims to determine the environmental attitudes of surf tourists within the framework of the new ecological paradigm, environmental advocacy and the awareness of the impacts of surf tourism. And thus, contribute to sustainable surf tourism planning and development through a clarification and understanding of the environmental awareness of surf tourists, and simultaneously enlightening the contradictory relationship between the representation of surfers and the environment.

The following main research question, sub-questions, as well as the corresponding objectives and hypothesis, serve as guidelines for this study.

Main Research Question :

- What is the attitude of surf tourists towards the environment and how does the stereotype of a surfer being an environmentalist reflect reality?

Sub-Questions:

- Are surf tourists aware of the impact that surf tourism has on the environment ?
- Are surf tourists willing to pay more for environmental protection?
- Do the socio-demographics correlate with the environmental concern of surf tourists?

Objectives:

- Contributing to sustainable surf tourism planning and development by clarification and understanding of the environmental awareness of surf tourists, and simultaneously enlightening the contradictory relationship between the representation of surfers and the environment.
- Measuring the environmental awareness of surf tourists using the NEP scale.
- Determining whether surf tourists are aware of the impacts that surf tourism has.
- Identifying surf tourist's environmental advocacy by examining their attitude towards an accommodation tax earmarked for environmental protection.
- Determining whether socio-demographics influence their environmental attitude.

Based on the literature review, the following hypothesis are proposed to be tested:

H1: The socio-demographic characteristics of surf tourists influence their environmental attitudes.

The hypothesis was formed to help answer the third sub-research question. In several previous studies (e.g. Blocker & Eckberg, 1997; Hunter et al., 2004; Casey & Scott, 2006; Xiao & McCright, 2014; Sanchez, 20016) the relation between socio-demographic variables and the ecological behavior was investigated and in some of these studies it was proven that gender, age or education affect the environmental attitude. If this applies to the surf tourists in Peniche, Portugal, the findings could be used to develop appropriate strategies to educate surf tourists.

H2: Surfers identify themselves as environmentalists

Through self-representation, and the representation throughout media, surfers are considered to be environmentalist and mostly environmental conscious. Studies show (Hill & Abbott, 2009a; Eddy, 2015) that the majority of surfers identify themselves with the term environmentalist, however, it was further found that their actions do not correspond to this representation. The hypothesis was formed to investigate the self-assessment of surfers opposing their attitude and to identify if the stereotype held to be true.

1.3 THESIS OUTLINE

The thesis is divided into five chapters, including this part of introduction, which seeks to give the readers a guidance and an overview. This introduction is followed by the consecutive chapters as listed below.

Chapter 2 – Literature Review: This chapter is divided into three parts and provides a theoretical framework on the following topics. The first part starts with a general review of surf tourism, followed by the second part, which discusses sustainable surf tourism. Within this part, a review on the overall concept of sustainable development and its relation to tourism, specifically surf tourism, is provided. Further, this chapter discusses the impacts that surf tourism has on surf destinations and provides examples.

The third part presents background information on environmental awareness within the surf community. To understand environmental awareness, the terms environmentalism, as well as environmental awareness and pro-environmental behavior are explained. Additionally, it provides a review on how to measure environmental awareness and discusses several theories and methods. Finally, it discusses the rise of environmentalism within surfing, and critically examines the relationship between surfers and the environment.

Chapter 3 – Methodology: This part, firstly, presents the study area and provides an overview of its location and geography. Further, it discusses surf tourism within the study area.

Secondly, this chapter elaborates on the research methods, approach and strategy of this research by utilizing the Saunders et al. (2009) 'Research Onion' approach to establish the methodological framework. Additionally, it discusses the questionnaire, data collection, sampling approach, and data analysis method.

Chapter 4 – Results: This chapter presents the results derived from the process of data collection, whereby the sub-chapters are outlined according to the themes of the questionnaire.

Chapter 5 – Discussions and Conclusions: The chapter comprises a discussion of results. Empirical findings of this study in conjunction with previous research is interpreted. Furthermore, key findings in conjunction with the research questions and objectives are highlighted.

Lastly, the limitations of this study and recommendation for future research are discussed.

CHAPTER 2. LITERATURE REVIEW

2.1 INTRODUCTION

The dynamics of surf tourism and sustainability has gained significant attention of research in recent years. Surfing is a globally recognized cultural phenomenon whose dependent connection with nature and the rapid expansion into a multibillion dollar industry has been critically subjected due to its negative impacts. Therefore, efforts were made to apply sustainable principles.

However, an interrelated key stakeholder group, namely individual surfers, which influence the role of surf tourism and sustainable development, are known to have a complex relationship to the environment and introduces contradictions to surfing as being ecologically friendly.

This chapter consists of three parts and provides a theoretical framework on the following.

Part I – Surf Tourism: In this part the researcher discusses the phenomenon of surf tourism, its connotation and further gives a brief overview of its history.

Part II – Sustainable Surf Tourism: The overall concept of sustainable development on its own and in relation to tourism and surf tourism is discussed in this part. Including the negative impacts on the economic, social and ecological welfare on surf destinations.

Part III – Environmental Awareness within the Surf Community: This part consists of a brief overview on environmentalism, followed by a review on environmental awareness and behavior. It further discusses how environmental awareness and behavior can be measured and which factors influence it. Finally, it reviews the rise of environmentalism within the surfing community, critically looks at the presumptions of surfers being environmentalists.

PART I SURF TOURISM

Surf tourism is expanding rapidly and has taken coastal destinations by storm, representing the fastest growing sector of the booming global surf industry. To understand the surf subculture and the development of surf tourism, this section discusses the overall phenomena of the surf industry, the context of surf tourism and its origins.

2.2 SURF TRAVEL AND TOURISM GROWTH

Surf tourism is a significant form of the worldwide adventure tourism and recreation sector, involving human interaction with diverse coastal environments on sea and land (Buckley, 2002a), and it is considered as one of the fastest growing action sports in the world and especially in Portugal, surfing is being considered not only as an action sport, but also as an economic activity (Bicudo & Horta, 2009).

The estimated number of surfers in the world varies widely and it is difficult to state an exact number of surfers worldwide. However, Buckley (2002a) estimated, that there were 10 million surfers worldwide in 2002. Other estimations on the number of surfers worldwide range from 23 million (Carrol, 2014) to 35 million (Ponting & O'Brien (2014).

As the number of surfers worldwide increases steadily, surfing has become a multi-billion dollar industry. The estimation of the economic scale of the surfing industry, including travel, manufactured surfboards and wetsuits, as well as surf-branded clothing, vary as well as the number of surfers worldwide. Even though, estimating the economic significance of this industry is not easy (Buckley, 2003), Buckley (2002a), estimated the economic value of the surf industry in the beginning of 2002 at \$10 billion dollars.

According to Borne (2014), the surf industry is worth in excess of \$6 billion dollars and estimates an increase of \$13 billion dollars by 2017. However, O'Brien and Eddie (2013; as cited in Ponting & Obrien, 2014, p. 385) estimated the economic scale of the surf industry between \$70 and \$130 billion dollars. The Global Industry Analysts (2016), projected that the surf industry by 2022 is expected to reach \$9.5 billion dollars, and an annual growth rate of 5% (as cited in Larson et al. 2017).

As can be seen, surfing gained more recognition on a global level over the years with a significant economic contribution for coastal communities, however, the economic aspect is not the only contribution, it has become a significant social phenomenon with environmental and social benefits (Buckley, 2002a).

Therefore, it is hardly surprising that for many coastal areas, surfing has become a lucrative market and plays a significant role in the tourism strategies. As Ponting (2008) points out, surf tourism seems to be present on almost every surfable coast worldwide.

This could be argued with the fact that surfing became more accessible to many people around the world over the years by the increasing prevalence of surf schools in many tourist destinations (Stranger, 2011).

Surfers' need to travel around the world, to search for the perfect and uncrowded waves around the globe and to remote destinations (Butts, 2001), increased since the release of Bruce Brown's (1966) movie 'The Endless Summer', which documented two surfers' journey to follow the summer and various sports around the world. This resulted in the exploration of new surf locations that further developed into significant tourism destination such as Bali and Mentawai Islands in Indonesia, Papua New Guinea, as well as Tamarindo in Costa Rica and many more (Dolnicar & Fluker, 2003).

However, it is certain that once a surf spot is discovered, it is difficult to keep it as a secret from other surfers, and uncrowded places become quickly overcrowded. Thus, the search is an ongoing process and surfers travel to various surf venues throughout the world, often with the help of tour operators that coordinate the travel arrangements. Nowadays, there is an indefinite number of tour operators that arrange a "fly-drive surf package to the all-inclusive learn to surf camps that guarantee to teach surfing within one week" (Tantamjarik, 2004).

As surf tourism has developed, the characters of surf tourists and types of surf travel have also evolved and changed. Tantamjarik (2004) argues, that surf travel has changed over the years and that the surf travelers are no longer just backpackers who are searching for the perfect wave, but that "surf travelers are even beginning to resemble the leisure traveler willing to pay a little more for some higher-end amenities when they travel, and choosing to engage in weeklong surf vacations packages at beachfront hotels and resort" (Tantamjarik, 2004).

Although the topic of surfing is relatively new in the academic area, research on surfing has steadily increased in the past 15 years (e.g Beaumont & Brown, 2016; Booth, 2013; Evers, 2009; Lanagan, 2003; Martin & Assenov, 2012; Nazer, 2004; O'Brien & Ponting, 2013; Ponting, 2015; Ponting, McDonald, & Wearing, 2005; Preston-Whyte, 2002; Usher & Kerstetter, 2015; Waitt, 2008; Wheaton, 2007; as cited in Larson et al. 2017).

For example Ponting, McDonald and Wearing (2005) and Buckley (2002a, 2002b), explored surf tourism in the Indo-Pacific Islands and discussed the growth of surf tourism and - the surf industry. O'Brien and Ponting (2013) analyzed a strategic approach to managing surf tourism in Papua New Guinea (PNG) in their research.

Within the research of Ponting et al. (2005), it was found that surf tourism does not fit the ecotourism model. There are various assumptions and definitions of surf tourism, which some of them are discussed in the following.

2.3 DEFINING SURF TOURISM

Although surf tourism has gotten an increased and recognizable amount of academic research over the years, an unified definition is not available yet. Not only do the definitions of surf tourism vary, but it seems also that researcher have difficulties to come to an agreement to categorize it to one of the tourism sectors. While some researchers (e.g Orams, 1999) categorize surf tourism under the sector of marine tourism, other researchers (e.g. Buckley 2002a; Tantamjarik, 2004) identify surf tourism as the nature-based adventure tourism. Poizat-Newcomb (1999) and Dolnicar and Fluker (2003), however, argue that surf tourism is a subset of sport tourism. It is also argued that surf tourism is considered to be a subset of coastal tourism and eco-tourism, however, as mentioned before, Ponting et al. (2005) argue, that surf tourism does not fit in the eco-tourism model.

According to Buckley (2002a), surf tourism is a new product that improves tourism development in any destinations and argues that travel is an essential part of surf tourism. So for Buckley (2002a), surf tourism is “when surfers travel at least 40 km and stay overnight with surfing as the primary purpose for travel”. It is also pointed out by Buckley (2002) that a surf tourist is a surfer first and a tourist second.

However, this definition is questioned by Orams and Towner (2013), who argue that the majority of surfing and surf-related activities are excluded in Buckley’s (2002a) definition. Moreover, surfers who live nearby the surf breaks are also excluded, and Orams and Towner (2013) state, that every surfer is away from home in the ocean (as cited in Mills & Cummins, 2015).

Another attempt to define surf tourism is given by Dolnicar and Fluker (2003), who don’t define surf tourism with a traveled distance as Buckley (2002), but rather with a duration of stay. According to this definition, “surf tourism involves people travelling to either domestic locations for a period of time not exceeding 6 months, or international locations for a period of time not exceeding 12 months, who stay at least one night, and where the active participation in the sport of surfing, where the surfer relies on the power of the wave for forward momentum, is the primary motivation for destination selection" (Dolnicar & Fluker, 2003).

Similar to the definition from Dolnicar and Fluker (2003), Ponting (2008) highlights, the primary purpose of surfing waves in his definition. As stated by Ponting (2008), "Surfing tourism is travel and temporary stay, undertaken by a surfer, involving at least one night away from the region of the surfer's usual domicile which is undertaken with the primary expectation of surfing waves." Different from the other definitions, Ponting (2008, p. 25) uses a concept formation of surfing tourism instead of surf tourism, which refers to "surfers touring, not tourists surfing". As can be extracted from the three definitions, all refer to the minimum stay of one overnight away from home and with the primary purpose of travel is to surf waves.

2.4 THE ORIGIN AND RISE OF SURF TOURISM

Technically, it is difficult to exactly trace back the first wave surfed by a person yet by a specific culture. However, in several surfing literature, it is said that surfing finds its roots in a number of Pacific cultures, including Hawaii, Polynesia and Peru (Kampion, 2003).

The widespread presumptions consider Hawaii as the birthplace of surfing, because Hawaii mainly resembled the idea of modern surfing with people standing straight on their surf boards (Finney & Houston, 1996). However, as surfing in Hawaii dates back to 1500 years ago (Walker, 2011), some surf historians (e.g Warshaw, 2004) argue that the origins in surfing, roots in pre-Inca Chan Chan (Peru) ,dating back to 3000 B.C., in which locals were riding canoes upon the crest of the waves. This would mean that the roots of surfing go much further back than widely assumed. Nevertheless, it can be argued that the modern era of surf lies in the roots of the Hawaiian culture, and that surfing is an integral part of their cultural identity.

When Captain Cook and his crew board 'The Resolution' arrived in Hawaii in 1777, surfing in Hawaii's history was already firmly anchored. Places have been dedicated to legendary surfing events, and special rituals have been developed to baptize new boards, promote the swell, and encourage the men and women who approach the big waves (Warshaw, 2004). Before the arrival of Cook, Hawaii was strictly divided into classes, which also had an effect on riding waves. Authorities enforced rights that allowed only royals to surf better waves and certain reef and beach breaks (Ponting, 2008).

According to Ponting (2008), Hawaiians that had no such rights, started to explore nearby islands in search of new waves. Following up on this, it could be argued that those Hawaiian explorers could have been the first surf tourists, and thus, surf tourism might originates in the Hawaiian culture.

Although surfing was already firmly anchored within Hawaii, when Captain Cook arrived, surfing experienced a big decline, when more European missionaries arrived. The European contact had a negative impact on Hawaii and as Cook published his research, Hawaii became a travel destination for many adventurers, captains and missionaries, who brought new technologies and religions and thus, influenced the Hawaiian culture and the importance of surfing (Ormrod, 2005). However, surfing in Hawaii was rediscovered in end of the nineteenth/beginning of the twentieth century and became once again popular in the mid1950s (Booth, 2004).

The global tourism industry has grown significantly since the middle of the twentieth century (Martin & Assenov, 2008), which can be argued with the fact that travel became an integral part of what it meant to be a 'true surfer', searching for the perfect waves (Hill & Abbott, 2009).

Documentaries, such as 'The Endless Summer' by Bruce Brown, which took two surfers on the quest for the perfect wave in un-surfed areas around the world contributed to the importance of travelling for the search of the perfect wave (Laderman, 2014), and Kampion (2003) even points out, ... "...that this was the ignition for the explosion of surf travel that shaped the sport for the rest of the millennium". Through these documentaries, surf tourism was introduced to surfers and non-surfers (Martin & Assenov, 2012).

In the past, surfing was just about the surfer and the sea and being one with the nature. Nowadays, surfing became rapidly commercial and has a mainstream appeal with continuous media attention attracting a large amount of people (Marting & Assenoc, 2008).

Hence, surfing has become a multi-billion dollar industry, including travel, manufactured boards and wetsuits, as well as surf-branded clothing. The development of light boards and wetsuits made surfing even more comfortable to surf in cold waters, made travelling easier and surfing more accessible to a larger audience (Lazarow et al. 2008).

Today, surf tourism can be divided in two components, the recreational surf travel, which still belongs more to the traditional way of exploring new surf breaks, as the surfers plan their own trips and use their own transportation, and also stay in local accommodations or their own tents. And then there is commercial surf tourism, which means that tour operators plan and package the surf trip, including transport and accommodation, and the provision of surf equipment and surf lessons (Buckley, 2002a).

Commercial surf tourism has led to negative socio-cultural impacts on local communities as it was suggested in the research from Buckley (2002a); Ponting, McDonald and Wearing (2005), Ponting (2008), and Ponting and McDonald (2013), which was undertaken in the Mentawai Islands. Surf tourism is often expanding into less developed world parts with newly discovered surf breaks, as in the case of the Mentawai Islands, and resorts and charter boats increasing every year, which resulted in the overrun of the islands' capacity.

As discussed in this section, surf tourism evolved and increased rapidly over the decades and the increasing number of documentaries and magazines that fuel the demand by representing these destinations giving rise to this continuously growing industry, but also another important development that boosts and popularized the sport among a wider audience, are the professional surf championships (WSL) that take place in various different surf spots around the world, and the fact that surf is added to the 2020 Olympic Games in Tokyo, could be also another booster to bring this sport to even a wider audience (ISA, 2017).

PART II SUSTAINABLE SURF TOURISM

Any form of tourism has the potential to negatively impact the social, economic and physical environment and therefore, as a counter reaction, new forms of tourism with a more sustainable approach have emerged, including eco-tourism, volunteer tourism, pro-poor tourism and sustainable tourism, which focus on an equal distribution of revenue and the conservation of the physical environment. Sustainability has become one of the most pervasive concepts of the twenty-first century's and it seems that there is no way to avoid it.

This section briefly discusses the concept of sustainable development, sustainable development in the context of tourism and sustainable surf tourism, as well as the impacts implicated by surf tourism, with a stronger focus on the environmental impacts.

2.5. SUSTAINABLE DEVELOPMENT

In order to understand the concept of sustainable surf tourism, one must first understand the concept of sustainable development as it is the foundation of it.

Hopwood et al. (2005, p. 39), argues that "the concept of sustainable development is the result of the growing awareness of the global links between mounting environmental problems, socio-economic issues to with poverty and inequality and concerns about a healthy future for humanity".

There are many different origins and definitions of the term sustainable development, yet the most widely recognized definitions stems from the report of the World Commission on Environment and Development (WCED) (1987), and according to that, sustainable development is "a process to meet the needs of the present without compromising the ability of future generations to meet their own needs".

It contains two key concepts, the concept of "needs -precisely the needs of the world's poor, and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet the present and future needs"(WCED, 1987). In other words, sustainable development aims to preserve the overall balance, respect for the environment and preventing the exhaustion of natural resources.

So in a very broad sense, sustainable development refers to a culture that thinks and lives in balance with the care for the environment, society, and the economy, which are considered to be the three pillars of sustainable development (UNEP & UNWTO, 2005). Overall, it is undeniable that in general an unsustainable lifestyle has created serious environmental issues and that if society continues to be apathic, either on an individual level or industrial level, the quality of life for the next generations are at risk, so the call for sustainable development is essential to sustain resources.

2.6 TOURISM AND SUSTAINABLE DEVELOPMENT

According to BZM (2011, p. 4), tourism has developed from a niche - into a mass product in many developing countries. In particular, long-distance tourism has grown at an above-average rate over the last 25 years, resulting in the fact that developing countries quadrupled their market share within the global tourism industry. It is forecasted by the UNWTO (as cited in BMZ, 2011, p. 4) that the global numbers, for the year 2020, will double in comparison to the year 2004, with an above average growth rate for developing countries.

As Honey (2008) states, the tourism sector offers great opportunities for economic and cultural development, however, mass tourism often caused more harm to society and the physical environment, especially in third world countries.

The call to integrate sustainable development principles gained significant relevance in the tourism industry, mainly because of the imbalance of positive and negative impacts of the three pillars (social, economic and environment). Therefore, measures have been taken to apply sustainable development to tourism development as well.

Sustainable tourism; is therefore, "tourism that takes full account of its current and future economic, social and environment impacts, addressing the needs of visitors, the industry, the environment and host communities (UNEP & UNWTO, 2005, p. 12).

2.7 SURF TOURISM AND SUSTAINABLE DEVELOPMENT

“It is important to be organized, having clear policy and solid leadership. Every surf destination has its own set of challenges. The end result justifies the effort. If we ensure the wave riding experience for future generations, we will perpetuate the dream of the surfing lifestyle”- Wayne Bartholomew (as cited in Borne & Ponting, 2015).

Sustainable surf tourism, likewise as sustainable tourism, adapts the principles of sustainable development and therefore, the overall aim is to respect the current and future, economic, social, cultural and ecological welfare of the local community, and create tourist satisfaction. However, there are major barriers to sustainable development within surf tourism and as can be extracted from the quotation above, every surf destination has its own set of challenges.

To assess and measure the sustainability of surf tourism in less developed countries, some models have been developed. For instance, the Surf Resource Sustainability Index (SRSI) by Martin and Assenov (2012), which is a “multidimensional approach by placing sustainability indicators into qualitative and quantitative modules for analysis, serving as a theoretical compass pointing at surf habitat conservation issues” (Borne & Ponting, 2017).

Ponting and O'Brien (2013, 2014) propose the Frame Analysis for Sustainable Surf Tourism (FASST) which consists of five variables, whereby it considers the impact of economic neo-liberalism; the need for coordinated planning and limits to growth; the advantages of systematic attempts to foster cross-cultural understanding; the social benefits associated with the development of surfing at the village level; and the need for surf tourism to contribute to poverty alleviation in destination communities (Ponting & Obrien 2014).

Additionally, the Stoke certification was created in 2014, to assess the sustainability of surf hotels and resorts (Borne & Ponting, 2017).

In order to understand how sustainable surf tourism arose as a concept, one has to understand the issues and challenges within the surf tourism industry. The general issues and impacts surrounding the social, economic and ecological welfare of surf destinations are discussed in the following.

2.7.1 Economic and Socio-Cultural Impacts

As previously discussed, surfing has become a multi-billion dollar industry over the years, which is even expected to continue to expand. Within the industry, surf tourism is one of its most valuable sectors. Whereby, the act of surfing itself is predominantly seen as being environmentally sustainable, mostly because surfing depends on natural resources (Reis & Jorge, 2012); surf tourism (as tourism in general) however, has significant positive and negative economic, social and environmental impacts, as it is bringing tourism development to surf destinations in developing countries all over the world.

Throughout literature, surf tourism has been recognized for its great potential to provide significant economic income and employment opportunities (Dolnicar & Fluker, 2003; Towner & Orams, 2016) and thus can contribute to a healthy society (Lazarow et al., 2008). For instance, according to Buckley (2002a), these opportunities can eventually provide improved education, health facilities and infrastructure, as well as funds for conserving the environment for developing countries. These benefits that are generated by the growing surf industry are more and more acknowledged by coastal destinations, and thus they advertise their surf spots and surf culture in order to attract surf tourism.

For instance, the discovery of high-quality surf breaks in Portugal was used to create jobs for the local community. The local council of Nazaré, a small town on the west coast of Portugal, had organized the project 'Zon North Canyon' in 2011, and invited the surfer Garrett Mcnamara to surf and publicize the waves at Praia Do Norte. This event resulted in many following events and helped Nazaré to become known for having one of the biggest waves in the world. The WSL Big Waves Challenges are held in Nazaré annually, and attract many tourists, and thus boosting the local economy (Gartside, 2017). Furthermore, a great example that surf tourism boosts the economy in Portugal can be seen in the municipality of Peniche, whereas the WSL world circuit is held annually, representing an annual economic impact of approximately 11 million Euros (Jorge et al., 2015).

Especially for developing countries and relatively small surf destinations, surfing has become an activity of economic importance. For instance, when surfers were afraid that a plan for a beachfront condo would ruin the hydraulics of the 30-foot wave that had made the small town (population of 15,200; Suburban Stats, 2017) in Rincon (Puerto Rico) famous, a study was conducted and showed that tourism – most of it surf -related- generated at least \$52 million dollars a year for the local economy in Rincon. Therefore, the condo project was successfully blocked as the economic factor of surf tourism was too significant (Kvinta, 2013).

A similar study by Murphy and Bernal (2008), which was conducted in Mundaka (population of 1.900) in the coast of southern Spain, concluded that the surf breaks generated \$ 4.5 million dollars annually for the local economy. As these studies have shown, waves can generate great market value for coastal destinations.

However, surf tourism has its down side and can of course also have detrimental impacts on the local community. The increase in visitors can threaten local cultures, which can subsequently lead to conflicts (Ormrod, 2005; Ponting et al., 2005).

According to Borne and Ponting (2017), commercialization and crowding are considered to be one of the biggest challenge to sustaining local cultures and access. The increase of the surf population and the scarcity of good surf breaks have led to crowding in many surf destinations and thus became a source of contention for the local surf communities (Martin & Assenov, 2008).

Another endanger for the surf tourism experience that has been acknowledged by surfers and academics as a problem in surf culture is localism, which is a result of crowding (Warshaw, 2003). Since the act of surfing is completely unregulated, local surfers can get territorial of a surf break, and instead of searching for less-crowded waves, they “may violently force non-resident surfers from the water, harm them physically or inflict property damage” (Nazer, 2004; as cited in Usher & Gómez, 2015).

Localism can be harmful for surf destinations, particularly in developing countries that are relying on the income of tourism. Usher and Gómez (2015) argue, that if a surf destination developed a bad reputation because of localism, this may influence a beginner not to start with surfing or could cause that tourists are deterred from such surf destinations.

Moreover, surf tourism has been criticized by many as a process of neocolonialism (Hill & Abbott, 2009b; Ruttenberg, 2014; Ponting et al., 2005), with “local cultures and livelihoods increasingly marginalized by foreign-owned surf tourism business operating in a free-for-all atmosphere of market-based, neoliberal competition” (Ruttenberg, 2014). Ponting (2007) points out, that one of main reasons that the market is dominated by foreign businesses, is because local communities have often not the resources or not the knowledge to compete with foreign businesses.

Further negative impacts that commercial surf tourism has on the socio-cultural of a local community “ranges from the negative influence of the Western culture to the uncontrolled development of resorts and homestays” (Towner & Milne, 2017).

The author remarks, as the numbers of surfers increase steadily, so does the development of surf camps and holiday houses in surf destinations. This can cause an increase of prices for the housing market and supermarket, which in some instances drive out the local people.

2.7.2 Environmental Impacts

As already mentioned, the act of surfing in itself does not affect the natural environment (Recinto, 2017), however, the surf industry and the sector of surf tourism, as any other form of tourism, have direct and indirect negative impacts on the natural environment. As islands and coastal destinations are critical and vulnerable environments (Weaver, 2001), it is crucial to minimize the negative impact. However, Buckley (2000) argues, that even if tourism is managed to be ecologically sensitive it can induce negative environmental impacts. The author remarks that this resonates with the paradox that tourism never can be entirely sustainable. Yet, maintaining environmental quality is critical for surf tourism as it depending on natural resources, however, finding a solution to minimize the level of degradation is one of the main challenges within the tourism industry.

As Martin and Assenov (2008) state, travel is an integral part of surfing, thus surfing and surf tourism run parallel. Travel can be considered as one of the most environmentally unfriendly part within the surfing culture, since it is a main contributor for global warming (Burwell, 2011). According to UNWTO (n.d.), tourism contributes to 4.6% of global warming, whereby air travel is considered the main tourism contributor to global warming with 40% of the total carbon emissions.

As common practice, surfers would drive from beach to beach to check for the best waves, swell and tide conditions; and travel across the globe for high-quality waves, which is considered to be an important part of a surfer's lifestyle (Dick-Read, 2007).

According to Butt (2015, as cited in Larson et al. 2017), surfers have a higher carbon footprint than the average citizen, mainly due to the amount they travel. This resonates with a study (Schultz, 2009), which shows that the average surfer emits 10 tons of CO₂ per year just on surfing, meaning that they have a 50% greater carbon footprint than the average non-surfer (Heisey, 2013).

However, it is more reprehensible to travel around the globe to surf for a living, which is environmentally contradictory. The ASP World Contest Tour arranges 11 contests annually around the world, whereby professional surfers travel halfway around the world every few weeks, emitting (per surfer) more than 24 tons of CO₂ during a season (Chin, 2011).

Buckley (2002a) points out, that tourism not only contributes to the environmental deterioration by the impact of transporting tourists themselves, but also through the "impacts of manufacturing, packaging and transporting goods and consumables specifically to satisfy tourists' preferences". He further argues that the contribution of surf tourism on the global environmental issues is equatable with the contribution of the overall tourism sector.

A major environmental issue that comes not directly from the surf tourism sector, but from the surf industry in general, is the production of surfboards and wetsuits. Nevertheless, the author believes that this issue should be addressed in this section since it is one of surfing's greatest paradox; and considering that it is the most essential equipment in surfing and surf camps/surf schools in surf destinations are supplied with loads of it. The petroleum and chemical based materials have not only an impact on the health of the shapers but also the environment during the production and destruction (Wade, 2007).

Nowadays, approximately 70% of surfboards on the market are made out of "polyurethane (P/U) foam core, which is encapsulated by fiberglass soaked with hardened unsaturated polyester resin (UPR)", which makes the board lighter than wooden boards (Schultz, 2009).

According to Lomax (2010), the manufacturing of surfboards leads to an average of 220,000 tons of CO₂ per year, whereby 20% of foam during the shaping of a surfboard is wasted and ends up in landfills (Chin, n.d.). Moreover, Schultz's (2009) study shows, that a typical 6'0" shortboard weighs approximately 2.5 kilograms, but from production to use and disposal, it contributes more than 270 kilograms of CO₂ to the atmosphere.

And wetsuits are comprised of neoprene, which is a synthetic rubber produced also from petroleum products (Serong, 2017), and Chin (n.d) found out that approximately 250 tons of neoprene is 'scrapped' each year.

As it shows, not only the part of travel, but also the production of the surf equipment has a significant high carbon footprint and it has been criticized by many. This led to a conscious effort to manufacture greener surfboards and wetsuits, however, the market is still dominated by the highly toxic surfboards and wetsuits, continuing to negatively impact the natural environment.

A direct impact of surf tourism is the phenomena of crowding in surf destinations and it is not only threatening the surf experience as mentioned before, but also the local natural environment, whereby resources are being exploited. Including the destruction of reefs, endangering fish species, and pollution of the water in coastal areas (O'Brien & Ponting, 2013). The author remarks, that surfing also can cause damage and destruction of dunes and vegetation in surf destinations.

How surf tourism negatively impacted the environment can be particularly seen in Indonesia, a surfer's paradise, comprised by 13.466 Islands (CIA, 2018). Bali, one of Indonesia's islands and known as the island of gods, has been submerged by an environmental crisis over years.

Serong (2017) states, "the brutal reality is that surfers historically led by Australians, have degraded the Island of Bali beyond recognition". And also Kelly Slater reported that he has never seen a worse pollution than on Bali. He wrote on Twitter, "I've never been so alarmed by pollution situation as this trip to Bali/Indo. We need solutions and multi-industry backing", and added further "If Bali doesn't #DoSomething serious about this pollution it'll be impossible to surf here in a few years. Worst I've ever seen" (as cited in Surfer Today, 2012).

Bali's carrying capacity has exceeded and exploited caused by its tourism development and can-not be managed well by the government. Nyoman argues (n.d.; as cited in Bachelard, 2013), the water usage is far beyond its carrying capacity, thus there exists a competition over very limited natural resources. It is stated by the Wisnu Foundation, that locals use about 150 liters of water a day, whereby tourists in hotels use 1500 liters or more (as cited in Bachelard, 2013).

Another critical issue that Bali faces is the amount of waste produced on a daily basis. The author personally observed in 2012 (in the monsoon season) how the beaches were covered with waste, coming from off shore and on shore. Moreover, the author observed, that trash, including plastic, was burnt by the residents themselves in public places. There are many issues related to inappropriate waste management in Bali. It is estimated that the quantity of waste produced exceeds 240 tons on a daily basis. (R.O.L.E Foundation, n.d.) According to the environment group Walhi, the tourism industry is supposedly responsible for the contamination of 13 beaches in Bali (as cited in Bachelard, 2013).

Bali is just one example of many, how surf tourism, and tourism in general, can overrun the carrying capacity of coastal destinations. The author remarks, how paradox it is, that surf tourism, more preciously surfers, entirely depends on the environment, yet it has an enormous negative impact on the natural environment. From any other sport or tourism sector, it can be argued that surfers and surf tourism in general will be one of the first to be affected by climate change, as in e.g. global sea level rise and any other factor of climate change can shut down surfing.

As it is evident the ideological 'bubble' of surf tourism was eventually exposed over the years and in response to the discussed negative consequences, whether economically, socially or ecologically, sustainable surf tourism has emerged in its intention to foster local communities and their environments from destructive impacts of unregulated surf tourism by "increasing knowledge, including local stakeholders in planning and moving away from developed 'business as usual' models" (Ponting & O'Brien, 2014).

PART III ENVIRONMENTAL AWARENESS WITHIN THE SURF COMMUNITY

Surfers are key stakeholders in sustainable surf tourism, therefore, it is important to understand their attitude towards the environment in order to take steps towards minimizing the impact on the environment caused by the surf community and surf industry. There is a notion about surfers and surfing, commonly held by those who do it and those who don't, that surfing connects humans with nature, whereby this deeper engagement with the natural world leads to more environmental awareness. And some presumptions identify surfers as environmentalists. This section gives a brief understanding of environmentalism and pro-environmental behavior, how it is influenced and how it can be measured. Moreover, the connection between environmentalism and surfing is examined.

2.8 ENVIRONMENTALISM

The Earth, is home to the human population but yet it is not looked after like it is our home. Humans utilize the Earth's resources, pollute it with trash and much else for decades, and not much thought was given in the past to what will be in the future. However, the concern to protect the environment of the Earth is not new and has recurred in diverse forms, in different parts of the world, throughout history. According to Guha (2000), there are two waves of environmentalism that date back from the eighteenth century throughout the present. The initial response to industrialism counts as the first wave of environmentalism and the second wave of the modern environmental movement was formed in response to new technologies, urbanization and globalization (Guha, 2000).

Especially in the 1960s and 1970s, an era known for radical political, social and cultural movements; concerns for the natural environment were raised out of the rapid growth of urbanization and industrialization, which entail "land degradation, loss of natural habitats and endangerment of species, as well as natural resource depletion, pollution of air, land and water due to waste products" (Fidelman, 2010).

Environmentalism is an all-embracing word, including different ideas of nature, society and activism, and it is usually a concept that everybody knows, until one is challenged to define it. Curley (2010, p. 240), defines environmentalism as a "political and ethical movement that seeks to improve and protect the quality of the natural environment. In various ways, environmentalism claims that living things other than humans, and the natural environment as a whole, are deserving of consideration in reasoning about the morality of political, economic, and social policies".

According to Fidelman (2010), “environmentalism refers to a social movement and associated body of thought that expresses concern for the state of natural environment as seeks to limit the impact of human activities on the environment.” In other words, environmentalism is much more than just to conserve the resources and protect the ecosystems. It can be more considered as a philosophy of human conducts (O’Riordan, 1991) and awareness, and is a concern for the planet as a whole.

An important and integral part of environmentalism is environmental awareness and pro-environmental behavior, which is discussed in the following.

2.9 ENVIRONMENTAL AWARENESS AND BEHAVIOR

As our society faces major challenges regarding environmental protection and restoration, various governments have undertaken the task of responding to these challenges by establishing policies and standards to regulate the impact of human activity. However, Milton (1993) argues, that it does not only depend on governments and other entities, but also on the individuals choices and their behavior towards the environment.

Besides, the European Commission (2005) points out, that most people blame and hold the governments and industries accountable for (a) negatively impact the environment and (b) to manage the environmental protection and restoration. However, they emphasized in their 2005 campaign, that environmentalism concerns us all and starts with the individual; the way of a lifestyle is what leads to environmental impact and through environmentally conscious behavior and awareness in the daily life, pollution can be minimized and the environment can be affected positively. Therefore, pro-environmental behavior and awareness of individuals is important to be taken into consideration when it comes to understanding and promoting a more sustainable development.

According to Culiberg & Rojšek (2008; as cited in Ham, Mrčela & Horvat, 2016), “environmental awareness is the attitude regarding environmental consequences of human behavior. Starting from the typical definition of attitude, environmental awareness is a predisposition to react to environmental issues in a certain manner”. Whereby, pro-environmental behavior is “a behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (Kollmuss & Agyeman, 2002).

The model below, shows one of the oldest and simplest theory of pro-environmental behavior (Burgess et al.,1998), which proceeds on the assumption that knowledge of the environment leads to environmental awareness (attitude) and this results in pro-environmental behavior.



Figure 1 Early model of pro-environmental behavior by Burgess et al. (1998). Source: Kollmuss & Agyeman (2002).

This model can be categorized into the linear models, which include the theory of reasoned action, the theory of planned behavior, and models of predictions of environmental behavior.

Nevertheless, Kollmuss & Agyeman (2002, p. 241) address, that according to various research these models are insufficient for illustrating a linear progression between knowledge, awareness and behavior. Instead, quantitative research showed that there is a gap between awareness and behavior, and that environmental behavior intentions are rather influenced by environmental knowledge and awareness, thereby arising in actions (Kollmuss & Agyeman, 2002).

Ham, Mrčela & Horvat (2016) also argue, that environmental awareness may be the first step to pro-environmental behavior, however, it does not mean just because a person is environmentally aware, that this person has necessarily a pro-environmental behavior. Overall, environmental awareness has a broad implication and it not only implies knowledge about the environment, but also attitude and values. Moreover, it is a complex undertaking to try to understand what forms environmental awareness and pro-environmental behavior, and thus it is a complex variable to measure.

However, several instruments and theoretical frameworks have been developed in order to comprehend environmental awareness and to explain what influences an individual to participate in pro-environmental behavior (Van Liere & Dunlap, 1980; Weigel & Weigel, 1978; Fishbein & Ajzen, 1975/1980; Stern et al.'s 1993; Kollmuss & Agyeman, 2002).

In the following, measurement scales and theoretical frameworks to measure environmental awareness and pro-environmental behavior are discussed.

2.9.1 Social Psychological Theories for Environmental Awareness and Behavior

As mentioned before, the importance of what shapes the relationship between environmental awareness and environmental behavior has been a major focus by many researchers since the early 1970s. Several researcher have developed measurement instruments and theories to understand and explain what influences environmental awareness and pro-environmental behavior.

In the following two of the most important and influential theory concepts are briefly discussed.

2.9.1.1 Theory of Planned Behavior (TPB)

From the original “Theory of Reasoned Action” by Ajzen & Fishbein (1980), which deals with the explanation of completely volitionally controlled behavior (Blöbaum, 2001; Kaiser & Scheuthle, 2003); Ajzen,1991) further developed a model, the so-called “Theory of Planned Behavior” (TPB).

Barr and Gilg (2006) argue, that although there is a lot of models of environmental action within this literature, the TPB is by far the most significant and effective example.

Moreover, the TPB is one of the currently best known attitude-behavioral theories that serve as a basis for many theoretical studies (Ajzen, 2011). It forms a socio-theoretical framework construct that indicated that individuals’ decisions to be participate in pro-environmental behavior are based on an individual’s behavioral intention, which is influenced by attitudes of behavior, subjective norms, and perceived control, as can be seen in Figure 2 (Ajzen, 1991).

In other words it suggests that the intentions are predicted by attitudes towards the behavior.

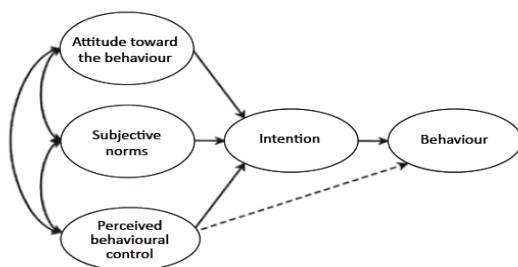


Figure 2 Theory of Planned Behavior (TPB) Source: Ajzen (1991, p. 182).

By incorporating the perceived behavioral control, Ajzen (1991) claims to be able to explain behavior that is influenced by external factors of the individual. As a result, TPB understands itself as an universalistic theory of action for predicting non-automated decision-making behavior (Hunecke, 2000). Particularly noteworthy is the consideration of situational influences on the behavior of a person (Kaiser & Gutscher, 2003, Kaiser et al., 2005). In other words, people will decide to act environmentally, if they think it is possible to act.

Ajzen (1991) reports a 25 to 30% behavioral variance caused by the intention and the perceived behavioral control is predictable. This means that 70 to 75% of the variance cannot be described by the constructs of the TPB.

The TPB has been utilized by many researchers in order to explain why people behave environmentally friendly, however, some researchers criticized the application of the TPB; because of its lack of moral judgment consideration (Kaiser et al. 2005). Moreover, Ajzen (2011) argues, that it is too rational and does not take into account affective and emotional variables that might have an impact on behavioral intention and motivation.

2.9.1.2 Value-Belief-Norm Theory (VBN)

Another common theory to explain pro-environmental behavior is Stern's (et al. 1995; 2000) Value-Belief-Norm (VBN) Theory, which takes value beliefs and personal standards as factors influencing the environmental behavior. Kaiser et al. (2005) describe the concept of value-belief norm as a connection of various theories for explaining environmental behavior.

It connects the general value theory, the NEP scale (Dunlap et al., 2000) and the norm-activation theory (Schwartz, 1977); linked by five causal variables that influence environmental behavior, such as personal values (especially altruistic values), NEP, awareness of consequences (AC) and ascription of responsibility (AR), beliefs about general conditions in the biophysical environment, and personal norms for pro-environmental action. According to this theory, environmental attitude is a key driver for pro-environmental behavior (Stern et al. 2000, p. 412).

The connection of these theoretical assumptions can be seen in Figure (3). It is assumed that each variable directly influences the following variable.

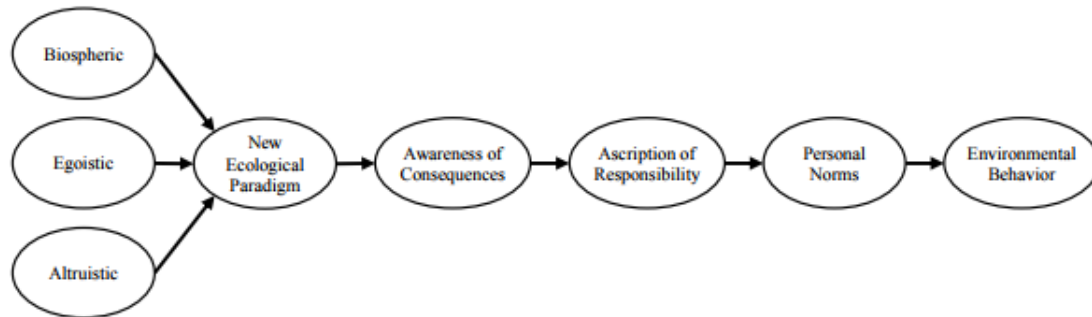


Figure 3 VBN model for environmental behavior. Source: Stern (1999).

Stern (2000, p. 409) further assumes that there are distinct types of significant environmental behavior, which are determined by various combinations of four causal factors:

- general environmental activism
- non-activist behavior in public
- environmental protection in the private sector
- other environmentally significant behaviors

In the study by Stern et al. (1999, p. 89) on the value-belief standard, it was shown that, depending on the causal factors influencing environmental behavior, 19 to 35% of the variance in behavior can be explained.

2.9.2 Measurement Scales for Environmental Awareness and Behavior

The following section describes which measuring instruments are used to grasp the environmental awareness of people and how constructs or measuring methods of environmental awareness look like. The focus of the measurement of environmental awareness is set, both on the environmental behavior and the environmental attitude. The environmental behavior is used as a dependent variable (Blasius, 1998, p. 19).

When measuring environmental behavior, the focus is set mostly on behavioral intentions and self-reported behavior. However, the behavior actually observed is rarely taken into account (Kuckartz, 1998, p. 41).

These attitudes and behaviors are normally measured on Likert-response scales in questionnaire surveys. This kind of attitude scales include for example the 'The New Ecological Paradigm (NEP) scale' (Dunlop and Van Liere, 1978, Dunlap et. al 2000), the 'Ecological Attitude-Knowledge scale' (Maloney and Ward, 1973; Maloney et al, 1975), the 'Environmental Concern scale' (Weigel and Weigel, 1987), the 'Ecocentric-Anthropocentric scale' (Thompson and Barton, 1994), Pro-Environmental Behavior Scale (PEBS) (Gail, L., M., 2013), and SEU scale (Das Skalensystem zur Erfassung des Umweltbewußtseins, Schahn and Holzer, 1996).

Three scale systems to measure and record environmental awareness are discussed in the following. However, it should be noted that only the NEP scale by Dunlap et. al (2000) is discussed in detail, since it was applied for this research to determine the environmental awareness of surf tourists. Two other scale systems are briefly discussed, namely the ecological attitude-knowledge scale (Maloney and Ward, 1973; Maloney et al, 1975) and the SEU scale (Schahn and Holzer, 1996).

2.9.2.1 Ecological Attitude-Knowledge Scale

Maloney and Ward's scale is one of the most important and widely used scales in the US for measuring environmental awareness (Maloney & Ward, 1973). Environmental awareness can be seen in the Maloney and Wards scale as an environmental attitude that is made up of three different components. On the one hand, the affective component, the emotional impact of the environmental problems, and on the other, the cognitive component, which relates to the rationality of a person concerning environmental problems, and finally, the conative component, which represents the willingness to act in order to solve environmental problems. It consists of a total of 130 items, which can be subdivided into the four subscales (affect scale, knowledge scale, behavioral scale and a scale of action readiness) (Diekmann & Preisendörfer, 2001, p. 102). Because of this length, the Maloney / Ward scale is not very economical for studies that aim to reach a large population.

2.9.2.2 SEU Scale

The scale system of Schahn et al., meanwhile forms in its third edition (Schahn, Damian, Schurig, & Fücksle, 1999), is one of the scale systems for measuring environmental awareness in the German-speaking countries.

Schahn and Holzer (1990, p.186) used Maloney and Ward's scale as an orientation to develop their scale, trying to "...make certain content areas independent of theoretical concepts", as in the original case.

The complexity and length of the item inventory, which consists of three conceptual areas (attitude, behavioral behavior and self-reported behavior) and seven content areas (waste separation and recycling, energy saving in the home, water saving and water conservation, environmentally conscious shopping, environmentally friendly transport, sports and leisure and social environmental commitment), presents a challenge to usability (Diekmann & Preisendörfer, 2001, p. 103).

2.9.2.3 The New Ecological Paradigm Scale

In comparison to the other survey instruments, the NEP scale (Dunlap et al., 2000) was chosen for this study to measure environmental awareness due to its practicability and its high Cronbach's Alpha of .83 (Dunlap, 2008, p. 10).

Moreover, the Nep scale measures environmental attitudes without mentioning any specific issues as the aforementioned scales. The aforementioned scales can be considered as a multiple-topic assessment technique (Hawcroft & Milfont, 2010).

The NEP concept was developed by Dunlap and Van Liere due to the need of an alternative way of ecological thinking and it is opposed to the Dominant Social Paradigm (DSP), which view point claims that humans are superior to all other species, it is basically 'anti-ecological' and therefore damaging to the environment. Moreover, it became obstructive for any sociological efforts to understand and describe new ecological problems and constraints (Dunlap & Van Liere 1978).

The NEP, builds on assumptions contrary to the DSP. As the DSP is comprised of the basic belief that technology will spare the planet and that humans are exempt from environmental forces, the NEP rather focuses on humans as a part of nature and human activities as driver of global environment changes (Dunlap, 2008, p. 11).

The NEP scale, which is used to measure environmental beliefs, attitudes and values as well as endorsement of fundamental paradigm or worldview, became a widely used scale (Dunlap et al. 2000, p. 427; Ek & Söderholm, 2008; Mobley, Vagias, & DeWard, 2010).

Many studies, conducted in recent decades, report a strong support for the NEP scale in different samples, whether they are the general population or special interest groups (Dunlap et al., 2000, p. 428). The original version of the NEP can be understood as a scale for measuring the emergence of values, political perspectives, economic and technological institutions that support the principles of sustainable development. Its global goal is to raise the environmental orientation of subjects (Peattie, 2010).

The revised version of the NEP scale, published by Dunlap in 1990, contains four major changes compared to the first version from 1978. On the one hand, an extension of the range of items in the direction of the ecological world view was made. In addition, negative and positively formulated items were balanced, as well as the outmoded terminology employed in the previous scale was eliminated (Dunlap et al., 2000).

First published in 1978, the NEP scale originally consisted of twelve items, with eight items as pro-NEP and only four items as anti-NEP, which was an issue that could lead to higher agreement with the NEP than it is in reality. However, revised NEP scale contains fifteen items, with eight positively formulated items and seven negatively formulated items (Dunlap, 2008, p. 6). Finally, the name of the NEP scale was changed. NEP, in its initial publication, meant "New Environmental Paradigm Scale," and in its new 1990 edition, it was changed to "New Ecological Paradigm Scale", in order to cope with the measurement and explanation of the global environmental measures (Dunlap et al., 2000).

The 15 items of the new NEP scale can be divided into the following five areas: "the reality of limits of growth (1, 6, 11), anti-anthropocentrism (2, 7, 12), the fragility of nature's balance (3, 8, 13), rejection of exemptionalism (4, 9, 14) and the possibility of an ecocrisis (5, 10, 15)" (Dunlap et al., 2000, p. 432).

Table 1 The five facets of an ecological worldview. Source: Dunlap et al. (2000).

THE FIVE FACETS OF AN ECOLOGICAL WOLRDVIEW
<u>THE REALITY OF LIMIT OF GROWTH</u>
NEP 1 – We are approaching the limit of the number of people the earth can support.
NEP 6 – The earth has plenty of natural resources if we just learn how to develop them.
NEP 11 – The earth is like a spaceship with very limited room and resources.
<u>ANTI-ANTHROPOCENTRISM</u>
NEP 2 – Humans have the right to modify the natural environment to suit their needs.
NEP 7 – Plants and animals have as much right as humans to exist.
NEP 12 – Human were meant to rule over the rest of nature.
<u>THE POSSIBILTY OF AN ECOCRISIS</u>
NEP 5 – Humans are severely abusing the environment.
NEP 10 – The so-called ‘ecological crisis’ facing humankind has been greatly exaggerated.
NEP 15 – If things continue on their present course we will soon experience a major ecological catastrophe.
<u>THE FRAGILITY OF NATURE’S BALANCE</u>
NEP 3 – When humans interfere with nature it often produces disastrous consequences.
NEP 8 – The balance of nature is strong enough to cope with the impacts of modern industrial nations.
NEP 13 – The balance of nature is very delicate and easily upset.
<u>REJECTION OF EXEMPTIONALISM</u>
NEP 4 – Human ingenuity will insure that we do NOT make earth unlivable.
NEP 9 – Despite our special abilities humans are still subject to the laws of nature.
NEP 14 – Humans will eventually learn enough about how nature works to be able to control it.

As can be seen in Table 1, the assertions in green are supposed to support the NEP, meaning that they are matching ecocentrism by supporting environmental ethics. On the contrary, the statements in black support DSP, meaning that these are matching anthropocentric orientations. Therefore, disagreement within the seven even numbered items display a pro-ecological orientation and agreement would display a pro-DSP orientation, whereby agreement within the eight odd numbered items display a pro-ecological orientation (Dunlap et al. 2000).

All in all the NEP scale focuses on pollution hazardous wastes, ozone depletion, deforestation, loss of biodiversity, climate changes on a global level (Stern, et al., 1992).

2.9.2.3.1 Criticism of the NEP Scale

As with any other widely used measurement instrument, the NEP scale has been subjected to criticism as well. In the following a few of these critics are discussed.

For example, Stern et al. (1995) argues, that the NEP is not sufficiently well founded in theory and in particular lacks references to the attitude theory. However, Dunlap et al. (2000) corrected several aspects of the scale, and at the same time improved measurement concerns. Moreover, the scale was grounded in contemporary attitude theory.

Other researchers questioned the one-dimensionality of the scale (e.g. Bechtel et al., 2006; Hunter & Rinner, 2004; Xiao & Dunlap, 2007). Albrecht et al. (1982; as cited in Dunlap et al., 2008) argue, that the NEP scale is not unidimensional and point out that the NEP scale “produced three distinct dimensions consisting of the balance of nature, limit to growths, and anti-anthropocentrism items, as have several subsequent studies”. The problem with multidimensional construct is that the widespread practice is flawed (Cortina, 1993).

In response, Dunlap et al. (2000) suggest that “researchers should use the revised NEP scale and then decide on the basis of their data analysis whether to treat it as a single or multidimensional scale”.

Moreover, Scott & Willits (1994), argue that the NEP scale is a poor measurement instrument to predict environmental behavior, as the correlations are usually weak. However, several other studies showed, that the NEP scale is a useful method in predicting environmental behavior (e.g., Casey & Scott, 2006). Further, Dunlap (2008) points out, that the VBN model was developed to predict environmental behavior and that the NEP scale is a key variable in the VBN. Thus, Dunlap (2008) suggests to make use of the NEP scale along with other variables within this model.

Another critique point that is argued (e.g. Chatterjee, 2008; as cited in Dunlap, 2008), is that the NEP scale is believed to be worded in a way that corresponds to Western developed countries rather than to developing countries. This critique point could be potentially valid, considering cultural differences and understandings to the environmental world view vary across the globe. However, Dunlap (2008) argues that there is no evidence available yet that confirms the aforementioned critique, but rather it shows that the NEP scale can be used for “making cross-national comparisons” (e.g. Vikan, Camino, Biaggio & Nordvik, 2007).

Despite several critics, the NEP scale is an interesting proposal for measuring environmental awareness, partly because of its widespread use.

2.9.3 Socio-Demographic Factors

Research has shown that certain factors affect the environmental awareness. Socio-demographic characteristics such as gender, age, education level and income are simple to gather. Thus, several environmental studies have taken into account its influence on environmental attitudes and personal environmental behavior (Kuckartz et al., 2006, p.48; Huber, 2001, p. 233; Homburg & Matthies, 1998, p. 150).

In this regard, there are general correlations between the socio-demographic variables and dealing with the environment (Rhein, 2006, p. 44). However, the results of these studies are contradictory and vary (Kuckartz et al., 2006, p. 48). Dunlap & Van Liere's (1980) study, showed that the socio-demographic factors have an inconsistent or only limited use in explaining environmental awareness.

Nevertheless, several studies (e.g. Blocker & Eckberg, 1997; Hunter et al., 2004; Casey & Scott, 2006; Xiao & McCright, 2014; Sanchez, 20016) demonstrated, that females have significantly a higher level of involvement in environmental behavior than men. Casey and Scott (2006), reasoned why women might be more environmentally concerned than men, with the fact that women are "traditionally more socialized into caregiver roles that predispose them to be more compassionate, nurturing and protective". However, the results in the research of Shen & Saijo (2008), found the contrary and show that men are more concerned with general and global environmental issued than women.

Moreover, several researcher (e.g. Hunter et al., 2004) suggested, to distinguish gender in regards to 'public' (e.g. political) and 'private' (e.g. household) environmental behavior. For example in Stern, Dietz & Guagnano's study (1995), it was found that women participate more in 'private' environmental behavior, such as recycling, than men. However, it was also found (e.g. Stern, Dietz & Guagnano, 1995; Blocker & Eckberg, 1997) that there is not really a gender difference when it comes to the 'public' environmental behavior, such as protests. Hunter et al. (2004) point out, that these patterns are reliable across various countries.

Additionally, several studies found out that age is admissible as a predictor of environmental behavior, however, the relationship between age and pro-environmental behavior seems to be imprecise, because of the conflicting results of previous studies.

The results of numerous studies (e.g. Van Liere & Dunlap, 1980; Tranter, 1996; Dietz, Stern & Guagnano, 1998; Cottrell, 2003) show that younger people are more likely to be concerned with the environment than older people. Van Liere & Dunlap (1980; as cited in Casey & Scott, 2006) reasoned this with the fact that younger people are less “integrated into the dominant social order to which solution to environmental problems often are viewed as threatening by older people, and hence the younger are more likely than their elders to embrace pro-environmental ideologies”.

Moreover, Shen & Saijo (2008) point out, that another reason might be that younger people have easier access and are easier attend to information about environmental issues than older people. However, other studies (e.g. Shen & Saijo, 2008; Raudsepp, 2001) proved the contrary and concluded that older people have a greater concern for the environment than the younger people.

According to Schahn (2003, p. 8), the level of education and knowledge about environmental problems are closely linked. Education and environmental knowledge influence people's environmental awareness. In addition, Schahn & Holzer (1990, p. 199) show moderate correlations between ecological knowledge and environmental awareness

Several other studies (e.g. Jones & Dunlap, 1992; Dunlap et al. 2000; Arcury & Chistianson, 1990; Scott & Willits, 1994) recorded the positive relationship between level of education and environmental awareness. Thus, higher education tends to a higher level of engagement in pro-environmental behavior.

Conflicting results can be found in the correlation between income and environmental awareness. The results of many studies (e.g. Shen & Saijo, 2008; Cottrell, 2003; Lukman et al. 2013) show that people with higher incomes tend to be more environmentally friendly.

2.10 ENVIRONMENTALISM IN SURFING

2.10.1 The Rise

Environmentalism in surfing began in 1961 with 'Save Our Surf' (SOS), which was the first surfing environmental organization, founded in Hawaii. The organization was formed to stop a development that would have ruined a surfing break, and continued to develop an environmentalist agenda (Taylor, 2010, p. 113). The organization went forth from small protests to major environmental success. For example, they "defeated a plan for the three high rise hotels directly on the reef at Ala Moana and created a 140-acre park plan for a working-class neighborhood on Sand Island where shippers wanted to build an industrial facility" (Ganaden, 2010).

However, as some scholars claim that environmental activism within the surf culture started in 1961, other scholar (in e.g. Warshaw, 2003), argue that environmental activism within surfing culture only started in the late 1969, when surfers came together to protest Union Oil after one of its platforms ruptured off the coast of California (Hill & Abbott, 2009a). Subsequently, soon other surfing environmental organization were formed by surf activists, such as the Surfrider Foundation, formed by Glen Hening and Tom Pratte in 1984. One of its major accomplishments was to win the second largest Clean Water act in U.S. history. "As a result of this suit, one of these mills, the Louisiana Pacific mill, became the only pulp mill in North America to produce totally chlorine-free (TFC) paper" (Surfrider,2008; as cited in Hill & Abbott, 2009a).

As many surf environmental organizations were formed (in e.g. SOS, Surfrider Foundation, Surfers Against Sewage, World Surfing Reserves) to protect surf breaks and coastal areas, the negative impact of the production of surf boards, clothing and accessories has been ignored for a very long time. However, eventually environmentalists within the industry such as Yvon Choundier, who is the founder of Patagonia, started to criticize the production of surf boards and surf clothing manufacturers (Hill & Abbott, 2009a).

The realization and increasing critics of the environmental impact of the production of surfing equipment has led to a 'greener' and more ethical manufacturing approach within the surf industry. The shift within the industry started to be visible and Quiksilver and other surf related companies started to hire people with the focus on sustainability (Borne & Ponting, 2015).

Moreover, materials from surf boards started to change, for example the organization 'Sustainable Surf' was formed in 2011 to advocate the construction of surf boards from either recycled EPS foam or plant-based epoxy resin. (Sustainable Surf-The Eco Project) Furthermore, initiatives to educate surfers about climate change and sea level rise, as well as to lower their carbon footprint have been created (Wilden & Stewart, 2015; as cited in Borne & Ponting, 2015).

2.10.2 Surfers and the Notion of being Environmentalists

"I think when a surfer becomes a surfer, it's almost like an obligation to be an environmentalist at the same time" – Kelly Slater (as cited in Surfrider Foundation, 2013)

Back then, the stereotype of a surfer, which was widely distributed and perpetuated by the media, was mostly young, unemployed, uneducated, living on the fringes of society as part of a marginal group without value contributions to society (Johnson & Orbach, 1986), however, this has been rebounded by several studies over the years (e.g. Dolnicar & Fluker, 2003; Nelsen Pendleton & Vaughn, 2007).

Dolnicar and Fluker (2003) conducted two studies based on demographic and psychographic characteristics of surf tourists. The studies reported, counter to the common stereotype, that surfers often have a high income level and at least a college degree, as well as that surfers consider environmental quality, remoteness, local culture and the natural surroundings as most substantial.

Nowadays, surfers have been identified as a key stakeholder group in the planning and development of the sustainability of surf tourism, and further it was indicated that they are more likely to inherent pro-environmental behavior (ASBPA, 2011; Scarfe et al., 2009; as cited in Martin & Assenov, 2014). They point out, that the role of surfers is vital when considering the sustainability of surfing resources within coastal planning and project development. For instance, as Butt (2010) argues, surfers can identify certain areas that should be avoided by developers, and he further suggests that surfers are vital to promote the following principles: "conserving and enhancing natural and cultural heritage; sustainable use of natural resources; understanding and enjoyment of the environment through recreation; and sustainable social and economic development of communities" (as cited in Martin & Assenov, 2014).

So surfers are immersed in nature and feel connected to the sea, right? Although this is debatable, historically, the surfers' reputation has been romanticized by being one with nature and surfing has been idealized to be an environmentally conscious endeavor, however, as the act of surfing itself may be harmless to the environment, many elements surrounding surfing contribute to environmental problems (Hill & Abbot, 2009b).

Despite the complexity of the relationship between surfers and the environment, and the questionable representation of surfers being environmental 'stewards' (Larson et al., 2017; Wade, 2007), it could be argued that the notion of surfers being environmental conscious comes from the ideological trend of the traditional soul surfer. Kampion (2003, as cited in Heywood & Montgomery, 2008) argues, that the direct relationship of man to nature was part of the traditional 'soul surfer' platform, and that it is also the characteristic of the eco-centered approach in environmental ethics.

Warshaw (2003), on the other hand, deromanticized the notion of the traditional soul surfer by emphasizing its less practical aspects. According to Warshaw (2003, as cited in Heywood & Montgomery, 2008), soul surfing is the "durable if overused expression generally used to describe the type of riding practiced by non-commercial, non-competitive surfers; the soul surfer is often thought as the 'pure' surfer ..."the man upon his board who shuts out the world and its clamor".

As Warshaw (2003), deromanticized the traditional soul surfer, he further argues, that even the most dedicated to 'purity', end up reaching pragmatic approaches, hence, the term soul surfer evolved to pragmatic soul surfer, which compromised the pro-environmental stances of the traditional soul surfer.

One would think that surfers should be environmentalists by nature (Dick-Read, 2007), as they depend on the natural environment, and e.g. plastic or sewage in the sea, would impact their health and enjoyment (Martin & Assenov, 2008), so to protect their environment would be in their best interest. Kelly Slater, the world famous professional surfer, makes it very clear that he believes, if you are a surfer, you have to be an environmentalists and points out "if you are one, you're the other – you have to be" (as cited in Hill & Abbott, 2009b).

However, in reality, surfers commune with nature on surfboards made of poisonous polymers, wearing wetsuits made of oil, use indefinite amount of petrol for the endless search for the perfect wave, either travelling long distance or just driving from beach to beach to check the wave conditions. According to Butt (2015, as cited in Larson et al. 2017), surfers had a higher carbon footprint than the average citizen, mainly due to the amount they travel.

Furthermore, surf wax is made out of petroleum products and Hill and Abbott (2009a) point out, that chunks of discarded surf wax can be found at many surf beaches around the world. Holland-Smith et al. (2013) see it as a "conflict of interest between these essentials but environmentally damaging factors of the surfers' lifestyle and their need to engage in pro-environmental behavior to protect their lifestyle".

Laderman (2014) argues, that most of the time, surfers are involved in a confined understanding of environmentalism, meaning their environmental concerns are only invested within their surfing environment, such as focusing mainly on protecting surf breaks and coastlines, and ignoring the damage done by the production of surfing equipment which has much wider impact than just within their surfing environment.

Despite the sustainable developments within the surf industry and the establishment of surf environmental organizations, the level of environmental awareness and attitude among individual surfers has been increasingly questioned due to the above mentioned facts and due to the growing number of surfers worldwide (Butt, 2015; Hill & Abbott, 2009; Taylor; 2007).

There are few studies that investigated the relationship between surfers and the environment, and revealed contradictory attitudes among surfers, as many consider themselves to be environmental conscious but often support dredging (Hill & Abott, 2009; Usher, 2016; as cited in Larson et al. 2017).

For example, Hill and Abbot (2009b), critically illuminate the conflicting relationship between the representations of surfing and the environment, and argue, that surfing may lead to an ecological ethic, however, it is questioned to what extent and to what cost to the environment. In their study (2009a), they scrutinized the connection between surfer and the environment in a greater deal and questioned Florida surfers about how surfing may influence their role as ecological actors.

The findings of Hill and Abbott's study (2009a) revealed that 93 % of the questioned surfers agreed or strongly agreed that 'environmental consciousness is an important part of surfing', and 62 % think that 'surfers have more responsibility than others to be environmentally aware. However, only 52 % of the survey respondents identified with the label 'environmentalist'. Moreover, the findings showed that nearly half of the respondents agreed that the surfing industry, in general, has a positive impact on the environment (Hill & Abbott, 2009a).

Edy's (2015) study of surfers and the relation to the environment was conducted in South Africa, and it showed that the majority (94%) of the respondents consider themselves as environmentalists, which is a higher result than the one from Hill and Abbott (2009a). However, similar to Hill and Abbott's study, the results showed that the majority (70%) of the respondents recognized the surf industry as environmentally friendly. Further results of Edy's study (2015) revealed that 56% of the respondents are aware that sustainable surf gear exists, however, only 18% out of those 56% are using sustainable surf gear. Despite the fact of surfers' lack of awareness regarding the damaging impacts of the surf industry and the unwillingness to purchase sustainable surf gear, the majority (76%) of the respondents had taken part in a beach-clean up (Edy, 2015).

Both studies showed that surfers do identify themselves as environmentally aware, which reflect the representation of the surfing community, however, it further showed that their activities mostly do not correspond to this representation, therefore, the relationship between the environment and the surfers can be considered as conflicting.

According to Ford's opinion (2000; as cited in Hill & Abbott, 2009a), it is "maybe unlikely that surfers are any more or less environmentally committed than any other group of the population". However, Moore's (2011) study revealed that surfers demonstrated significantly more pro-ecological views, which was measured on the NEP scale, than another user group (e.g., divers), although the majority (65%) of the surfers, in Moore's study, did not even know how to advocate for the environment.

A similar study (Mass, 2006) investigated the pro-ecological stance between surfers and non-surfers, and results showed that surfers scored also significantly higher on the NEP scale than non-surfers. "In the surfing study group, all statements yielded pro-ecological results in more than 80% of the group except for statements 6 and 10 (on the NEP scale), yielding pro-ecological views of 66% and 73% respectively. In contrast to Moore's (2011) and Mass's (2006) study, Larson's et al. (2017) study showed that non-surfers reported slightly higher NEP scores than surfers. The fact that mostly surfers, except in Larson's et al. (2017) study, tend to have a more pro-ecological orientation on their responses to the NEP scale, could maybe be argued with the increasing movement towards sustainability within the surf industry (Borne & Ponting, 2015).

In a survey of surf tourists, Frank et al. (2015) used as well the NEP scale and found that the majority of respondent's environmental attitude showed a very strong ecological view, only a few anthropocentric aspects were identified. Further, Frank et al. (2015) used a form of recreation specialization, such as the willingness to pay to protect environmental resources (Oh, Ditton, Anderson, Scott & Stoll, 2005; as cited in Larson et al., 2017) to assess the pro-environmental behavior of surf tourists and found out that the majority (86%) were willing to pay an accommodation tax earmarked for environmental protection.

A very recent study (SustainableSurf, 2018), shows that the act of surfing does result in raising environmental awareness and action, and further shows that surfers engage in pro-environmental actions at much higher rates than non-surfers. For instance, as reported, the majority (84%) stated that surfing would increase their environmental awareness.

As the studies show, surfers, seem to be overall an environmentally conscious group of people, which has led to the emergent of a great number of environmental grassroots organizations, raising for example awareness of the dolphin slaughter in Japan, or through Surfrider Foundation and other NGOs, protecting and preserving the beaches around the world. However the studies have also shown inconsistencies within the self-representation of being an environmentalist or environmental conscious and their actions. It is fact that their consumptions and use of toxic equipment and their endless travel for the perfect wave do not favor the environment and display contradictions. Also, it seems that surfers are overly concerned within their surfing environment. Therefore, the author notes that it is overstated to say that surfers are environmentalist and it should not be generalized. The author hypothesized that the level of environmental awareness could be also influenced by the surf level of the surfer. For instance, experienced surfers who are more committed could be more environmental conscious than a beginner or intermediate. It is fact that surfers play an important role when considering the sustainability of surf destinations, and therefore, should be included in the planning and development of strategies. Thus, understanding their environmental awareness is crucial.

2.11 SUMMARY

This chapter discussed the overall phenomena of surf tourism and how it established to a multibillion industry through an increased interest and popularity on a global basis. Further, it was identified that the 'surf travel bubble' has been bursted due to its increasing negative impacts, whether economically, socially or ecologically; and consequently, sustainable surf tourism has emerged in its intention to create better conditions for the environment and local communities. The negative impacts were elucidated in the section of sustainable surf tourism, whereby the focus was set more on the ecological impacts. At that point it is clear that surf tourism, but much more the whole surf industry has a high carbon footprint and thus contributes to climate change.

Following on that, the chapter reviewed environmental awareness within the surfing community. This section started with a general overview of environmentalism and pro-environmental behavior, followed by measurement methods, which was particularly relevant for the conducted survey within this study. By reviewing and comparing different measurement scales, it was clear that the NEP scale was the appropriate scale to use. After gaining an understanding of the concept of environmentalism, the chapter discussed the rise of environmentalism within the surfing community, followed by an exploration of the notion of surfers being environmentalist and environmental conscious. At this point it is clear that surfers seem to be overall an environmentally conscious group of people, however, the relationship between surfers and the environment is much more complex.

CHAPTER 3. STUDY AREA AND METHODOLOGY

3.1 INTRODUCTION

The following chapter introduces the study area and elaborates on the research methods, approach and strategy of this research, by utilizing the Saunders et al. (2009) 'Research Onion' approach to establish the methodological framework. The onion is composed of different layers, including the philosophy, approach and strategy of the research. The methods applied to this research have been guided by the research questions and the corresponding objectives, as well as the theoretical considerations drawn from the literature.

Additionally, questionnaire, data collection, sampling approach, data analysis method of the research are introduced.

3.2 STUDY AREA

3.2.1 Location and Geography

Portugal is located in South of Europe, with many Mediterranean physical and geographic features. The coastline of Portugal roughly measures 1.793 km and about 60 % of the population inhabits the coastal zone, which can rise up to 80 % in the touristic summer months (European Commission, n.d.). With this long and resourceful coastline, Portugal offers a lot of surf spots and perfect natural conditions for surfing all year around. .

Peniche is a coastal town and known to be a great surfing spot and fishing port. It is located on a Peninsula on the central coast of Portugal known as Oeste and is a part of the district of Leiria. The town covers 77,55 km² and has a population of almost 30.000 inhabitants (Surfguiding Peniche, n.d.) Lisbon, the capital of Portugal, is only ca. 80 km away from Peniche.

Peniche is partly surrounded by the sea and its sedimentary carbonate cliffs along the whole border of the peninsula register 20 million years of Portuguese geological history (Municipality of Peniche, n.d.). It is said that the rocks “date back to the early Jurassic times, circa 200 million years ago” (Municipality of Peniche, n.d.).



Figure 4 Location of Peniche. Source: Adapted from Weltkarte.



Figure 5 Location of Berlenga Islands. Source: Adapted from Haliotis.

About 10 km away from Peniche, are the Berlenga Islands, which consist of the Berlenga Grande, and two groups of smaller islets. The Berlenga Islands were declared by UNESCO as Natural Reserve in 1981 and World Biosphere in 2011 (UNESCO, n.d.).

3.2.2 Surf Tourism in Peniche - Portugal

Portugal's surf history may not be as old as that of Hawaii, and as it is not possible to define with full certainty the beginning of surfing in the world, likewise it is also not possible to be certain about the Portuguese reality. However, it can be assumed that surfing in Portugal first gained popularity in the beginning of the 1990s (Land, 2013).

With a long and resourceful coastline, Portugal offers a lot of surf spots and perfect natural conditions for surfing all year around. It is estimated that the surfing industry in Portugal can reach up to € 300 million Euros a year (Ferrony, 2013) and roughly 200.000 practice surf; 50 to 70 thousand practices surf at least once a week (Lopes and Bicudo, 2016); with a growth factor of 25% to 30% per year (Duarte de Almeida, Vilas-Boas, Bargado, 2015).

Portugal has several regions suitable for surf, and each of these regions have a large selection of surf camps and surf spots, such as Ericeira, Nazaré, Cascais, and Peniche.

Peniche is known as 'the wave capital' of Portugal, since the city council decided in 2007 to brand itself as such, and focus on and boost its distinction surrounding surfing and other wave-riding activities (Nunes, 2015). Thanks to Peniche's substantial, quality and consistency of natural resources, the development of surf tourism increased significantly. There are more than 10 surf sports within and around Peniche, as can be seen in Figure 6, for all level of surfers, from beginner to advanced. The most famous beach in Peniche is 'Supertubos' known for its best and hardest beach breaks, and is called the 'European Pipeline'.

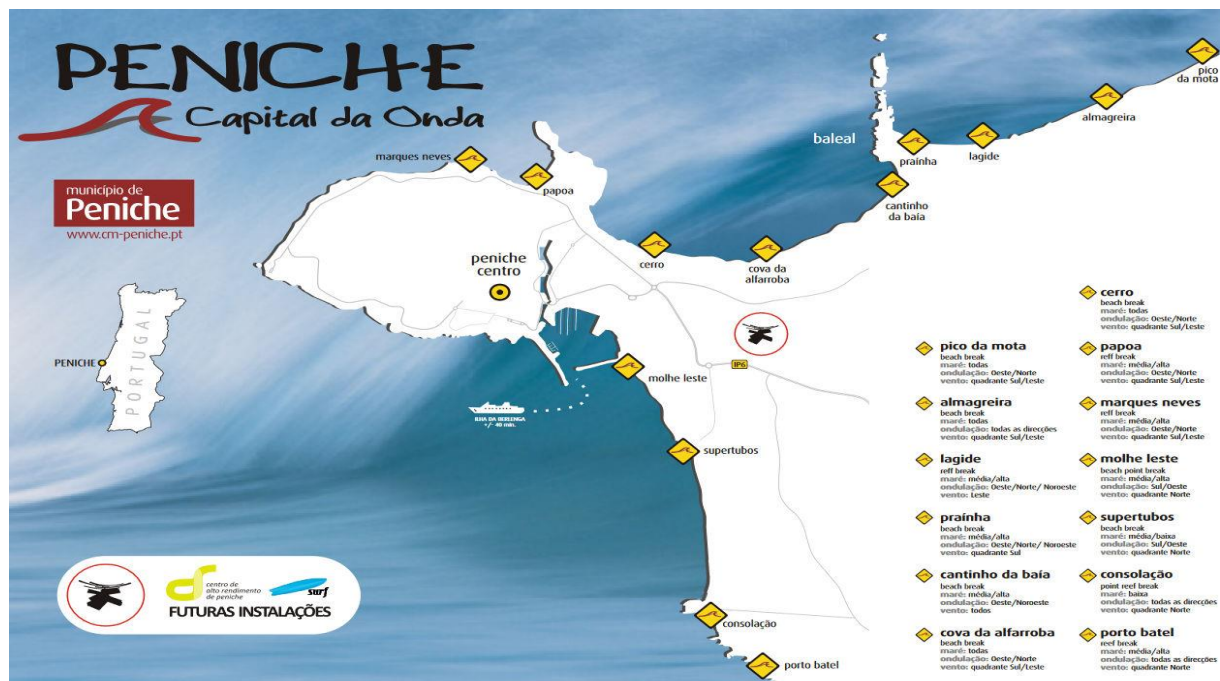


Figure 6 Surf Spots in Peniche. Source: Adapted from Municipality of Peniche.

The first surf camp in Peniche, which is also claimed to be the first surf camp in Portugal, was established in 1993 in Baleal. (Baleal Surfcamp, n.d.) With the creation of following surf camps and surf schools, Peniche got subsequently more and more accessible for surf tourism. Nowadays, the number of surf camps and surf schools are impossible to determine due to the fact that many surf related businesses are operated covertly (Leopoldo, 2012; as cited in Nunes, 2015). Research on the Internet showed that there are more than 30 surf schools and surf camps in Peniche at the moment.

Besides the fishing industry and activity of agriculture, surf tourism is now a key economic driver for this small coastal town (Municipality of Peniche, n.d.). Peniche hosts the MEO RIP Curl Pro – Surf World League Tour annually since 2009, boosting its economy and its international recognition yearly. According to Jorge et al. (2015) the total and direct economic impact of the event has been within the range of 7 million – 8 million Euros.

Previous research, related to surf tourism, has been conducted in Peniche, focusing for instance on the motivation and destination choice of surf tourists (Reis & Jorge, 2012), satisfaction of surf experience (Nunes, 2015), and a recent study (Afonso, 2017) focused on the adoption of sustainable surf tourism principles within Peniche.

In 2017, Peniche has been benchmarked as first sustainable surf destination in the world by the STOKE Certified representatives. Several attributes such as the tourism plan, community development, cultural heritage preservation, surf resource management, and environmental conservation initiatives were evaluated and benchmarked against the new STOKE Surf Destinations standards of 84 criteria (Surfer Today, 2017), “which was built on the foundation of the Global Sustainable Tourism Council’s Destination Criteria and adapted to the unique sustainability challenges that coastal communities and surf tourism destinations face” (Jones, 2017).

The survey was conducted in Peniche, Portugal, which was the author’s place of residence and due to the fact that it is focusing on surf tourism as a key economic driver.

3.3 METHODOLOGY

3.3.1 Research Philosophy, Approach, and Strategy

Determining the appropriate research methodology is considered to be the central element in a research project. In order to define the nature of this research, Saunders' 'Research Onion' model was utilized. Saunders et al. (2012) defines the research philosophy as "How a researcher views the world, her or his taken-for-granted assumptions about human knowledge and about the nature of the realities encountered, inevitably shape how a research question is understood and the associated research design" (Saunders et al., 2012).

This research follows a positivist research philosophy, as hypotheses are tested and due to the fact that the study focuses on facts and observations rather than personal impressions or opinions of the researcher. It is further supporting the usage of quantitative numerical data, which also implies a deductive research approach. According to Saunders et. al (2009), a research design can be either inductive or deductive. An Inductive design is concerned with generation of new theory and deductive is aimed to test theory.

A deductive research approach is applied in this research, since there is sufficient theory available, which can be used to build a theoretical framework for this research. Data collection and data analysis will be proceeding on the basis of this theoretical framework. Conclusions and recommendations will logically result from available facts and collected data. Thus, this research follows a top down approach, meaning the research is starting with general (theory) and moving on to specifics (data), the application of controls to ensure the validity of data, and the operationalization of concepts to ensure clarity of definition (Saunders et al., 2009).

According to Saunders et al. (2009), the case study strategy has considerable ability to generate answers to the question 'why', as well as 'what?' and 'how?'. Since the main research question is a 'What' and 'How' question, the case study strategy is most applicable for this research, as well as because the research was applied to Peniche, Portugal. Additionally, the research applied a survey strategy, which tends to be used in quantitative research, involving sampling a representative proportion of the population. A questionnaire was conducted amongst 145 surf tourists in Peniche, Portugal.

Furthermore, there are two types of time horizons, namely Longitudinal and Cross-Sectional. The Cross-Sectional studies are limited to a specific time frame, and the Longitudinal studies are repeated over an extended period. Since this research is limited to a specific time frame, the applied time horizon is cross sectional (Saunders et al., 2009).

3.3.2 Questionnaire, Data Collection, and Sample

A survey questionnaire was designed to collect quantitative and qualitative data from surf tourists staying in the study area. The survey aimed to characterize the environmental awareness of these surf tourists. The questionnaire included 19 open-end and closed-end questions, as well as the adaption of the revised NEP Scale (Dunlap et al., 2000). The questionnaire was segmented into five parts. In the first part, respondents were firstly asked if they believe if surf tourism impacts the environment and culture at a destination and thus indicate their strength of agreement and disagreement on a Likert scale in relation to the stated item impacts. The second part included questions about their environmental advocacy and awareness. The NEP scale was used in the third part of the questionnaire, in order to assess information about the environmental attitudes and ecological world view. The NEP scale, as described in Table 1, consists of 15 items and is expressed in a Likert scale with the statements 1 - Strongly Disagree (SD), 2 – Disagree (D), 3 – Neutral (N), 4 – Agree (A), and 5 – Strongly Agree (SA). The fourth and fifth part of the questionnaire queried about the socio-demographic information and about their stay.

After pre-testing the questionnaire, some changes have been made and additionally a Portuguese version of the questionnaire was compiled. The questionnaire was applied at the Peniche Surf Camp in Baleal, and one day at the Meo Rip Curl Pro – WSL., during September – October 2017.

Convenience survey sampling of asking every potential and willing participant that was participating within the activity at the time the researcher was at the site was utilized. Therefore, data was collected from 145 surf tourists, who agreed and were willing to collaborate in this study.

3.3.3 Measurement and Data Analysis

After the collection of the data, it was entered into Excel and IBM Statistics 24 program for analysis.

Qualitative responses to open-ended questions were analyzed for patterns. These commonalities were categorized into common responses. The open-ended questions were used to expand and explain other factors that may not have been questioned and allow the participants to express what makes a surfer environmentally friendly.

Besides questions to socio-demographics, stay and overall environmental awareness, a measurement scale was used, composed of 15 statements, to evaluate the ecological worldview of respondents.

As discussed in Table 1, disagreement within the seven even numbered items display a pro-ecological orientation and agreement would display a pro-DSP orientation, whereby agreement within the eight odd numbered items display a pro-ecological orientation. This indicates that the scale consists of positively-keyed and negatively-keyed items, and that the negatively-keyed items must be reversed-scored before computing the total scores. Thus, to be able to evaluate the NEP score of each respondent, the scores corresponding to the seven even numbered NEP items (negative-keyed items) were reordered, so that for all the items, high scores indicate pro-NEP orientation.

The NEP score of each respondents was acquired and analyzed as applied in previous works (e.g., Erdogan, 2009; Thomas, 2013; Santos, 2015). Thus, in order to evaluate the ecological world view of respondents, an item response distribution was determined using frequency analysis, as well as calculating the mean and determining the standard deviation.

The NEP scores for the five facets of the NEP, which are the reality of limits to growth of human societies (items 1, 6, and 11), anti-anthropocentrism (items 2, 7 and 12), the fragility of nature's balance (items 3, 8 and 13), the rejection of human exemptionalism (items 4, 9 and 14) and the possibility of an ecological crisis (items 5, 10 and 15), were obtained.

Furthermore, the final NEP score of a respondent is the average of the scores for each item. Therefore, it ranges from 1 (all answers 1-“strongly disagree”) to a maximum of 5 (all answers 5-“strongly agree”). Based on this, the study adapts the allocation of scores into the categories of anti-ecological, mid-ecological, and pro-ecological, from Thomas (2013).

Pro-ecological – NEP score greater than 4. Such a score indicates that on average the respondent would have had to give environmentally positive strongly agree or mildly agree to most NEP answers and strongly disagree and mildly disagree to most DSP answers.

Mid ecological – NEP score greater than 3 and less than or equal to 4, corresponding to a wide range of possible combinations.

Anti-ecological – NEP score between 1 and 3 (3 included). The most environmentally positive answers someone in this group could give would be 15 unsure responses. At the lower end of this grouping someone would have to strongly disagree with all environmentally positive statements and strongly agree with all the negative statements” (Santos, 2015).

Furthermore, an independent samples t-test, which compares the means of two unrelated groups on the same continuous, dependent variable, as well as an Chi-square test was conducted in order to investigate the relations between the NEP scores and other variables, such as socio-demographics and the respondents’ surf level.

3.4 SUMMARY

This chapter provided information about the study area, including location and geography, as well as information about surf tourism, mentioning its attributes and its development to be the first sustainable surf destination in the world. Further, the chapter discussed the necessary approaches and strategies under which the research has been conducted. Whereas, the author applied the ‘Research Onion’ by Saunders et al. (2000).

Additionally, information were provided on the design of the questionnaire, the method of data collection, measurement and analysis of data, especially for the NEP Scale.

CHAPTER 4. RESULTS

4.1 INTRODUCTION

This research was designed to assess surfers' environmental awareness and simultaneously enlightening the contradictory relationship between the representation of surfers and the environment. The previous chapter introduced the study area and elaborated on the research methods. The environmental awareness of surf tourists was examined through a conducted questionnaire in Peniche, Portugal.

This chapter presents the results derived from the process of data collection, whereby the sub-chapters are outlined according to the themes of the questionnaire. The presented results within the first sub-chapter, which is here categorized as surf tourist profile, start with an overall overview of the socio-demographic attributes of respondents, as well as an overview of their length of stay and type of accommodation. In the following sub-chapter, the results for the potential impacts of surf tourism in regards of the respondents perception are presented.

The next section, discusses the results of the respondents environmental advocacy and awareness, followed by the results of the NEP scale, which reveal the ecological worldview of the respondents. The chapter ends with a short summary.

4.2 SURF TOURIST PROFILE

As several studies have shown, certain factors, such as gender, age and educational level affect the level of environmental awareness and PEB. Thus, socio-demographic data was collected from all respondents in order to identify whether these variables influence environmental awareness. Moreover, information about their stay was asked. A total of 145 surf tourists participated in this research and fully completed the questionnaire.

The questionnaire was conducted in Peniche Surf camp and during one day at the Meo Rip Curl Pro Championships 2017.

Table 2 Surf Tourist Profile.

SURF TOURIST PROFILE	FREQUENCY	PERCENTAGE
<u>Gender</u>		
Male	53	36,6
Female	92	63,4
<u>Age</u>		
18-29	89	61,4
30-44	53	35,9
45-64	4	2,8
<u>Education Level</u>		
High School	24	16,6
Higher Education	120	82,8
Other	1	0,7
<u>Profession</u>		
Employee	62	42,8
Freelancer/Entrepreneur	28	19,3
Student	39	26,9
Unemployed	8	5,5
Other	4	2,8
<u>Surf Level</u>		
Beginner	68	46,9
Intermediate	54	37,2
Experienced Surfer	23	15,9

As can be seen in Table 3, the main socio-demographic characteristics of the surf tourists are presented. Therefore, the results show that the majority (63,4%) of respondents that participated were male, whereby only 36,6 % of the respondents are female. The age range of the respondents followed a distribution of 18 - 64 and presents that a large proportion (61,4%) of respondents are young adults between 18-29 years, and 35,9% are aged between 30-44 years.

The educational level shows a widespread distribution (82,8%) of the respondents with a higher education, whereby the majority (42,8%) of respondents stated to be employees, followed by being a student with 26,9%, which also can be observed in table 3. Additionally, the surf level of respondents was queried in order to explore differences of environmental awareness within the surf skills. Results showed that the majority (46,9%) of respondents are classified as beginners, whereby only 15,9% are classified as experienced surfer.

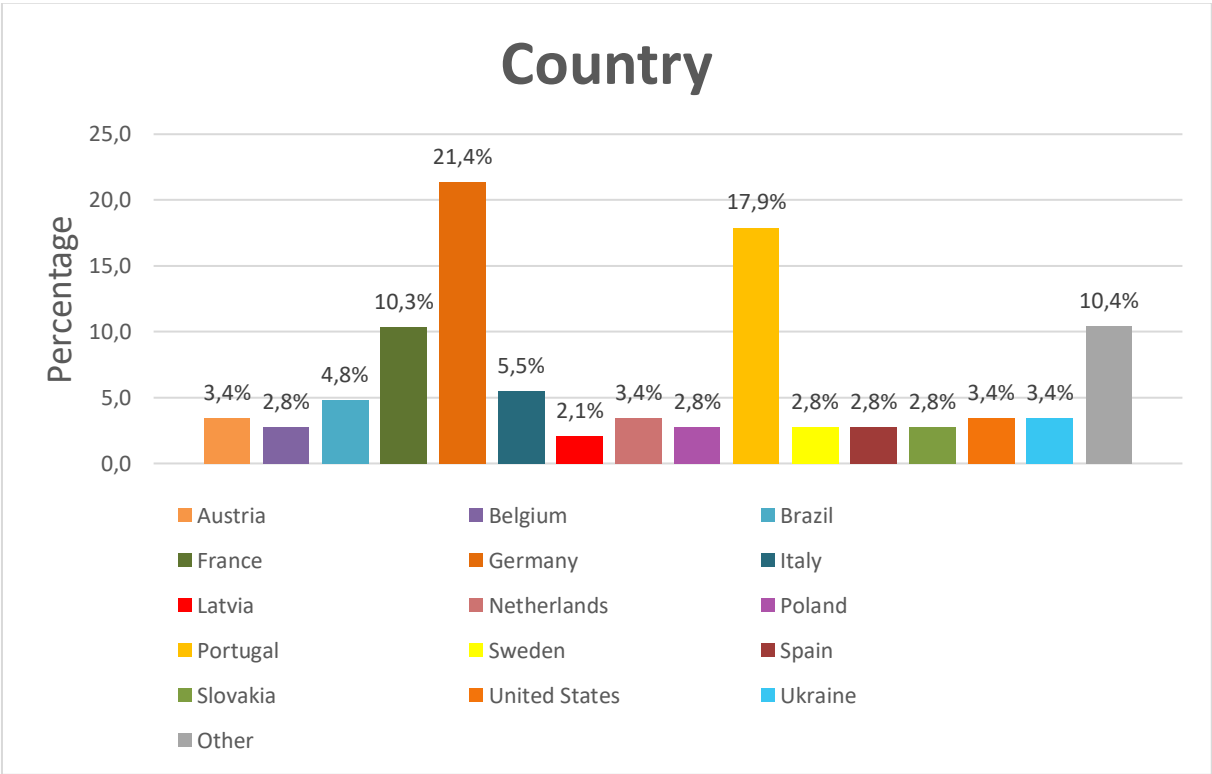


Figure 7 Graphical representation of the variable 'Country'.

The questionnaire was distributed amongst 145 surf tourists from 27 countries. As can be seen in Figure 7, the majority (21,4%) of respondents are from Germany, followed by domestic surf tourists (17,9%) from Portugal, meaning that the overall majority (82,1%) are international surf tourist mostly from Europe, with a few exception from United States, Australia, Canada, Russia, and Brazil.

Additional information about the respondents stay was queried, and results show that the majority (56,6%) of respondents visited Peniche for the first time, whereby most of them (36,6%) visiting for 4-7 days, followed by 8-15 days (24,1%). Further, it showed that most of the respondents (44,8%) stay in surf camps, and the majority is travelling with friends (37,2%), while 36,6% are travelling alone. Regarding the importance of a sustainable accommodation, almost three quarters (71,0%) of the sample indicated that they do find it important that their chosen accommodation is sustainable managed.

4.3 POTENTIAL IMPACTS OF SURF TOURISM ON SURF DESTINATIONS

This section deals with the respondents' belief whether surf tourism has impacts on the environment and culture at surf destinations. Thus, respondents were asked to rank from strongly disagree to strongly agree on twelve possible impact statements. Out of 145 respondents, 139 respondents do believe that surf tourism impacts the environment and culture at surf destinations.

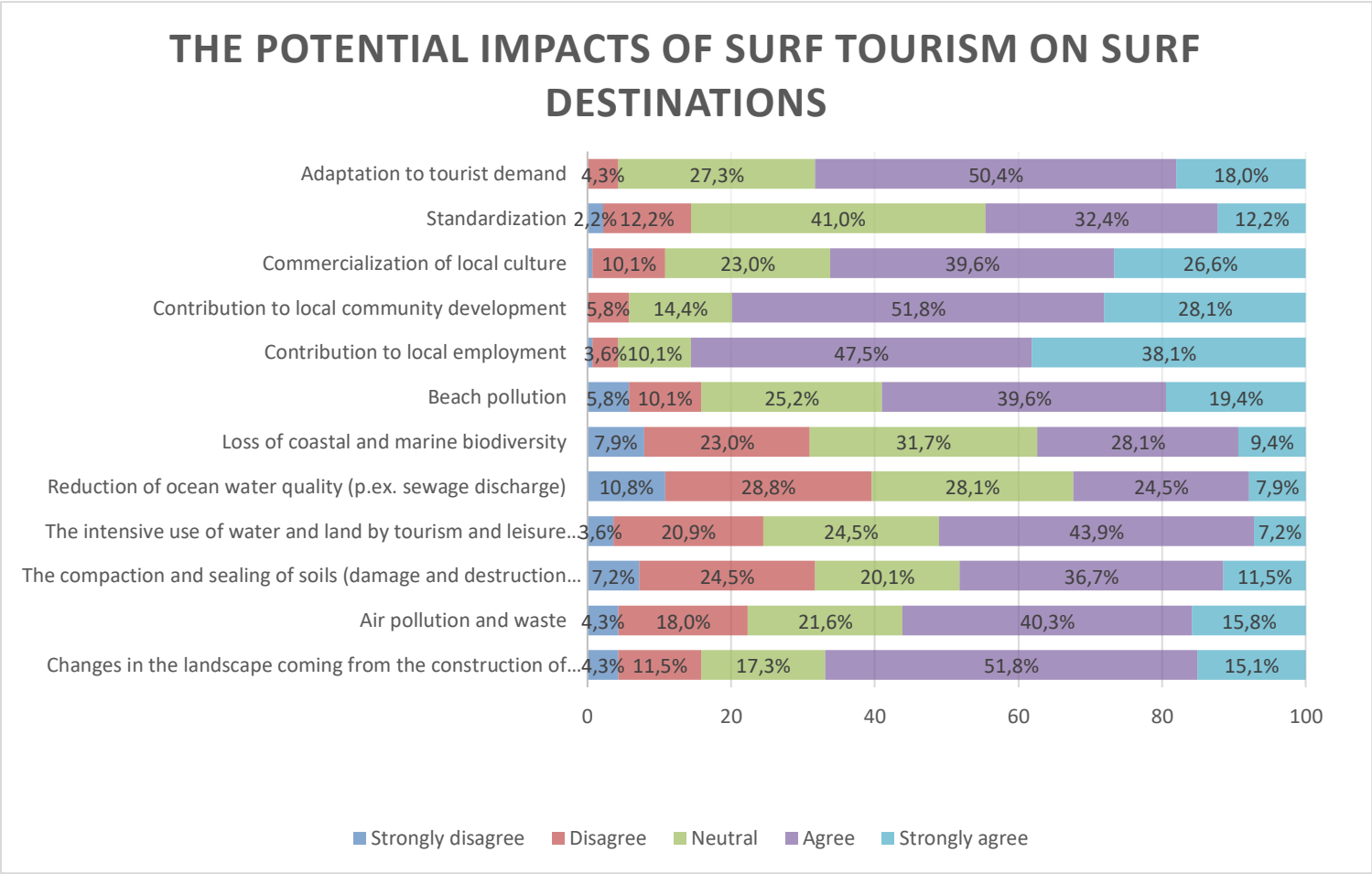


Figure 8 Respondents perception of potential impacts of surf tourism on surf destinations.

All answers are listed in Figure 8 and range from strongly disagree to strongly agree. The following results are compiled from agree and strongly agree. Therefore, the majority (85,6%) of the respondents agreed that surf tourism contributes to local employment, followed by contribution to local community development (79,9%) and changes in the landscape with 66,9%. Overall, higher agreement rates are within the first five statements that concern the cultural impacts, rather than the following seven ecological impact statements. 59% of the respondents agreed with the cause of beach pollution and only 32,4% agreed with the reduction of ocean water quality.

4.4 ENVIRONMENTAL ADVOCACY AND AWARENESS

This section consists of eight question regarding the respondents environmental advocacy and awareness. Firstly, respondents were asked if they advocate in any way for the environment, whereby they should state in an open question in what way they advocate. The qualitative responses were analyzed for patterns, therefore, commonalties were categorized into common responses. A follow-up question, in case they do not advocate, regarding if they are unaware of how to help, was asked.

As can be seen in Figure 9, the results show that most of the respondents (51%) do advocate for the environment. The qualitative response patterns on how the respondents advocate for the environment were categorized as – Beach Clean-up; - Recycling;- Supporting NGO’s; - and Educating Others.

Further, results show that the majority (30,3%) of those who do not advocate (49%), are unaware of how to help and advocate.

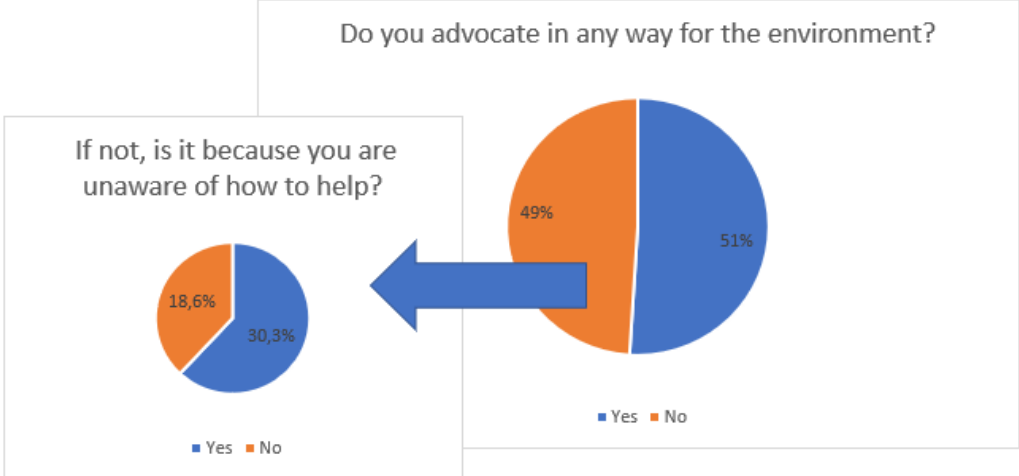


Figure 9 Respondents Environmental Advocacy.

The next question was concerned with whether the respondents have ever taken part in a beach or ocean related clean-up. The results show that the majority (51,7%) of respondents have never taken part in a beach or ocean related clean-up. Additionally, respondents were asked in an open-ended question about their opinion what makes a surfer environmental friendly. The qualitative response patterns of the statements can be seen in Table 3.

Table 3 Respondents opinion about what makes a surfer environmental friendly.

Respect for Nature/Environment	Pick up trash and keep the beach clean	Responsible water usage	Awareness and Engagement	I don't know
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Further questions in this section examined the respondents' awareness about the surf industry and surfing equipment, such as surf boards. Results show that the majority (63,4%) of the respondents consider the surf industry as environmental friendly, whereby slightly more than half (52,4%) of the respondents are not aware that surfboards and surfing goods are mostly environmental unfriendly. On the other hand, 55,2% of the respondents indicated to be aware that environmental friendly surf boards exists, while 37,2% of these respondents (55,2%) who are aware, actually use environmental friendly surf boards.

Regarding the regulation of surf tourism (e.g. regulation, permits, licenses, fee, and limits on the number of visitor at destinations), slightly more than half (51,7%) do not think that it should be regulated.

Additionally, the attitude towards an accommodation tax earmarked for environmental protection was determined by asking the respondents to state which rate they are willing to pay, ranging from 0% - more than 20%. As can be seen in Table 10, the majority (35,9%) of respondents are willing to pay a rate of 5%, whereby only 4,1% of the respondents would pay more than 20%. Only 15,9% of the respondents are not willing to pay anything.

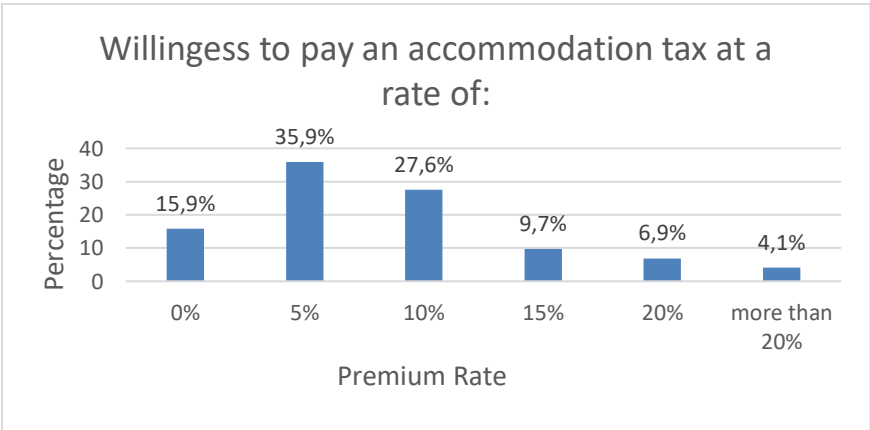


Figure 10 Respondents willingness to pay an accommodation tax.

The question whether respondents consider themselves as environmentalist was purposely asked in the end of the questionnaire. The author believes, by answering all other questions first, the respondents gained an impression of the circumstances and thus, better self-assess themselves whether they consider themselves as environmentalist or not. As can be seen in Figure 11, the majority (91%) of the respondents do not identify with the term environmentalist.

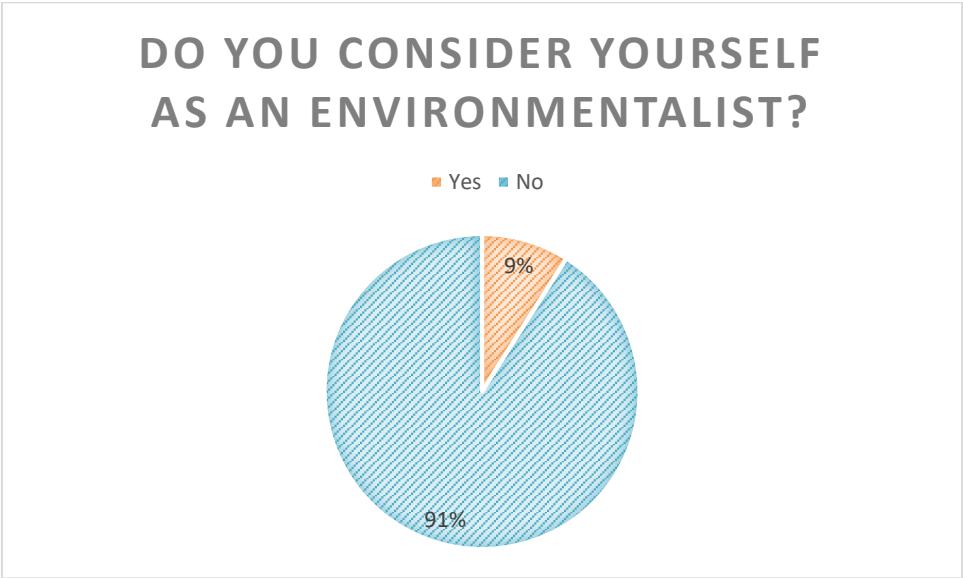


Figure 11 Respondents self-appraisal about being an environmentalist.

4.5 ECOLOGICAL ATTITUDE (WORLDVIEW)

4.5.1 NEP Scores

The collected NEP data is presented in Table 4, and shows the frequency of each item, as well as the mean and the standard deviation. As mentioned before, a high level of agreement with the odd numbered items reflects a high mean and indicates a pro-ecological view. A high level of disagreement with the even numbered items would reflect in a low mean and indicates a pro-ecological view. As the even numbered items are negatively-keyed, the mean scores were calculated after adjustment for direction, so that all items with higher scores indicate pro-NEP worldview.

As can be seen in Table 4, the mean scores for the eight pro-NEP items range from 3,54 to 4,28, whereas, the mean scores for the seven even DSP items range from 2,14 to 4,02. All items, except item 6, indicate a 'positive' mean score (greater than 3), and thus support a pro-ecological behavior. Regarding the 6th item, it seems that respondents support some DSP beliefs. As it shows, the odd numbered items had higher scores, whereas almost all items, except the 1st, 3rd and 11th, had mean scores greater than 4.

In the following the NEP scores for each item are presented within the five subscales.

THE REALITY OF LIMIT OF GROWTH: As the three items (1,6,11) within this subscale show, there is a concern with the limits to population growth regarding the carrying capacity of the earth, with equity and development issues, and limits to human interference with nature (Erdogan, 2009). The results show that the majority (68,3%) of the respondents embrace beliefs about population control (item1). Item 6 on the other hand provides a DSP view, and the results show that almost three quarters of the respondents (73,1%) agree with the idea of unlimited resources and with the need to learn to develop them. Regarding item 11, the majority (62,7%) of the respondents agree with the limits of natural resources to human interference with nature. However, as it shows within this subscales, it seems that respondents are less accepting the NEP valuation of nature and are more aligned with the DSP value on economic growth.

ANTI-ANTHROPOCENTRISM: This subscale consists of two pro-DSP items (2,12) and one pro-NEP item (7), having a pro- NEP worldview would mean that the ideas of item 2 and 12 would not be accepted. The results show that the majority (63,5%) of respondents reject the anthropocentric view at item 2, whereby 24,8% accept it, and 11,7% have a neutral perspective on the idea of item 2. A considerable number of respondents (74,5%) oppose the anthropocentric view at item 12. The anthropocentric idea that plants and animals have as much right as humans to exist (item 7) is supported by the vast majority (88,2%), and opposed by only 4,1%, whereby 7,6% have a neutral view on it.

The results of item 7 suggest that one does not have to be an environmentalist in order to acknowledge the right of existence of plants and animals. As can be seen, the results for all three items incline to a pro-NEP worldview.

ANTI-EXEMPTIONALISM: A pro-NEP worldview assumes that people reject human exemptionalism views which are based on the idea that humans are exempt from the constraints of nature. This view supports the human domination and domination of economy over nature (Erdogan, 2009). The subscale consists of two pro-DSP items (4,14) and one pro-NEP item (9). The results for item 4 show that 39,3% of the respondents have an anti-exemptionalism worldview, whereby 30,3% have a neutral view on the idea of this item, and 30,4% indicated to have an exemptionalism worldview. The vast majority (82,1%) of respondents believe the idea of item 9, that 'despite our special abilities, humans are still subject of laws of nature'. Regarding item 14, the results show that 35,1% of the respondents have an anti-exemptionalism worldview, 24,1% are neutral, and as the majority (40,7%) of respondents agree with this item it seems they have an exemptionalism worldview.

THE POSSIBILITY OF AN ECOCRISIS: The NEP stresses on human dependence to nature and disastrous outcome of human interference to nature (Erdogan, 2009). The subscale consists of two pro-NEP items (5,15) and one pro-DSP item (10). The results show that an overwhelming number of respondents (90,3%) agree with the statement 'Humans are severely abusing the environment (item 5), indicating a pro-NEP worldview. Regarding item 10, only 13,8% of the respondents agree with the statement and thus support a DSP view, however, the majority (62%) disagrees and thus supports the NEP-view, whereby 24,1% indicated to be neutral about it. Concerning item 15, the majority (77,3%) of respondents agree with the statement 'If things continue on their present course we will soon experience a major ecological catastrophe', and thus has a pro-ecological worldview.

THE FRAGILITY OF NATURE'S BALANCE: This subscale hold the idea that there is a balance between nature and human interference, and that this interference can endanger nature (Erdogan, 2009). Two items (3,13) are pro-NEP and one item (8) is pro-DSP. The results show, that the majority (75,8) of respondents agree with item 3 and thus, support the NEP worldview regarding this statement. Concerning item 8, 76,5% disagree with that 'The balance of nature is strong enough to cope with the impacts of modern industrial nations', meaning that they oppose the DSP view on this statement. Further, the results show, that the majority (79,1%) believe that 'The balance of nature is very delicate and easily upset' (item 13), therefore, agreeing with a pro-NEP worldview.

Table 4 NEP items with frequency, mean, and standard deviation of responses.

NEP ITEMS	% DISTRIBUTIONS					N*	Mean**	ST.D***
	SD	D	N	A	SA			
1. We are approaching the limit of the number of people the earth can support.	4.1	14.5	13.1	36.6	31.7	145	3.77	0.72
2. Humans have the right to modify the natural environment to suit their needs.	29.0	34.5	11.7	20.0	4.8	145	3.63	0.64
3. When humans interfere with nature it often produces disastrous consequences.	0.0	10.3	13.8	51.0	24.8	145	3.90	0.85
4. Human ingenuity will insure that we do not make the earth unlivable.	11.7	27.6	30.3	21.4	9.0	145	3.12	0.40
5. Humans are severely abusing environment.	0.7	0.7	8.3	50.3	40.0	145	4.28	1.05
6. The earth has plenty of natural resources if we just learn how to develop them.	2.1	9.0	15.9	46.9	26.2	145	2.14	0.32
7. Plants and animals have as much right as humans to exist.	0.7	3.4	7.6	44.8	43.4	145	4.27	1.04
8. The balance of nature is strong enough to cope with the impacts of modern industries.	33.1	43.4	9.7	9.0	9.0	145	3.91	0.84
9. Despite our special abilities humans are still subject to the laws of nature.	0.0	5.5	12.4	45.5	36.6	145	4.13	0.92
10. The so-called "ecological crisis" facing human kind has been greatly exaggerated.	23.4	38.6	24.1	6.9	6.9	145	3.65	0.64
11. The earth is like a spaceship with very limited room and resources.	3.4	11.7	22.1	52.4	10.3	145	3.54	0.81
12. Humans were meant to rule over the rest of nature.	47.6	26.9	9.0	13.1	3.4	145	4.02	0.97
13. The balance of nature is very delicate and easily upset.	0.7	7.6	7.6	52.2	26.9	145	4.02	0.99
14. Humans will eventually learn enough about how nature works to be able to control it.	11.0	24.1	24.1	36.6	4.1	145	3.01	0.35
15. If thing continue on their present course, we will soon experience a major ecological catastrophe.	2.1	3.4	17.2	41.4	35.9	145	4.06	0.86

SD=Strongly Disagree, **D**=Disagree, **N**=Neutral, **A**= Agree, **SA**= Strongly Agree;

N* = Number of participants who responded to each item;

Mean** = Mean scores after adjustment for direction. Higher score indicates pro-NEP worldview;

St.D.*** = Standard deviation.

Table 5 presents the statistics on the environmental attitudes of the respondents according to the NEP subscales. The results show that the mean scores for the subscale 'Possibility of an ecocrisis' has the highest rate (M= 4.00; SD=0.85) and the subscale 'Limits to growth' has the lowest average score (M= 3.15; SD= 0.61).

Table 5 Environmental attitude scores according to NEP subscales.

NEP SUBSCALES	N	MEAN	ST.D
Fragility of nature's balance	145	3.94	0.89
Limits to growth	145	3.15	0.61
Anti-anthropocentrism	145	3.97	0.88
Anti-exemptionalism	145	3.42	0.56
Possibility of an ecocrisis	145	4.00	0.85

Table 6 presents the descriptive statistics for the whole NEP items together. As can be seen below, the scores varied between 2.14 and 4.28, with an average score 3.90.

Table 6 Descriptive statistics for the NEP Score variable.

	N	Min.	Max.	Mean	St.D.	Quartile 1	Quartile 2	Quartile 3
NEP Score	145	2.14	4.28	3.70	0.57	3.54	3.90	4.04

Furthermore, as described in chapter 3, the distribution of the respondents were categorized according the ecological classifications based on Thomas (2013), which is presented in Table 7.

Table 7 Ecological attitude scores according to categories.

	Anti-ecological NEP Score in (1,3)	Mid-ecological NEP Score in)3,4)	Pro-ecological NEP Score in)4,5)
% of respondents	14.7%	56.6%	28.8%

The results in Table 7 show that the majority (56,6%) of the respondents are mid-ecological, whereas 14,7% are anti-ecological and 28,8% are categorized as pro-ecological.

4.5.2 Comparing Means

The independent sample t-test evaluates the statistical difference between the means of two independent or unrelated groups. In this part the test was conducted to compare the NEP scores between gender, age, education and surf level in order to test the hypothesis.

Hypothesis 1 – ‘The socio-demographic characteristics of surf tourists influence their environmental attitudes’.

Gender

H₀: $\mu_1 \leq \mu_2$ Women have a lower or equal global NEP score mean than man.

H_A: $\mu_1 > \mu_2$ Women have a higher global NEP score mean than man.

As can be seen in Table 8, the mean of females is 3,74 and the mean for men is 3.65. Using one-tailed 0,05 criterion, the null hypothesis (H₀) is not rejected, since p-value = 0,17 > 0,05. The alpha value indicates that no statistically significant difference exists between the global mean of females and males. Thus, in this study pro-ecological attitude is not depending on gender.

Table 8 Gender and NEP subscales.

NEP SUBSCALES	GENDER	N	MEAN	ST.D	t	g.l.	P
Fragility of nature's balance	Male	92	3.96	0.92	-1.366	21.04	0.18
	Female	53	3.91	0.86			
Limits to growth	Male	92	3.19	0.65	-1.900	20.36	0.07
	Female	53	3.08	0.58			
Anti-anthropocentrism	Male	92	3.73	0.80	-1.119	27.19	0.27
	Female	53	4.21	1.12			
Anti-exemptionalism	Male	92	3.38	0.57	-1.501	21.53	0.14
	Female	53	3.50	0.59			
Possibility of an ecocrisis	Male	92	3.98	0.85	-1.376	22.56	0.18
	Female	53	4.02	0.88			
Score (media)	Male	92	3.65	0.76	-1.452	22.54	0.17
	Female	53	3.74	0.80			

Age

H₀: Age is independent of environmental awareness.

H_A: Age is dependent of environmental awareness.

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of age on environmental awareness. Therefore, respondents were divided into four groups according to their age (group 1: 18-29; group 2: 30-44; group 3: 45-65; group 4: 65+).

As can be seen in Table 9, the mean for group 1 = 3,70; group 2 = 3,68; group 3 = 3,95. Using one-tailed 0,05 criterion, the null hypothesis (H₀) is not rejected, since p-value = 0,38 > 0,05. The alpha value indicates that no statistically significant difference exists between age and ecological awareness. Thus, the Bonferroni results are not provided.

Table 9 Age and NEP Score.

Age Score Media	Mean	ST.D	N	ANOVA (p)
18-19	3.70	0.40	89	
30-44	3.68	0.38	52	0.38
45-65	3.95	1.19	4	

The study of the relationship between age and environmental awareness was complemented with an analysis according to the NEP categories as described before (anti-ecological, mid-ecological, and pro-ecological). As can be seen in Figure 12, in all groups the majority (18-29= 58,2%; 30-44= 54,5%, 45-65=65%) is mid-ecological.

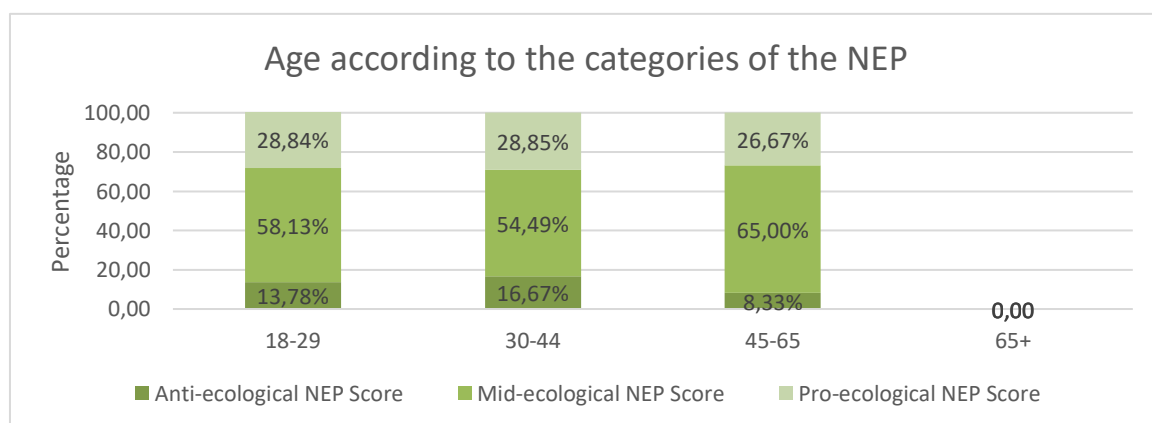


Figure 12 Age and NEP categories

Education

H₀: Education is independent of environmental awareness.

H_A: Education is dependent of environmental awareness.

To evaluate whether education has an influence on environmental attitudes, three groups were considered (group1: participants with a High School degree; group 2: participants with Higher Education (bachelor's degree, master's degree or PhD); group3: participants with 'Other' education). The mean for group 1= 3,55; group 2= 3,72; and group 3= 3,66. Using one-tailed 0,05 criterion, the null hypothesis (H₀) is not rejected, since p-value = 0,41 > 0,05. The alpha value indicates that no statistically significant difference exists between education and environmental awareness.

Surf Level

H₀: Surf Level is independent on environmental awareness.

H_A: Surf Level is dependent on environmental awareness.

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of surf level and environmental awareness. Therefore, respondents were divided into three groups according to their surf level (group 1= Beginner; group 2= Intermediate; group 2= Experiences Surfer). The mean for group 1= 3,72; group 2= 3,65; and group 3= 3,69. Using one-tailed 0,05 criterion, the null hypothesis (H₀) is not rejected, since p-value = 0,94 > 0,05. The alpha value indicates that no statistically significant difference exists between surf level and environmental awareness.

4.6 SUMMARY

This chapter discussed the results of the data obtained from surf tourists concerning their environmental awareness. The outcomes show that overall surf tourists seem to be environmental aware and advocate for the environment, however, the outcomes also show some controversial results. Particularly in view of the fact that a considerable amount of the respondents consider the surf industry as environmental friendly and that more than half of the respondents do not know that surfboards and surfing materials are mostly environmental unfriendly. Overall the NEP outcomes showed that the scores turned out to be high, which indicates a pro-NEP worldview. Further, it showed that most of the respondents have a mid-ecological attitude and just a small portion of the respondents have an anti-ecological attitude. For the hypothesis 1 related to socio-demographics and environmental awareness, no significant differences were found, and thus it can be said that in this study socio-demographics had no influence of the environmental attitude. Further, it showed that respondents do not identify themselves as environmentalist, and thus hypothesis 2 was rejected.

CHAPTER 5. DISCUSSIONS AND CONCLUSIONS

5.1 INTRODUCTION

This study responded to the need for a better understanding of surf tourists and their attitude towards the environment and thus, attempts to contribute to the planning and development of sustainable surf tourism. Exploring the environmental awareness of surf tourists has been done by conducting a questionnaire amongst 145 surf tourists in Peniche, Portugal. Questions regarding surf tourists environmental awareness and advocacy in conjunction to surf tourism and surf industry were queried. Additionally, the NEP scale was applied to measure the overall environmental attitude, by using the overall score and scores based on three categories – pro-ecological, mid-ecological and anti-ecological – that was adapted from Thomas (2013).

The following section comprises a discussion of results. The author interprets empirical findings of this study in conjunction with previous research, followed by conclusions in conjunction with the research questions and key findings.

Finally, limitations to this research and suggestions for further research on this topic are proposed.

5.2 CONCLUDING DISCUSSION

The dynamics of surf tourism and sustainability have gained significant attention of research in recent years, and surfers were identified to be a key stakeholder group for the development and planning of sustainable surf tourism management.

In this research, it was found that the general demographic profile of surfers, who are travelling to Peniche were Germans and Portuguese, well-educated and mostly males. The fact that most surfers, who are visiting Peniche, are males, is consistent with the results of the research by Dale and Ford (2002), in which it was found out that surfing is a sport that is dominated by males. Although it can be said that the number of female surfers is increasing annually.

Peniche mostly attracts a young market, as the results show, the most represented group is between 18 - 29 (61,4%), followed by 30 - 44 years old (35,9%), and 45 - 65 years old (2,8%). A reason for the high number of younger surfers is given by Nunes (2008), who notes that surfing is very interesting for the younger generation, because of its own constant contact with the sea, which provides the tremendous feeling of freedom and control (ocean waves) even it cannot be controlled. Therefore, surfing mediates an interior strength and creates a positive self-image, which is convenient in life. However, it does not align with the research of Buckley (2002), who notes that there is a low number of younger surfers, because the majority of surfers in their teens and early 20s cannot afford surf packages, such as surf lessons, surf equipment and accommodation.

In order to get an understanding of the respondents overall awareness and perception of surf tourism and its impacts, respondents were asked, whether surf tourism impacts the environment and culture at surf destinations. Additionally, respondents were asked to rank their strength of disagreement and agreement on seven ecological impact statement and five cultural impact statements. Overall, the results revealed that respondents are aware that surf tourism has positive and negative impacts on surf destinations, however, environmental impacts were rated lower than the cultural impacts. This resonates with previous studies (e.g., Marion and Lime, 1986) on perceptions of the environmental impacts, which have concluded that tourists are not very perceptive for instance of their own effects on the visited areas.

The overall environmental attitude and worldview was measured with the NEP scale, however, the connection between the respondents and the environment was taken a step further by examining their environmental advocacy and awareness in conjunction with more specific questions about their behavior and knowledge about the surf industry and surf equipment. This section showed some controversial outcomes.

On a positive note, slightly more than half of the respondents do advocate for the environment through beach clean-ups, recycling or supporting NGO's. However, the other half of the respondents do not advocate for the environment, because of a lack of knowledge of how to help. Similar outcomes were found by Moore (2011), whereas 65% of the questioned surfers were unaware of how to advocate for the environment. This indicates that there is a need to educate and engage surf tourists to be active and show them how they can advocate for the environment.

On a negative note, and one of the most concerning findings was how respondents perceived the surfing industry. The majority (63,4%) of respondents consider the surfing industry as environmental friendly, and regarding their awareness of unfriendly surf equipment, more than half of the respondents do not know that surf boards are mostly environmentally degrading. Appallingly, this resonates with the studies of Hill and Abbott (2009a), whereas, nearly half of the respondents agreed that the surfing industry has positive impacts on the environment. In Eddy's study (2015) it was found that the vast majority (70%) are also unaware of the impacts of the surfing industry, whereas 78% of the respondents are unaware of the high levels of toxicity that their surf boards emit during production. These findings are problematic in the sense that they shows the extent to which surfers are overlooking to be critical of the surfing industry and how unaware they actually are of the impacts, which in some ways translates into the fact that the public pressure might be less on surfing companies to improve their environmental policies. Also in that sense, there is a need for transparency within the surfing industry, and spreading more awareness about the impacts of the surfing industry and equipment itself amongst surf tourists, which could be easily done in surf camps.

Regarding whether surf tourism should be regulated (e.g. regulation, permits, licenses, fee, and limits on the number of visitor at destinations), slightly more than half (51,7%) of the respondents do not think that it should be regulated. These results do not resonate with other studies. In contrast to this study, Ponting's and O'Brien's research (2015) on the Mentawai Islands, whereas surfers were asked about their perceptions of the need for regulations, findings suggested to incorporate regulations in future planning, such as "social carrying capacity augmentation measures to encourage positive tourist behavior in a way that raises the crowding thresholds of individual surf tourists" (Ponting & O'Brien, 2015).

Moreover, this study explored the surf tourists' attitude towards an accommodation tax earmarked for environmental protection, in order to assess how serious and willingly they are to advocate for the environment. On a very positive note, 84,1 % of the respondents are willing to pay an accommodation tax. This is a very similar result to the study of Frank et al. (2015), who found out that 85,8% of the 240 surf tourists would be willing to fund environmental protection in the Algarve. These findings suggest that a accommodation tax would be construed as positive. However, a different study (Valle et al., 2012) found out that the majority of other tourist segments would not be willing to pay such tax. Therefore, it should be noted and considered that such tax might just work in surf accommodations.

The previous findings explored the environmental awareness and advocacy in a more specific sense and revealed some lacks in the knowledge regarding the impacts of the surfing industry. However, the NEP scale was utilized to measure surf tourists' environmental awareness in a broader sense, meaning their overall ecological attitude and worldview. Findings suggest that surf tourists (56,6%) are mid-ecological, but only 28,8% of the surf tourists exhibit true pro-ecological attitudes. On the one hand these results are positive, because there is only a small portion of anti-ecological attitudes. But on the other hand the low number of pro-ecological attitudes amongst surf tourists is rather underwhelming, considering that surfers are considered to be environmentalist, and that other studies (SustainableSurf, 2018) found out that the act of surfing does result in raising environmental awareness and action, and further showed that surfers engage in pro-environmental actions at a much higher rates than non-surfers.

The mean score on the NEP subscales (Table 5) on the responses of surf tourists indicated that the 'Possibility of an ecocrisis' NEP facet had the highest level of endorsement, which stresses on human dependence to nature and disastrous outcome of human interference to nature (Erdogan, 2009). Such high score within this subscale could be argued with the fact that surfers depend on the natural environment (Reis & Jorge, 2012), and that they are the first to be affected, for instance by plastic or sewage in the sea, which would impact their health and enjoyment (Martin & Assenov 2008).

However, the overall mean scores for each item, except for the 6th item, turned out to be high, and thus, indicates pro-NEP worldview amongst the respondents. This resonates with the studies of Frank et al. (2015,) who applied the NEP scale amongst surf tourists in the Algarve, Portugal. They found out that the majority of respondent's environmental attitude showed a very strong ecological view, whereas only a few anthropocentric aspects were identified. A similar study (Mass, 2006), identified that the majority of surfers (80%) yielded pro-ecological results within all statements, except for item 6. This indicates that surfers seem to be overall an environmentally conscious group.

Many studies have shown that certain factors, such as socio-demographic attributes, affect environmental awareness (Casey and Scott, 2006; Kuckartz et al., 2006; Xiao & McCright, 2014; Stern et al., 1995). For instance, several studies (e.g. Blocker & Eckberg, 1997; Hunter et al., 2004; Casey & Scott, 2006; Xiao & McCright, 2014;) demonstrated, that females have significantly a higher level of involvement in environmental behavior than men, justifying it based on the idea that women are more compassionate, nurturing, protective and cooperative than men.

For instance, in the study of Rideout (2014), there was a significant effect of gender in the NEP scores. Additionally, several studies found out that age is admissible as a predictor of environmental behavior, however, the relationship between age and pro-environmental behavior seems to be imprecise, because of the conflicting results of previous studies. Several other studies (e.g. Jones & Dunlap, 1992; Dunlap et al. 2000; Arcury & Chistianson, 1990; Scott & Willits, 1994) recorded the positive relationship between level of education and environmental awareness. Thus, higher education tends to a higher level of engagement in pro-environmental behavior.

However, in this study there were no statistically significant differences between, gender, age, education, surf level and the scores of ecological attitude, and thus Hypothesis 1 “The socio-demographic characteristics of surf tourists influence their environmental attitudes” was rejected.

Moreover, the results in this study showed that the vast majority of surf tourists do not identify themselves as environmentalist, and thus, Hypothesis 2 “Surfers identify themselves as environmentalists”, was rejected as well. These results do not resonate with the similar study of Hill and Abbott (2009a), whereas 52% of the respondents consider themselves as environmentalist. And also in the study of Edy (2015), findings showed that even 94% of respondents identify themselves as environmentalists. However, this could be hypothesized with the fact the meaning of being an environmentalist is highly variable and that the term ‘environmentalism’ may vary on an individuals’ interests and environment that they are most surrounded in.

5.3 CONCLUSIONS

Surfing exploded in popularity in the 1960s and has steadily grown and maintained popularity in the past half century, and thus, is responsible for the development of a profitable surf tourism industry. However, as it has been discussed in this research, as any other form of tourism, surf tourism has led to negative impacts on local communities and every surf destination has its own barriers and set of challenges. Therefore, the dynamics of surf tourism and sustainability has gained significant attention of research in recent years, and surfers were identified to be a key stakeholder group for the development and planning of sustainable surf tourism management. However, the level of harmony between surfers and the environment has been increasingly questioned, and thus, potential links between surfers and pro-environmental behavior needs further attention, as they play an important role to identify and preserve surfing resources.

In the following the key findings within this research and in conjunction with the research questions and objectives are highlighted.

Main Research Question :

What is the attitude of surf tourists towards the environment and how does the stereotype of a surfer being an environmentalist reflect reality?

- **Key findings:**

1. Surf Tourists have a strong ecological worldview: Though it would be false to make the case for surfers as collectively environmental aware, respondents in this study have a mid-ecological to pro-ecological attitude.
2. Representative amount of respondents advocate for the environment. As respondents indicated, they either advocate by supporting NGO's, recycling or through beach clean-ups. The other part that do not advocate for the environment is due to a lack of knowledge of how to help.
3. Lack of awareness regarding the impacts of the surfing industry. Respondents believe that the surfing industry is environmentally friendly and are not aware that surf equipment is mostly environmentally unfriendly.
4. In this study, surf tourists do not identify themselves as environmentalists.

Sub-Questions:

Are Surf Tourists aware of the impact that surf tourism has on the environment ?

- **Key findings:**

1. Respondents are aware of the impacts of surf tourism, however, there was not a high level of agreement regarding the environmental impacts.

Are Surf Tourists willing to pay more for environmental protection?

- **Key findings:**

2. The willingness to pay an accommodation tax earmarked for environmental protection is high. Most respondents are willing to pay a rate of 5% more.

Do the socio-demographics correlate on the environmental concern of surf tourists?

- **Key findings:**

3. Socio-demographic attributes do not influence the environmental attitude of the respondents. In several studies socio-demographic attributes influenced the environmental behavior, however, in this study neither gender, age, education or surf level of the respondents had statistically significant differences.

This study responded to the need for a better understanding of surf tourists and their environmental awareness in Peniche, Portugal. Peniche is depending on surf tourism as it is one of the main economic drivers, and the town has been recently benchmarked as the first sustainable surf destination in the world. The benefit of understanding the environmental attitude of surf tourists is vital for the town as new campaigns can be developed to promote pro-environmental behavior, as well as to educate and motivate them.

Concluding, the findings revealed that surf tourists have an environmental awareness in a broader sense, however, when it comes to surf related issues and the environment it seems that there is a lack of awareness. Therefore, findings suggest adapting strategies to spread more awareness and educate surf tourists – 1. Educating them on the impacts of the surfing industry and the production of surf boards; 2. Simultaneously provide information on sustainable alternatives; 3. Educate and engage surf tourists to advocate for the environment; 4. Educate them about their own carbon footprint and what they can do to minimize it. Further, it is suggested to consider an accommodation tax earmarked for environmental protection in surf related accommodations.

Furthermore, it should be kept in mind that environmental awareness may be the first step to pro-environmental behavior, however, it does not mean just because a person is environmentally aware, that this person has necessarily a pro-environmental behavior.

LIMITATIONS TO THE RESEARCH

The author has experienced several limitations during this research. One significant limitation was the scope of the research topic. It is a comprehensive and complex subject and it is influenced by several other subjects. Therefore, it was difficult to narrow it down.

Another limitation was the availability of data for the literature review, as the author had limited access to journals, research papers due to liable of charges. However, some journals and articles that would have been liable of charges, were available on B-on.

Furthermore, the sample size of the questionnaire was limited due to the available time of research and due to the surf tourists' willingness to participate. Therefore, a larger sample size would have let to a better representation of the environmental awareness of surf tourists in Peniche, Portugal.

FUTURE RESEARCH

This research merely scratches the surface of possibilities in this field and therefore, potential future research is suggested. Regarding the topic within this research, the sample size should be increased and further distributed to other coastal areas. A more diverse approach on measuring high and low efforts of behavioral measures, for example including efforts to reduce carbon footprints, consumer behavior, and concerns of the surf community, could generate significant conclusions on the relation between surfers and environmentalism.

Moreover, research about environmental awareness and pro-ecological behavior should be conducted amongst other key stakeholders within surf tourism and the surf industry itself, such as tour operators, surf board shapers or surf camps/ surf schools. It would be particular interesting to conduct research in surf camps and investigate to what extent they operate and advocate in an environmental friendly manner since they could be potential educators for surf tourists. Moreover, conducting research amongst surf board shapers could give an understanding of why the majority of surf boards are still produced with toxic materials and what would it take to make a complete shift to sustainable surf boards. Therefore, research should also be done within the surf industry, and investigate sustainable shipping, energy and no-waste strategies and most importantly green manufacturing and not only for surf boards.

Further research should focus on investigating to what extent personal benefits outbalance environmental responsibilities, for example are surfers willing to give up some of the essentials that are part of the surfers' lifestyle but yet environmentally damaging. Another aspect that should be considered for further research is the link between surfing and other recreational activities in regards of PEB, and how these information can help to support green campaigns.

In terms of Peniche, Portugal, it is recommended that further research should attempt illuminating, as the town was declared to the title of being a sustainable surf destination in 2017, to what extent that really applies. Moreover, the socio-cultural impacts that surf tourism has on the local community should be researched.

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APPENDIX A



Questionnaire – Understanding the environmental awareness of Surf Tourists

The following questionnaire aims to collect information on surf tourists in Peniche, Portugal. It is important for the research that you answer as sincerely and objectively as possible. The questionnaire is confidential and takes 10 minutes.

Thank you for your time and effort!

The potential impacts of surf tourism on coastal areas

Do you think that surf tourism impacts the environment and the culture at a destination?

No

Yes If so, what do you think are the most significant impacts (environmental, economic, social) associated with surf tourism on coastal areas?

Please indicate your strength of agreement and disagreement

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Changes in the landscape coming from the construction of infrastructure, buildings and facilities					
Air pollution and waste					
The compaction and sealing of soils (damage and destruction of dunes vegetation)					
The intensive use of water and land by tourism and leisure facilities					
Reduction of ocean water quality (p.ex. sewage discharge)					
Loss of coastal and marine biodiversity					
Beach pollution					
Contribution to local employment					
Contribution to local community development					
Commercialization of local culture					
Standardization					
Adaptation to tourist demand					

Environmental Advocacy and Awareness

Do you advocate in any way for the environment?

- No, if not, is it because you are unaware of how to help? Yes No
 Yes, through _____

Have you ever taken part in a beach or ocean related clean-up?

- Yes No

In your opinion, what makes a surfer environmentally friendly?

Do you consider the surfing industry as environmentally friendly?

- Yes No

Are you aware that surfboards and surfing goods are mostly environmentally unfriendly?

- Yes No

Are you aware that environmentally friendly surfboards and surfing goods exist?

- Yes If so, do you use environmentally friendly surfboards etc.? Yes No
No

Do you think that surf tourism should be regulated (e.g. regulation, permits, licenses, fee, and limits on the number of visitors at destinations)?

- Yes No

Suppose an environmental fund were raised to protect the coastal area in -and around Peniche.

This would be used to finance the following things:

- Preservation of natural environments,
- Environmental improvements to beaches and other coastal areas,

Assume further that this fund would be financed through an accommodation tax paid as a fixed amount per day spent in an accommodation established in Peniche.

To support these efforts, I am willing to pay a premium at the rate of:

- 0% 5% 10% 15% 20% more than 20%

Ecological Worldview

This part consists of questions regarding your concern for the environment. Please indicate your strength of agreement or disagreement with each of 15 statements below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We are approaching the limit of the number of people the earth can support					
Humans have the right to modify the natural environment to suit their needs					
When humans interfere with nature it often produces disastrous consequences					
Human ingenuity/creativity will insure that we do NOT make the earth unlivable					
Humans are severely abusing the environment					
The earth has plenty of natural resources if we just learn how to develop them					
Plants and animals have as much right as humans to exist					
The balance of nature is strong enough to cope with the impacts of modern industrial nations					
Despite our special abilities humans are still subject to the laws of nature					
The so-called "ecological crisis" facing humankind has been greatly exaggerated					
The earth is like a spaceship with very limited room and resources					
Humans were meant to rule over the rest of nature					
The balance of nature is very delicate and easily upset					
Humans will eventually learn enough about how nature works to be able to control it					
If things continue on their present course, we will soon experience a major ecological catastrophe					

SOCIO-DEMOGRAPHIC CHARACTERIZATION

Nationality (country): _____ Age: _____ years Gender: F M

Level of education:

- No education Primary
 High school Higher Education Other. Indicate which:

Professional activity

- Employee Freelancer/Entrepreneur Retired
 Student Unemployed Other. Indicate which:

Stay

Is this your first stay in Peniche? Yes No

How long is your stay in Peniche: _____ (days)

Are you: Beginner Intermediate Experienced Surfer

Are you staying in a: Hotel Surf Camp Bed & Breakfast Hostel Other

Is it important to you that your accommodation is sustainable? Yes No

Are you travelling:

Alone with wife/husband/girlfriend/boyfriend with family (including kids)
with friends Other

Do you consider yourself as an environmentalist?

Yes No



Questionário - Compreender a consciência ambiental dos praticantes de surf

O seguinte questionário visa recolher informações sobre surfistas em Peniche, Portugal. É importante para a pesquisa que você responda tão sinceramente e objetivamente quanto possível. O questionário é confidencial e demora cerca de 10 minutos.

Obrigado pelo seu tempo e esforço!

Os impactos potenciais do turismo de surf em áreas costeiras

Acha que o turismo de surf afeta o meio ambiente e a cultura do destino onde é praticado?

Não

Sim Em caso afirmativo, quais os impactos mais significativos (ambientais, econômicos, sociais) associados ao turismo de surf nas áreas costeiras?

Concorda ou discorda com as seguintes afirmações, sendo 1- "Discordo totalmente"; 2- "Discordo parcialmente"; 3- "Indiferente"; 4- "Concordo parcialmente"; 5- "Concordo totalmente"

	1	2	3	4	5
Mudanças na paisagem provenientes da construção de infraestrutura, edifícios e instalações					
Poluição do ar e resíduos					
A compactação e vedação do solo (danos e destruição da vegetação das dunas)					
O uso intensivo de água e terra pelo turismo e instalações de lazer					
Redução da qualidade da água do oceano (por ex. descarga de esgoto)					
Perda de biodiversidade costeira e marinha					
Poluição da praia					
Contribuição para o emprego local					
Contribuição para o desenvolvimento da comunidade local					
Comercialização da cultura local					
Padronização					
Adaptação à demanda turística					

Advocacia e Consciência Ambiental

De que forma defende o meio ambiente?

Não. Se não, é porque você não tem conhecimento de como ajudar? Sim Não

Sim, através de _____

Você já participou em alguma limpeza da praia ou do oceano?

Sim Não

Na sua opinião, o que faz um surfista amigo do ambiente?

Considera a indústria do surf ecológica?

Sim Não

Você está ciente de que as pranchas de surf e os produtos de surf são na sua maioria prejudiciais ao meio ambiente?

Sim Não

Você está ciente de que existem pranchas e artigos de surf ambientalmente amigáveis?

Sim Em caso afirmativo, você usa pranchas ambientalmente amigáveis etc.? Sim Não

Não

Você acha que o turismo de surf deve ser regulamentado (por exemplo, regulamentação, licenças, taxas e limites no número de visitantes em destinos)?

Sim Não

Suponha que um fundo ambiental tenha sido criado para proteger a área costeira na zona de Peniche. Isso seria usado para financiar as seguintes coisas:

- Preservação de ambientes naturais,
- Melhorias ambientais para praias e outras áreas costeiras,

Suponhamos ainda que este fundo seria financiado através de um imposto de acomodação pago como um valor fixo por dia gasto em um alojamento estabelecido em Peniche.

Para apoiar esses esforços, estou disposto a pagar um prêmio à taxa de:

0% 5% 10% 15% 20% Mais de 20%

Consciência ambiental

Esta parte consiste em questões relativas à sua preocupação com o meio ambiente. Indique sua força de acordo ou desacordo com cada uma das 15 declarações abaixo.

Concorda ou discorda com as seguintes afirmações, sendo 1- “Discordo totalmente”; 2- “Discordo parcialmente”; 3- “Indiferente”; 4- “Concordo parcialmente”; 5- “Concordo totalmente”

	1	2	3	4	5
Estamos a aproximar-nos do limite do número de pessoas que a Terra pode suportar					
O Homem tem o direito de modificar a natureza de acordo com as suas necessidades					
A ação do Homem na natureza produz frequentemente consequências desastrosas.					
A capacidade inventiva do Homem permitirá sempre a vida no planeta Terra					
O Homem está a abusar severamente do ambiente					
O planeta Terra será sempre rico em recursos naturais se os aproveitarmos bem					
Tal como a espécie humana, todas as espécies animais e vegetais têm o direito de existir					
A natureza conseguirá ultrapassar sempre os efeitos negativos da industrialização					
Apesar das capacidades especiais do Homem, este ainda está sujeito às leis da natureza					
A tão falada “crise ecológica”, associada ao mundo humano, tem sido muito exagerada					
A Terra pode ser comparada a uma nave espacial, em que os recursos e o espaço são limitados					
O Homem foi criado para controlar a Natureza					
O equilíbrio da natureza é muito frágil e facilmente alterável					
O Homem acabará por conhecer o funcionamento da natureza suficientemente bem para a controlar					
Se as coisas continuarem como até aqui, uma catástrofe ecológica será inevitável					

CARACTERIZAÇÃO SOCIO-DEMOGRÁFICA

Nacionalidade (país): _____ Idade: _____ anos Sexo: F M

Nível de educação:

- Sem educação Primário
 Ensino Secundário Ensino superior Outro. Indique quais:

Atividade profissional

- Empregado Freelancer / Empreendedor Aposentado
 Estudante Desempregado Outro. Indique quais:

Estadia

É a sua primeira que fica hospedado em Peniche? Sim Não

Quanto tempo é a sua estadia em Peniche: ____ (dias)

Você é: Iniciante Intermédio Surfista experiente

Você está hospedado em: Hotel Surf Camp Bed & Breakfast Hostel Outro

É importante para si que sua acomodação seja sustentável? Sim Não

Está a viajar:

Sozinho com esposa / marido / namorada / namorado com a família (incluindo crianças)

com amigos Outros

Você se considera um ambientalista?

Sim Não

