

**Sustainable Energy on Ameland?**  
Eco-tourists View on Energy Self-Sufficiency

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## **ABSTRACT**

In this research, the view of eco tourists concerning renewable energy self sufficiency (RESS) at a nature-based vacation destination will be explored. Ameland, a highly tourist dependent Dutch Wadden Island functions as a case study. An analytical survey was used to explore the sentiments of the eco tourists, and the extent in which they can function as opinion leaders, including the NEP Scale, the GEB Scale and the Place Attachment Scale. Those scales were used to analyze the relation between attitude, behavior and place attachment and the sentiment towards changes on the Wadden Island Ameland to convert it to energy self sufficiency, measured through a three-item-scale. After the analysis through a multiple linear regression analysis it becomes apparent that attitude and behavior are on the one hand highly correlating and on the other hand predict both the tourists' sentiment towards RESS significantly. Besides that, two of the five dimensions of place attachment, Place Identity and Nature Bonding, did also have a positive (Nature Bonding) and negative (Place Identity) effect on the RESS. This shows the highly complex effect place has on people's sentiments towards divers issues.

## **TABLE OF CONTENT**

INTRODUCTION .....	4
THEORETICAL FRAMEWORK.....	6
CONCEPTUAL MODEL.....	11
METHODOLOGY.....	11
POSITIONALITY .....	14
RESULTS.....	15
CONCLUSION .....	19
REFERENCE LIST.....	21
APPENDIX .....	24

## **INTRODUCTION**

Ameland, as well as the other Wadden Islands, has the aim to be self-sufficient concerning energy by the year of 2020 (Gemeente Ameland, 2011). The energy cooperation AEC (Amelandse Energie Cooperatie) is one example of their efforts becoming self-sufficient. AEC sells green energy, provided by Green Choice, to local customers and uses the obtained profits to reinvest in local renewable energy production (AEC, 2012). However, there is still a long way to go until all the energy needed at this island will and can be produced by itself. During the Summerschool Sustainable Marketing of the Honours College, Rijksuniversiteit Groningen, in the year 2011, a member of the municipality of Ameland stated 4 wind turbines would be sufficient to produce enough energy for the island itself. In the paper *Duurzame Waddeneilanden*, published by Grontmij (2011) and *ekwadraat*, several partial solutions towards their 2020 goal are stated. In the chapter about wind energy, the authors note that not only wind energy could produce 21 percent of the total energy need in the foreseeable future but also, that there would be support from the islands' inhabitants. However, the province of Friesland has restricted any major wind energy parks on the Wadden because it would not fit into the area and disrupt the nature in the Wadden Sea (Grontmij, 2011).

The paper *Duurzame Waddeneilanden* does not mention whether tourists would prefer to spend time on the islands if it would be self sufficient. The preferences of tourists however, can form a major impulse for a tourism based area and economy like Ameland is. In 2010, 533.297 tourists came to Ameland, while only around 3500 inhabitants lived on the island permanently (CBS, 2012A). This number of tourists is since 1999 nearly constant (Gemeente Ameland, 2012). However, because the number of tourists does not grow anymore, like in the late 1980s and early 1990s causing a constant rise of pollution, waste and energy use, there is now a possibility to focus on a more efficient and therefore more sustainable way of tourism activity on the island. In order to get this sustainable development in tourism started, one should first of all focus on tourists, who are most aware of the subject-matter: Eco-tourists. This group of tourists, which will be defined in the theoretical framework, could function as early adaptors of these new developments and thus form a critical mass of beginners demanding self-sufficiency which in turn makes it economically viable for entrepreneurs and institutions to invest in innovation and start supplying services sustainably. Those early adopters may be willing to pay more at the beginning and, due to their connection to the issue, can afterwards "serve as opinion leaders" (p. 293) for other tourists and therefore support the change (Rogers, 2005). There are no specific numbers about the share of eco-tourists in the Netherlands, however estimates are that 10-15% of all tourism is ecotourism and that this group is growing three times faster than tourism in general (Biomanantial, 2012; FAO UN, 2012). Besides the rise of ecotourism, one can also see the growth of environmental aware tourism through the rise of accommodations in the Netherlands with a "Green Key" or "Eco-Label" certificate of nearly 50%, from 4,4 percentage

points in 2010 to 6,4 percentage points in 2011 (CBS, 2012B). Tourism in general is important for Ameland which becomes clear when looking at the sector division of labor. This high importance of tourism is shown through the low share of industry and agriculture, with 14% and 3% of total employment respectively, compared to the Service Sector with 61% of total employment, show the high importance of tourism as a means of living (CBS, 2012A; Kabat et al., 2009). Consequently, if one can indicate that Ameland isn't only highly dependent on tourism, but also eco-tourists see the advantages of their tourist destination being self sufficient, this could be a major argument for reconsidering the provincial restrictions concerning the generation of energy through environment friendly manners.

Besides the above explained societal relevance of this research, in science researchers also start to see the need to accumulate more knowledge about the Wadden to protect this unique area, "accounting for 60% of all tidal areas in Europe and North Africa" (Kabat et al., 2009, p. 7). In order to achieve this protection, the Wadden Academy was established in 2008. Its tasks range from filling knowledge deficits about the area to the creation of a "sustainable network", where research questions and outcomes as well as other information can be exchanged "between science, government, private parties and social organizations" (Kabat et al., 2009, p.7). All research concerning the area is organized in three related main topics: Wadden Climate, Wadden Nature and Wadden Well-being (for more specific information see Kabat et al., 2009). All three related topics have an influence on this research, however, Wadden Climate and Wadden Well-being are of uttermost importance. Wadden Nature is least important because it relates more to the environmental changes and therefore concerns "natural quality of water flows, geomorphology [...] water, air and soil quality", which is of course also linked to the tourism area, however does not connect to the central issue of this research (Kabat et al., 2009, p. 15).

Wadden Climate, on the one hand, is foremost referring to safety issues concerning global climate change and climate neutrality concerning a sustainable energy balance for the Wadden Sea Region. In this context they refer to "knowledge gaps in the tension between the desire to create innovative 'energy landscapes' and to preserve natural and cultural-historic values" (Kabat et al., 2009, p. 15), directly referring to the problem between the preservation of nature, as an area which should be protected in order to satisfy the expectation of tourists, and the possibilities of highly viable energy production (Grontmij, 2011) to make the area self-sufficient.

Wadden Well-being, on the other hand, gathers research concerning shifts in local economy and the local quality of life. Since, as aforementioned, the local community is highly dependent on tourism the question about how local residents "income and quality of life [...] can be guaranteed in a sustainable manner" (Kabat et al., 2009, p. 15) is inherently connected with the issue of tourism and whether the tourists go on visiting the islands or not.

By taking the (eco-) tourists' perception and their opinions concerning the environment into account, this research tries to achieve two central aims. The first aim is to generate knowledge about the sentiments eco-tourists and general tourists have about energy self-sufficiency on Ameland. It focuses on ecotourism in contrast to general tourists, as a highly interested group, because, they could serve as the critical mass to start a shift in the tourism based area towards more sustainable development. Moreover, it tries to explore whether there is a connection in the general group of tourists between their attitude, behavior and place attachment and their sentiments towards a more energy self-sufficient Ameland. The second aim of this research is to reduce the above mentioned tension and create the opportunity to meet some of the goals set and simultaneously prevent wrong decision making and therefore lower the risk of harming the local economy and eventually the local community.

Additionally to the above mentioned aims of this research, it tries to explore the attitudes of eco-tourists towards the environment in general and specifically renewable energy self-sufficiency (RESS) in the case of Ameland. This can be split up into three central objectives. Firstly, identify the sentiments of eco-tourists towards RESS in a tourism based area and identify whether this is significantly higher than general tourists and thus giving the opportunity to use eco-tourists as opinion leaders. Secondly, to explore the influence of place attachment on the attitudes towards RESS, and finally, to identify relations between environmental attitude and behavior of the general tourists on the one and attitudes towards RESS on the other hand.

## **THEORETICAL FRAMEWORK**

Following the main objective of this research it is necessary to first define what academics meant when referring to eco-tourists in previous research and second to explore the methods and theories that have been used to be able to conceptualize behavior, mindset and place attachment.

Eco tourism itself is a subgroup of the much broader term nature-based tourism. Consequently, I start exploring what nature-based tourism is in order to come to a usable definition of eco-tourism. As mentioned in Fredmann (2010) and Luo and Deng (2008) there is not one distinct definition of nature-based tourism. Karlsson (1994) however, uses two dimensions to explain to what extent tourism should be labeled as being inherently nature-based (Figure 1). The two dimensions "(i) focus on nature and (ii) nature as arena" (Karlsson in Fredman et al., 2010, p. 181), plotted in a matrix, give four different ways of tourism. According to Karlsson (1994), every combination, besides the one where nature is not the focus and not the arena could be qualified as nature based tourism. Other definitions are relating to nature as the supply side of this tourism and state that it is the basic "human-activity occurring when visiting nature areas outside the person's ordinary neighborhood"

(Fredman et al., 2010, p. 179). Concluding, nature based tourism is in a broad sense *just* the sort of tourism which is “based on natural resources” (Goodwin in Wurzinger, 2006, p. 218) and has a rather “anthropocentric perspective” (Luzar et al. (1998) in Wurzinger, 2006, p. 218).

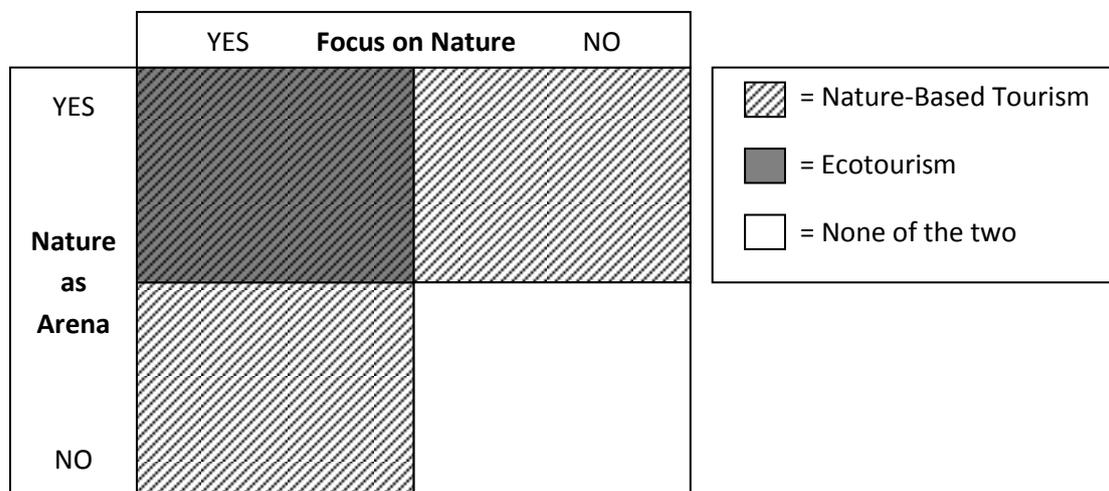


Figure 1: Matrix to explain Nature-Based Tourism and Ecotourism (Karlsson, 1994)

This definition of nature-based tourism stands in contrast to ecotourism, having a definition that is more distinct and, according to Weaver and Lawton (2002), has an ecocentric perspective. Referring back to the two dimensions of Karlsson (1994) in figure 1, in ecotourism activities nature should be focus and arena simultaneously. This can be recognized in the definition of Donohoe (2006) who states that ecotourism is “nature-based, preservative, educative, sustainable, responsible and ethical” and thus summarizes the differences to nature-based tourism. One of these differences, that is important for this research, is “sustainability” (Donohoe, 2006). While nature-based tourism concerns the mere beauty of a landscape or a place, eco-tourists are concerned about the consequences their activities might have. Equivalent to this, Fennell (1999) states in Williams (2009) that ecotourism should be “low impact, non consumptive and locally oriented” (p. 130). All three aspects refer towards a more concerned way of behaving at the touristic destination. Low impact, for example, may not only relate to the physical impact on the place itself, but also to the usages of facilities and connected energy consumption and wastage on the part of the eco-tourist. This mostly unavoidable consumption, due to housing, transport and maintenance, has in turn a global impact through the generation of the energy consumed. In addition to the local orientation of ecotourism (Fennell, 1999) and the other key characteristics mentioned in Donohoe (2006), it could be in the interest of the tourists that the place of destination would provide all the energy by itself on a sustainable non-polluting way. Furthermore, since Weaver (2005) defines ecotourism as a “self-transformation of tourists in terms of their environmental values, attitudes, and behaviors” (Luo and Deng, 2008, p. 393), it could be expected that eco tourists are keen to explore or be part of new ways of living and using

energy because one of the basic motivations behind tourism is the “exodus from the everyday” (Olafsdottir, 2011, p. 4; Iso-Ahola, 1980).

After describing the theories behind the group of interest, I will now describe the theories behind the methods used in order to identify the before stated aims of this research. The New Environmental Paradigm will first be described and set into its context and afterwards the link to the General Ecological Behavior Scale will be established.

The New Environmental Paradigm (NEP) mainly developed as a reaction to the rising environmental issues in the 1970s and formed a contrast to both, the Human Exceptionalism Paradigm (HEP) (Dunlap et al., 1979; Buttel, 1987) and the Dominant Social Paradigm (DSP) (Dunlap et al., 2000; Shafer, 2006). Those two contrasting paradigms are important for the definition of the NEP important and will be explained below.

In contrast to the newly developed New Environmental Paradigm, the Human Exceptionalism Paradigm (HEP), a sociological paradigm, represents a “widely held sociological-domain assumption[...], such as supposed irrelevance of physical environments for understanding social behavior” (p. 250) and saw human species “somehow exempt [...] from ecological principles and from environmental influences and constraints” (Dunlap et al., 1979, p. 250). However, according to Dunlap et al. (1979), the influence of the environment and the related interconnectedness between people and their surroundings cannot be ignored. Aside from that, the authors did recognize innovation and technological progress, but did not ignore the possible depletion of resources (Horowitz, 1977).

In contrast to the aforementioned HEP the Dominant Social Paradigm (DSP) is more societal and consistent with Gramsci’s “Theory of Hegemony” (Shafer, 2006, p. 121). Its main purpose, according to Shafer (2006), is the construction of legitimacy concerning “the way western society works” (p.122) and thus creating commitment to the western culture and its characteristics of “unlimited economic growth and human progress fueled by a steady progression of science and technology” (p. 124). Taking this into account, the NEP develops as the counterpart of the DSP, referring to the conflict between growth and sustainability, the impossibility of ongoing growth, and the recognition of the “contradictions and consequences of capitalism” (Shafer, 2006, p. 122). This counterpart development is also inherent to the development of ecotourism, which develops and identifies itself in contrast to the general tourism by seeing themselves connected to nature.

The NEP Scale, in the revised format from 2000, still reflects the characteristics defined by Dunlap and focuses on “beliefs about humanity’s ability to upset the balance of nature, the existence of limits of growth” (Dunlap et al., 2000, p. 427) and “the need of humans to live in harmony with nature” (Scott, 1994, p. 240), which again corresponds with low-impact and non-consumptive aspects of ecotourism (Fennell, 1999). Since the scale was initially developed in the late 1970s, it was widely tested and extensively used to examine environmental beliefs in different groups and sectors as for example farmers (Albrecht et al.,

1982) or college students in different countries (Schultz & Zelezny, 1998). It has been mostly used to monitor or classify “views that people have about the natural environment” (Harraway, 2012, p. 178). Taking the revision of the scale in 2000 into account, where foremost the formulation of the statements was adjusted, Hawcroft and Milfont (2010) suggest that “until a gold-standard EA [environmental attitude] measure has been widely accepted, it is probably advisable for researchers to continue using the NEP scale as a standardized measure of EA” (in Harraway, 2012, p. 178).

However, in spite of the extensive usage of the NEP Scale and its solid theoretical foundation, the method has also been criticized. On the one hand, Lalonde and Jackson (2002) criticize the simplicity of some of the statements of the original NEP Scale and suggest that it “clearly needs revision if it is to reflect the current knowledge base in this area” (Lalonde & Jackson, 2002, p. 35). Since the Scale was revised in the year 2000, where it got a better balance of anti- and pro-environmental statements and outdated terminology was replaced, I am confident that this critique can be viewed as adapted (Dunlap et al., 2000). The critique of Scott (1994), on the other hand, may still have some major implications on today’s application of the NEP Scale as a method. Scott (1994) argues that the link from the NEP Scale outcome to actual behavior is missing and there is a “low correlation between environmental attitudes and behaviors” not only in his own research, but also in many other researches (list of those researches in Scott, 1994, p. 255). Even though this weakness seems to be well-known for “over nearly two decades [, there is still] limited research that has focused on the relationship between support for the NEP and environmental behavior” (Scott, 1994, p. 255). To overcome this problem, Scott (1994) explored the respondents’ behavior through Environmental Behavior Scales. Following this example, my research uses the General Ecological Behavior (GEB) Scale by Kaiser et al. (1999). Through the application of this scale, it is possible to overcome the identified problems and furthermore one can compare the NEP Scale outcomes with the actual behavior of tourists and contribute to the shortage of research in that area.

The General Ecological Behavior (GEB) Scale goes even further than trying to explore the attitudes of the respondents towards the environment, but intends to include “behavior influences” (Kaiser et al., 1999, p. 2) and therefore determining ecological behavior directly. In contrast to the NEP Scale which, according to Kaiser et al. (1999), has a relationship to “ecological behavior [that] ranges from nonexistent to weak” (p. 3), the GEB scale is capable to make more valid assumptions about the respondents. This comes mainly through its basis on Ajzens “Theory of planned behavior” (1985) and statements referring to everyday actions. In this research the GEB Scale functions as an extension of the NEP Scale to compare the attitude with the actual everyday behavior to indicate whether the relation between thinking and acting has an influence on their sentiments towards renewable energy production. The different behavior statements, which are used to measure the general ecological behavior,

have different “difficult[ies] to be carried out, which, in turn, represents an estimate of all the constraints beyond peoples control” (Kaiser et al., 1999, p. 6). These constraints are different for different people and may not always have an ecological background, but instead are just related to certain individual preferences or habits. However, the diversity of the statements takes the fact into account that “someone, for instance, who tends to behave ecologically on a very high level across different behaviors, may fail to recycle newspapers, even though this behavior is easy to carry out” (Kaiser et al., 1999, p. 6). I am convinced that, nonetheless the GEB Scale is a further development of exploring behavior and therefore having the NEP Scale as part of its fundament, both scales can be useful together.

The last aspect of crucial importance to this research is the place this research is about: Ameland. To be able to incorporate the influences tourists’ relationship with this place can have on the outcome of the research, I use the concept of place attachment. As mentioned in Rollero et al. (2010), there are two ways in which one can describe the “affective link that people establish with specific environments” (p.198). Place identification, on the one hand, describes the membership of a person of a certain physical area, and place attachment relates, on the other hand, to the emotional bond between people and place (Rollero et al., 2010). Whilst place identification especially develops over a longer time of e.g. living in a certain area, “place attachment can also be developed for physical space with which individuals have had a recent contact” (Rollero et al., 2010, p.199) and is therefore most applicable to tourism. Another argument why the attachment of people may be important to this research is that it “contributes to the preservation of the status quo and, therefore, [...] may hinder territorial changes and modification” (Rollero et al., 2010, p.199). Hence, connecting to the statement of Rollero et al. (2010) that a higher valuation of a place leads to higher place attachment, it is of great interest to this research whether a higher attachment and thereby valuation of the area leads to a certain attitude towards renewable energy self-sufficiency. To explore the attachment of the tourists, I use a measurement for place attachment developed by Raymond et al. (2010). His five dimensional scale, consisting out of 20 statements, was used in a survey exploring the place attachment of rural landholders (Raymond et al., 2010). The great advantage of these five dimensions is that one is able to filter out influences of different aspects of tourists attachment to the place and thus is able to connect the tourists’ sentiment towards energy self-sufficiency with different ways of attachments. This relates back to the tension between “innovative ‘energy landscapes’ and [...] [the preservation of] natural and cultural-historic values” mentioned above (Kabat et al., 2009, p. 15). The original scale (Appendix 4) is translated and modified content wise so that it fits in a touristic context instead of a situation, where the respondent lives in the area permanently (Raymond et al., 2010). In the end, I am confident that the inclusion of place attachment through this scale makes it possible to take the “deeper meaning of experiencing

close, local relationship with people and [...] places” (Rollero et al., 2010, p.199) into account, and therefore enriches the overall outcome of this research.

## CONCEPTUAL MODEL

The conceptual model briefly describes what will be done during the research. The results of the surveys will provide information about the (eco-) tourist him- or herself, his or her environmental attitude (NEP-Scale), his or her ecological behavior (GEB), his or her attachment to Ameland and his or her attitude towards renewable energy self-sufficiency (RESS). According to the aims of this research, the final goal is to identify whether (eco-) tourists are positive about RESS or. However, it is of great interest whether this mindset about RESS is related to their attitude, their behavior, their place attachment, or the accordance of the three aspects.

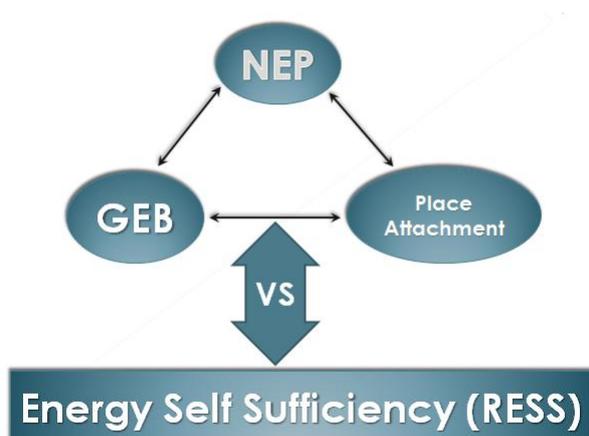


Figure 2: Conceptual Model

## METHODOLOGY

In the following paragraph I will illustrate the decision process and the reasons why a certain method was chosen as a means of exploring the aims of this research. The two methods which come to one's mind are personal interviews and surveys. Albeit, both methods are capable of producing usable information, limited resources and time are two main arguments for the latter one. Besides that, people are in general more willing to fill in a survey than doing the more time consuming interview. Furthermore, conducting a survey results in a greater amount and higher variety of respondents.

According to Flowerdew and Martin (2005), a survey is an important tool when it comes to peoples' "behavior, attitudes [...], opinions and their awareness of specific issues" (p. 78), and therefore meets the criteria of this research. In contrast to a descriptive survey, mostly conducted by large institutions over a longer period of time and with greater reach,

this research will use the analytical survey as its method. This choice is made because in this research “explanations and causalities” are far more important than the mere “counting [of] numbers” (Flowerdew and Martin, 2005, p. 80).

Although an analytical survey seems appropriate for this research, there are a some possible errors inherent to this method. These possible errors can, according to Flowerdew and Martin (2005), be subcategorized in reliability and validity problems. First, the problem of reliability is highly related to the process of sampling. As stated earlier, the representativeness of the research was restricted by limited time and resources. However, because Ameland, as an island, functions as a case study in a geographical definable area, it is at least possible to make a few solid statements about the samples’ geographical and temporal boundaries. Secondly, validity problems mainly concern the results and therefore refer to how the questions are formulated and whether they are understood well. To obviate misunderstandings, Flowerdew and Martin (2005) suggest to anticipate on fatigue bias and avoiding double barred and double negative questions. During the translation of all the scales, the New Ecological Paradigm (NEP), the General Ecological Behavior (GEB) and the Place Attachment Scales, I tried on the one hand to preserve the actual meaning as good as possible, but on the other hand also attempt to formulate the questions in a way to avoid the above mentioned problems. Fatigue bias, referring to an “interviewer administered questionnaire [that] exceeds half an hour in length” (Flowerdew and Martin, 2005, p. 87), is not a problem because of the relative shortness of the survey. Another error is the prestige bias, important to consider in this research because of the possibility that the tourist fills in what he/she thinks is the morally right answer. To prevent this bias, both NEP and GEB Scale make use of frequent changes from environmental negative and positive statements to force the respondent to reflect about every statement.

At the beginning of this survey (Appendix 1), questions regarding the main purpose of the journey and the reason of visit facilitate the researcher to classify the different tourists into groups. Next to the general questions about gender, age and income two questions about their frequency of visit to Ameland are added to be able to see a possible influence of this factor. This, in combination with the Place Attachment Scale, tries to take the important impact place can have on the outcome of this research into account.

After the generic part of the survey, this research intends to examine the above mentioned aims through the New Ecological Paradigm Scale (Dunlap et al., 2000) and the General Ecological Behavior Scale (Kaiser and Biel, 2000). In Wurzinger (2006) the different groups of respondents were defined by criteria like whether they had a guided tour from a certified ecotourism company or not. In this research, unfortunately an equally strict definition or separation between different groups of tourists could not be made. The first half of the surveys were conducted on the ferry to Ameland (n=43) incorporating all different kinds of tourists. The second half was conducted in the nature centre, part of the “Amelander

Musea”, and during activities organized by the nature centre (n=54), where a higher environmental sensitive group of tourists was approached. This differentiation, combined with an analysis of connotations with ecotourism, is used to show the difference between general and eco tourists. The influence of place can be measured with the help of the Place Attachment Scale of Raymond et al. (2010).

Besides those three scales, a three-statements-scale concerning the tourists' view about renewable energy self-sufficiency (RESS) on the island was added to the survey. Those questions investigate whether the respondent expects Ameland to be sustainable in a way that it organizes its energy supply environmental friendly; whether he/she is convinced that solar and wind energy are good to reach the aforementioned goal and whether the respondent would be willing to pay more, so that the island is able to reach the goal of energy self-sufficiency in the next 5 years. This three-statement-scale is used to identify the general sentiments, either positive or negative, towards the idea of RESS. In the analysis, this three-items-scale is chosen because of the higher information density of answers that range from “totally agree” to “totally disagree”, in contrast to simple yes or no questions (Appendix 1: part 3a).

After conducting these surveys and gathering all information, certain analytical tools needed to be chosen to show distinct relationships and explore whether those are significant or not. In the end, the analysis of the outcomes will provide the answers to the above proposed questions.

Alongside more descriptive analyses in the beginning, the main tool of the analysis will be the multiple linear regression analysis, through IBM SPSS Statistics 19. First of all, all the data has to be entered into an excel sheet and therefore labels and values have to be ascribed to the data. One important issue, which has to be taken into account, is the partially reversed statement of the NEP and the GEB Scale, needing special attention when entering into the data sheets. Secondly, summaries and overall descriptive were plotted to provide the first overview about the general outcomes of the data (See Appendix 1 for outcomes). In a third step, the internal variance of the data was tested to eventually point out cases, which are highly different from the rest and may influence and thereby distort the overall outcomes. Those cases may of course be valid statements of the respondent, so it is important to check the survey sheet and the data sheet once again to be sure that no errors have been made during the insertion of the data. Finally, through different methods, e.g. the Multiple Regression Analysis, this research shows how personal characteristics as well as the NEP, GEB Scale and personal attachment to Ameland have an influence on each other and most importantly on the sentiment towards RESS.

## **POSITIONALITY**

Due to the arbitrariness, inherent to the process of conducting the survey, the influence of the researcher on who will answer the survey seems small at first sight. Nonetheless, one needs to be cautious not to leave a less salient group out. When searching for the accurate and fitting places, I used the criteria for ecotourism of Donohoe (2006) and I am confident that there is a high likelihood that the answers in the ecotourism group were given by 'eco tourists'. Furthermore, the New Environmental Paradigm and the General Ecological Behavior Scale also functions as a helping measurement. A second "safety measure" is the associative question of what ecotourism is, giving me the opportunity to check whether there is a different perception of ecotourism between those actively engaging in an ecotouristic activity and those who do not (Appendix 5). However, as it is the case in most groups, there will most likely be a certain group of people, who are most salient and are more than willing to share their opinion, even though other people with opinions not following the mainstream may not be as active in the beginning. Being aware of the possible hidden power relations between me as a researcher and the respondent, I intend to introduce myself neutrally to everyone, who comes along, thus not influencing respondents with my own opinion and simultaneously encouraging people who would normally not stop to share their thoughts about this issue.

It is self-evident that all information and all personal data are analyzed anonymously, so that none of the answers can be traced back to a specific person. Additionally, the topic of the research and consequently the survey is not asking for personal experience or private and highly sensitive and detailed answers. This enables people to be part of this research without feeling invaded in their privacy. All questions and statements asked refer to either everyday actions (GEB-Scale) or general opinions about global issues. The survey was tested in pilot interviews with tourists to check whether all questions cover the right meaning, which is important because the three scales are only available in English and were translated into Dutch. Besides that, it was clearly communicated that every respondent is free to leave certain answers open when he or she is not feeling comfortable answering them. Additionally, all the respondents were given the opportunity to receive all the outcomes of the research.

## RESULTS

After analyzing the sample as described in the methodology, the following paragraph describes the outcomes. This section starts with a description of the overall information gathered and a validation through a comparison with previous research, conducted by Kaiser et al. (1999) and Scott (1994). In the following, the three research aims will be discussed in the light of the collected data ending with the overall result of this research.

From the collected data (n=97) 48 respondents were male and 43 were female, furthermore the income distribution was as follows: 5 = low income, 27 = middle income and 60 high income. 57 of the respondents did not visit Ameland in the last 12 month, however 36 did so 1-5 times, one respondent 5-10 times and 2 visited the island more frequently than 10 times. Besides that, 30 planned not to visit the island again in the coming 6 month, however 66 did so. The overall age distribution can be seen in figure 3.

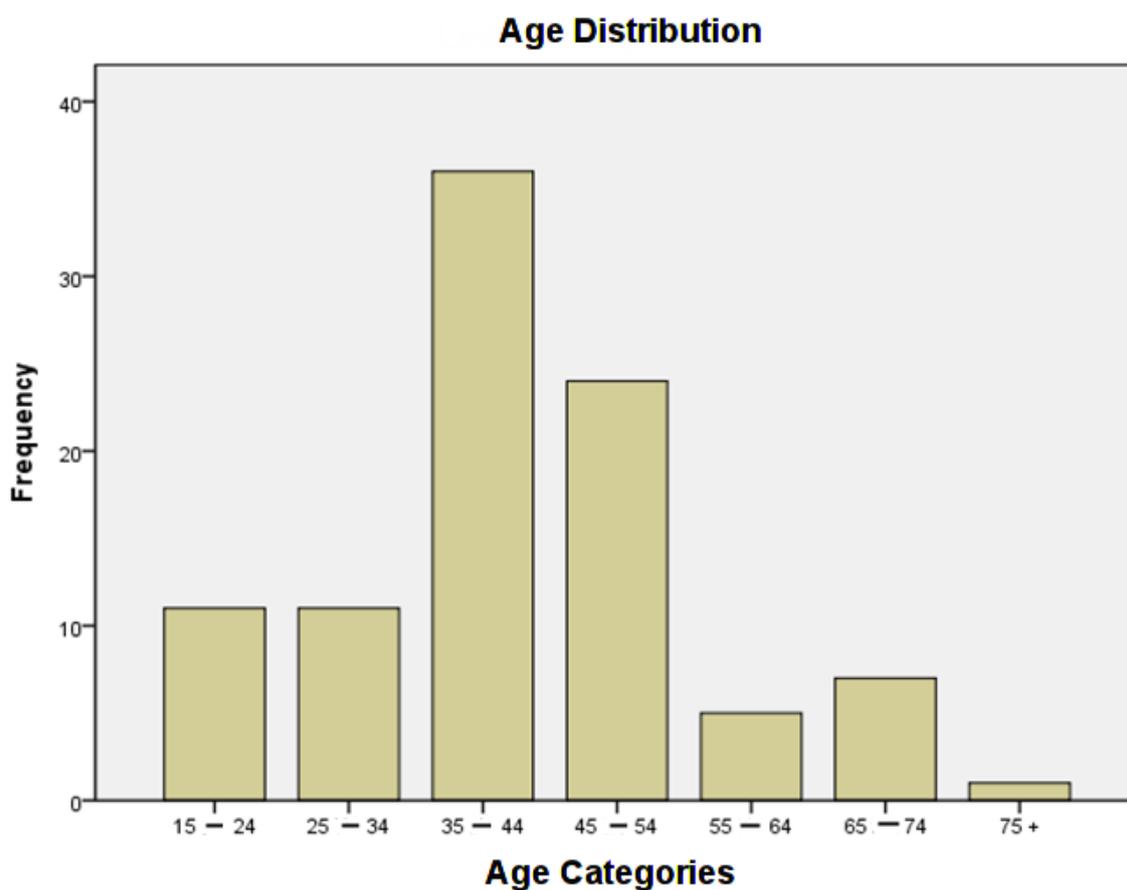


Figure 3: Age Distribution of all respondents

A similar research was conducted by Kaiser et al. (1999) and Scott (1994), where the authors stated that the NEP Scale has a relationship to “ecological behavior [that] ranges from nonexistent to weak” (p. 3). Their researches were conducted under different circumstances and in different contexts. On research dealt with transportation and its impact on the environment (Kaiser et al., 1999) and the other was about the general attitude of people concerning the environment in Pennsylvania (Scott, 1994). Because in my research uses both,

the New Environmental Paradigm Scale and the General Ecological Behavior Scale, I can test the aforementioned hypothesis. Interestingly enough, my research showed a high and significant correlation between the attitude and the behavior of the people (p-value <0,0005) (Table 1). This means that respondents, who scored high concerning their environmental behavior also scored high on the scale measuring their environmental attitude. This in turn, has implications for the further analysis that even if both attitude and behavior could explain, for example, the sentiment towards RESS on Ameland, only one of them will most likely stay in a regression.

**Regression Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,149	,154		-,967	,337
	NEPScore	,218	,046	,498	4,741	<b>,000</b>

a. Dependent Variable: GEBScore

**Table 1: Regression: Relation between NEP and GEB (see also Appendix 6)**

**Group Statistics**

	Eco-tourist	N	Mean	Std. Deviation	Std. Error Mean
RESS-Scale	no	40	<b>3,4250</b>	,67087	,10607
	yes	48	<b>3,7292</b>	,62892	,09078

**Independent Samples Test**

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
RESS-Scale	Equal variances assumed	-2,192	86	<b>,031</b>	-,30417
	Equal variances not assumed	-2,179	80,995	,032	-,30417

**Table 2: Differences between general and eco-tourists (see also Appendix 7)**

To identify the sentiments of eco-tourists concerning RESS and thereby explore whether eco-tourists could “serve as opinion leaders” (Rogers, 2005, p.293) for a change on Ameland or not (the first aim of the research) I drew a comparison between general respondents on the ferry (n=43) and those tourists engaging with an activity (n=54) thus fitting into the definition of eco-tourists as defined in the theoretical framework. Those two groups were significantly different in their sentiments towards RESS on the island (p-value of 0,031 in table 2). The group of eco-tourists (mean score=3,7292) had a more positive sentiment towards the change of Ameland to be more energy self-sufficient than the general tourists (mean score=3,425). Besides this statistical difference, the question what they think is ecotourism was analyzed to see differences in their knowledge about it. The categories in table 3 are created by means of the statements the tourists wrote down, when they were asked what they connect with ecotourism (for the explicit statements see Appendix 5). What becomes most apparent is the difference in the category resources, which is of greater importance to eco-tourists than to general tourists when it comes to the definition of ecotourism. This could lead to a deeper understanding of fundamental issues of ecotourism.

Category	Eco-tourists	General tourists
Nature	20,5%	26,6%
Environment	24,8%	31,6%
Resources	<b>23,1%</b>	<b>8,9%</b>
Uses	31,6%	32,9%

Table 3: Connotation with Ecotourism (see also Appendix 5)

Place can be of utmost importance when it comes to all kinds of decisions of people and therefore the five dimensional scale of place attachment is used to measure the influence on tourists’ sentiments towards RESS on Ameland (for complete scale see Appendix 4). During the analysis of the data, two of the five dimensions seem to be highly important, however they have a different impact on the core issue of this research: Place Identification and Nature Bonding.

Place Identification on the one hand, describes the membership of a person to a certain physical area and therefore incorporates the fact that this area and the way it is in relation to other areas is important (Rollero, 2010, p.199). This stands in contrast to Nature Bonding, which relates more to the natural environment in the area and not the identity of the area itself. The reason why those two dimension are interesting is the fact that they both have a significant influence (p = 0,019). However, Place Identity is negative related concerning sustainable self-sufficiency (correlation coefficient = -0,267) and Nature Bonding is positive related (correlation coefficient = 0,273) (Table 4). In short, this means that

tourists, who feel closely related to Ameland and indicate that the island itself is part of their identity, are less likely to support the idea of changing it to make it more self-sufficient. However, tourists, who feel highly connected to Ameland as a place in nature support the change. This differentiation shows how diverse the influence of place can be and how different facets of place attachment can influence certain changes having an impact on that place. Contributing to this result, Rollero (2010) mentions in his research that some aspects of a person's place attachment "may hinder territorial changes and modification" (p. 199). This hindering of change in relation to a person's place attachment can therefore be confirmed and can be recognized as highly important concerning future changes on the island.

**ANOVA<sup>e</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,657	5	,731	1,679	,150 <sup>a</sup>
	Residual	33,977	78	,436		
	Total	37,634	83			
4	Regression	3,487	2	1,743	4,136	,019 <sup>d</sup>
	Residual	34,147	81	,422		
	Total	37,634	83			

a. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMFaBScore, PAMPDScore

d. Predictors: (Constant), PAMPIScore, PAMNBScore

e. Dependent Variable: RESS-Scale

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,412	,410		8,315	,000
	PAMFrBScore	,056	,110	,069	,509	,612
	PAMFaBScore	-,019	,085	-,031	-,228	,820
	PAMPDScore	,045	,152	,045	,296	,768
	PAMNBScore	,263	,124	,265	2,124	,037
	PAMPIScore	-,302	,135	-,351	-2,240	,028
4	(Constant)	3,472	,388		8,939	,000
	<b>PAMNBScore</b>	<b>,273</b>	<b>,119</b>	<b>,275</b>	<b>2,303</b>	<b>,024</b>
	<b>PAMPIScore</b>	<b>-,267</b>	<b>,103</b>	<b>-,310</b>	<b>-2,595</b>	<b>,011</b>

a. Dependent Variable: RESS-Scale

Table 4: Influence of Nature Bonding and Place Identification on Sustainable Self-Sufficiency (For complete analysis please see Appendix 8)

The last aspect of interest, relating to the third and final aim of this research, is whether general ecological behavior (GEB) and the attitude of general tourists concerning the environment (NEP) have an influence on the sentiment concerning the idea of RESS on the island. To begin with, there are a few influences, which are significantly related to the sentiment towards sustainable self-sufficiency, besides the two already mentioned dimensions of place attachment. The NEP Score (positively related;  $p=0,002$ ), the GEB Score (positively related;  $p<0,0005$ ) and the fact that a person is actively engaging in an “eco-touristic” activity (positively related;  $p=0,031$ ) are those significantly influencing variables. However, all those variables, as partly explained earlier, are highly correlating. So when putting them all in one multiple linear regression and excluding all variables, which do not contribute significantly to the model, only the GEB Score stays, explaining 45,7% of the variance ( $R^2$ ) in the RESS. This means that the behavior of tourists in general is the best predictor of how likely they support the idea of RESS (for the multiple regression analysis, see Appendix 9). This, connecting back to the statement of Kaiser et al. (1999), shows that the behavior of people is indeed a much better predictor when it comes to certain issues concerning the environment, than environmental attitude.

So in general, eco-tourists that are more environmental sensitive concerning their behavior and their attitude towards the environment and also engage in more nature-based activities, are in the end more positive about possible energy self-sufficiency on Ameland. Besides this general conclusion, the way people connect with the island seems to play an important role in their sentiment towards the central issue of sustainability and those who identify themselves with the island as a certain area are less likely to be positive in contrast to the people who identify with nature.

## **CONCLUSION**

When looking back to the reason why this research has been conducted a few concluding statements can be made concerning the overall use of this research and specific outcomes concerning the sentiments of eco-tourists.

The two societal goals mentioned in the beginning, contributing to the overall knowledge on the one hand and lowering the tension between innovative desire and preservation of natural landscape on the other, are reached. Besides the fact that only 14 respondents did know about the plans concerning self-sufficient Wadden Islands, we now know that a majority of eco-tourists as well as general tourists are generally positive about those changes, however with a significantly higher agreement of eco-tourists. This conclusion confirms the definitions about ecotourism made earlier and makes it possible to indeed see eco-tourists as the early adopters of sustainable self-sufficiency. Eco-tourists are apparently more aware of environmental problems and moreover are more likely to support developments trying to solve those problems. Consequently, eco-tourists may well be the

opinion leaders, making those plans possible in the beginning, before the general tourist adopts the new standards. In other words, the statement that eco-tourists are more concerned about the environment and that being sustainable and responsible is important is reflected in this research (Karlsson, 1994; Donohoe, 2006). One remark which has to be made, in regards to future developments, is that general tourists scored significantly lower for the statement concerning “willingness to pay more” for a more immediate reach of self-sufficiency, than eco-tourists (see Appendix 10). This on the one hand refers to the possible support of eco-tourists concerning these developments, however, also shows the difficulties may occur concerning general tourists. However, there needs to be further research to identify whether and in which way prices are important.

Another, mainly academic conclusion, which can be drawn, is that in contrast to statements of both Scott (1994) and Kaiser et al. (1999), in this research attitude and behavior of tourists concerning the environment are highly related. So people with a higher mental bonding with the environment seem also to behave more environmental friendly. However, as was stated by Kaiser et al. (1999), also in this research behavior of people, tourists in this case, is the best predictor when it comes to issues concerning the environment. Besides this conclusion the fact that place attachment has a significant impact on the sentiments towards sustainable self-sufficiency is also important to mention. Particularly that two aspects, Place Identity and Nature Bonding, influence the sentiments differently is a great contribution to research already done. In future research, this relationship, and why there is a difference between the attachment to a place and to nature of that place, should be further explored.

In general, I am convinced that this research, through giving new information about eco-tourists concerning a specific topic on Ameland, can be a valuable contribution to the overall discussion about the future of the Wadden Islands concerning energy use and the aimed self-sufficiency in the year 2020. Much information, gathered through the conduction of the survey, could not find its way into this research because of resource and time based constraints. However, I am convinced that the outcomes of this research alone can give many opportunities for future research and help to create more insights in the importance of ecotourism when it comes to a change towards a sustainable future.

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Appendix 1 – The survey (In Dutch) including Descriptive Statistics of the outcome

## **Duurzame Energie op het vakantie-eiland Ameland**

Beste mevrouw of meneer,

Bedankt dat u even de tijd hebt genomen om mee te werken aan dit onderzoek. Mijn naam is Patrik Nowak en dit is mijn afstudeer onderzoek voor mijn Bachelor Sociale Geografie en Planologie. Een jaar geleden heb ik net als u het Eiland Ameland bezocht en was verrast van de natuur en hoe men met duurzaamheid bezig was. Door mij verder te informeren ben ik erg geïnteresseerd geraakt in de ontwikkelingen op het gebied van energie op het eiland.

Door middel van dit onderzoek wil ik de mening van de toerist over deze ontwikkelingen verzamelen om dit voor toekomstige ontwikkelingen mee te kunnen nemen. Immers is toerisme van groot belang voor het hele Wadden gebied.

Deze enquête bestaat uit drie delen. Deel 1 zijn wat algemene vragen over u als persoon. In deel 2 gaat het om u zicht en gedrag ten opzichte van het milieu. En in deel 3 gaat het om uw mening over specifieke vraagstellingen over duurzaamheid op Ameland.

Als u een specifieke vraag niet kunt of wilt beantwoorden mag u deze zeker vrijlaten.

Alvast bedankt voor uw tijd en voor het ondersteunen van mijn afstudeerproject. Als u de uitkomsten van dit onderzoek wilt ontvangen mag u op de laatste pagina u email adres invullen.

Met vriendelijke groeten,

**Patrik Nowak**

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### **Deel 1 – de respondent (omcirkel het juiste antwoord)**

*Leeftijd:* 15-24 (**11,3%**) / 25-34 (**11,3%**) / 35-44 (**37,1%**) / 45-54 (**24,7%**) / 55-64 (**5,2%**) / 65-74 (**7,2%**) / 75+ (**1%**) / (missing 2,1%)

*Huishoudensinkomen per maand:*

Laag (minder dan 1000) (**5,2%**) / Gemiddeld (1000-2500) (**27,8%**) / Hoog (meer dan 2500€) (**61,9%**) / (missing 5,2%)

*Geslacht:* M (**49,5%**) / V (**44,3%**) / (missing: 6,2%)

*Aan wat denk u als u aan Ameland denkt:*

Natuur – Zee – Milieubewustzijn – Rust – Duurzaamheid - \_\_\_\_\_ - \_\_\_\_\_

*Hoe vaak hebt u Ameland in de laatste 12 maand bezocht:*

niet (**58,8%**) / 1-5 (**37,1%**) / 5-10 (**1%**) / 10+ (**2,1%**) / (missing: 1%)

*Bent u van plan om in de volgende 6 maand nog een keer terug te komen:*

Ja **(30,9%)** Nee **(68%)**, omdat \_\_\_\_\_

*Geef 5 woorden (of minder) woorden aan welke u denkt als u aan eco-toerisme denkt:*

(see **Appendix 5**) \_\_\_\_\_

## Deel 2 – Mening en Gedrag

In dit deel van de enquête staan algemene stellingen in relatie tot het milieu in het algemeen, alledaagse gedrag en uw relatie tot het eiland Ameland. U kunt altijd het meest toepasbare aankruisen. Het is of “Ja” of “Nee” of een schaal van helemaal mee oneens, tot helemaal mee eens.

Stelling	Helemaal mee oneens 1	Mee oneens 2	Neutraal 3	Mee eenw 4	Helemaal mee eens 5
We naderen de limiet van het aantal mensen dat de aarde kan ondersteunen. <b>(mean = 3,28)</b>	<input type="radio"/>				
De mens heeft het recht om de natuur naar eigen behoefte aan te passen. <b>(mean = 2,33)</b>	<input type="radio"/>				
Wanneer de mens zich gaat bemoeien met de natuur heeft dat vaak desastreuze gevolgen. <b>(mean = 3,11)</b>	<input type="radio"/>				
De vindingrijkheid van de mens zal ervoor zorgen dat we de aarde NIET onleefbaar maken. <b>(mean = 3,46)</b>	<input type="radio"/>				
De mens is de natuur ernstig aan het misbruiken. <b>(mean = 3,46)</b>	<input type="radio"/>				
Op aarde zijn genoeg natuurlijke middelen, we moeten alleen nog leren hoe we ze moeten gebruiken. <b>(mean = 3,88)</b>	<input type="radio"/>				
Planten en dieren hebben een even groot bestaansrecht als mensen. <b>(mean = 3,69)</b>	<input type="radio"/>				
De balans van de natuur is sterk genoeg om invloeden van de moderne industriële landen te doorstaan. <b>(mean = 2,40)</b>	<input type="radio"/>				
Ondanks zijn speciale vaardigheden staat de mens niet boven de wetten van de natuur. <b>(mean = 3,93)</b>	<input type="radio"/>				
De zogenoemde ‘milieucrisis’ die de mensheid te wachten staat is sterk overdreven. <b>(mean = 2,72)</b>	<input type="radio"/>				
De aarde is ons ruimteschip met een beperkte hoeveelheid ruimte en middelen. <b>(mean = 3,39)</b>	<input type="radio"/>				
De mens behoort de rest van de natuur te regeren. <b>(mean = 2,41)</b>	<input type="radio"/>				
De balans van de natuur is erg gevoelig en makkelijk te verstoren.	<input type="radio"/>				

<b>(mean = 3,72)</b>					
De mens zal uiteindelijk genoeg over de natuur te weten komen om er de controle over te kunnen hebben. <b>(mean = 2,91)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Als het op deze manier doorgaat zullen we binnenkort een zeer grote milieuramp te verduren krijgen. <b>(mean = 3,71)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
NEP Score: <b>mean = 3,3359</b> (including reversion of reversed statements)					

<b>Stelling</b> (100% - Ja% - Nee% = Missing%)	Ja (%)	Nee (%)
Ik breng niet gebruikte medicijnen terug naar de farmacie.	50,5	48,5
In de winter laat ik de ramen voor lange tijden open om frisse lucht erin te laten.	48,5	50,5
Normaalgesproken, rij ik in de stad niet met de auto.	43,3	53,6
Als ik een plastic zak krijg aangeboden, neem ik die altijd mee.	27,8	69,1
Ik ben lid van een milieu organisatie.	26,8	71,1
Ik gebruik wasverzachter als ik de was doe.	38,1	57,7
Normaalgesproken rij ik op snelwegen niet harder dan 100 kilometer per uur.	14,4	81,4
Ik was vuile was zonder voorwas.	80,4	16,5
Soms koop ik drank in blikken.	52,6	46,4
Als er insecten in mijn woning zijn, dood ik deze met chemische insecticide.	12,4	86,6
Ik zamel en recycle oud papier.	90,7	8,2
Ik gebruik een oven - schoonmaakspray om mijn oven schoon te maken.	39,2	59,8
Ik gebruik een chemische luchtverfrisser in de badkamer.	19,6	79,4
Als ik boodschappen doe, gebruik ik liever papier zakken dan plastic.	46,4	50,5
Ik gebruik chemische toilet schoonmaakmiddelen.	68,8	29,9
Ik praat vaak met vrienden over milieugerelateerde problemen.	26,8	71,1
Ik gebruik fosfaatvrije wasmiddel.	32	56,7
Ik breng lege flessen na de glasbak.	90,7	5,2
Als het mogelijk is gebruik ik op korte afstanden (rond 30 km) openbaar vervoer of het fiets.	53,6	44,3
In het verleden heb ik andere mensen al op hun onecologisch gedrag gewezen.	33	64,9
Ik gooi lege batterijen in de restafval.	27,8	70,1
Ik gebruik speciale schoonmaakmiddelen voor het bad dan een alles reiniger.	33	63,9
Ik vermijd het kopen van spullen met onnodig veel verpakkingsmateriaal.	33	64,9
Ik wacht tot dat ik een volle wasmachine heb voordat ik de was doe.	85,6	11,3
Soms ondersteun ik milieu organisaties financieel.	53,6	44,3
In de winter laat ik de verwarming aanstaan, zodat ik geen trui aan hoeft te trekken.	39,2	57,7
GEB Score: <b>mean = 0,573</b> (including reversion of reversed statements)		

<b>Stelling (de plek is Ameland)</b>	Helemaal mee oneens 1	Mee oneens 2	Neutraal 3	Mee eenw 4	Helemaal mee eens 5
Het eiland Ameland betekend heel veel voor mij. <b>(mean = 3,51)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
I voel me erg verbonden met Ameland. <b>(mean = 3,22)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Ik heb vele intensieve herinneringen aan Ameland. <b>(mean = 3,20)</b>	0	0	0	0	0
Ameland is voor mij heel speciaal. <b>(mean = 3,31)</b>	0	0	0	0	0
Ik identificeer me met Ameland. <b>(mean = 2,81)</b>	0	0	0	0	0
Ameland voelt als een deel van mij identiteit. <b>(mean = 2,55)</b>	0	0	0	0	0
Als ik tijd in de natuur op Ameland doorbreng voel ik me diep eens met de natuur. <b>(mean = 3,46)</b>	0	0	0	0	0
Ik zou me minder nauw verbonden voelen met Ameland als de oorspronkelijke planten en dieren zouden verdwijnen. <b>(mean = 3,59)</b>	0	0	0	0	0
Ik leer veel over mezelf als ik tijd in de natuur op Ameland doorbreng. <b>(mean = 3,19)</b>	0	0	0	0	0
Ik veel me erg verbonden met de natuur op Ameland. <b>(mean = 3,47)</b>	0	0	0	0	0
Als ik tijd doorbreng in de natuur op Ameland voel ik rust en vrede met mezelf. <b>(mean = 3,61)</b>	0	0	0	0	0
Ik ben liever in Ameland op vakantie dan in ieder andere plek. <b>(mean = 2,37)</b>	0	0	0	0	0
Geen andere plek is zo als Ameland. <b>(mean = 2,74)</b>	0	0	0	0	0
Ik zou Ameland niet inruilen voor de activiteiten die ik daar doe. <b>(mean = 2,70)</b>	0	0	0	0	0
De activiteiten op Ameland doen is belangrijker dan ze in een willekeurig ander plek te doen. <b>(mean = 2,63)</b>	0	0	0	0	0
Ameland is de beste plek voor de activiteiten die ik graag doe. <b>(mean = 2,54)</b>	0	0	0	0	0
Ik ga na Ameland op vakantie omdat mijn familie hier ook is. <b>(mean = 2,40)</b>	0	0	0	0	0
Mijn relaties tot familie op Ameland zijn zeer bijzonder voor mij. <b>(mean = 2,35)</b>	0	0	0	0	0
Vriendschappen die hier door (vrijwilligers-)werk zijn ontstaan zijn zeer belangrijk voor mij. <b>(mean = 2,37)</b>	0	0	0	0	0
Vriendschappen die door sport activiteiten zijn ontstaan zijn zeer belangrijk voor mij. <b>(mean = 2,38)</b>	0	0	0	0	0
Place identity mean score: <b>3,0982</b> Nature bonding mean score: <b>3,4468</b> Place dependence mean score: <b>2,5957</b> Family Bonding mean score: <b>2,3925</b> Friend Bonding mean score: <b>2,3710</b> <b>Place attachment (all 5 dimensions) mean score: 2,9311</b>					

### **Deel 3a – Duurzame energie ontwikkelingen op Ameland**

De onderstaande vragen gaan over uw mening met betrekking tot ontwikkelingen op het gebied van duurzaamheid op Ameland. Omcirkel JA of NEE. Als u wilt is er ruimte voor beredenering.

*Bent u bekend met de plannen van de Waddeneilanden om tot 2020 zelfvoorzienend qua energie te zijn?*

JA **(14,4%)** / NEE **(77,3%)** / (missing: 8,2%) \_\_\_\_\_

*Zou u de ontwikkeling van het zelf opwekken van duurzame energie op Ameland ondersteunen?*

JA **(57,7%)** / NEE **(30,9%)** / (missing: 11,3%) \_\_\_\_\_

*Zou duurzaamheid van een café of een hotel uw keuze tussen cafés en hotels positief beïnvloeden?*

JA **(52,6%)** / NEE **(38,1%)** / (missing: 9,3%) \_\_\_\_\_

### **Deel 3b – Duurzame energie ontwikkelingen op Ameland (RESS-Scale)**

Nu volgen nog drie stellingen waar u aan kunt geven in hoeverre u het ermee eens oftevel oneens bent. Kruis aan.

---

*Een eiland als Ameland met een focus op milieu en natuur is verplicht om ook qua energie verzorging een milieu vriendelijk en niet-vervuilende positie in te nemen. (mean = 3,77)*

Helemaal mee eens 5 /  Mee eens 4 /  Neutraal 3 /  Mee oneens 2 /  Helemaal mee oneens 1

---

*Het opwekken van energie door wind en zon is voor Ameland een goede manier om zelfvoorziening te bereiken. (mean = 3,89)*

Helemaal mee eens 5 /  Mee eens 4 /  Neutraal 3 /  Mee oneens 2 /  Helemaal mee oneens 1

---

*Ik zou extra willen betalen voor mijn vakantie op Ameland als daardoor binnen 5 jaar zelfvoorziening zou zijn bereikt. (mean = 3,10)*

Helemaal mee eens 5 /  Mee eens 4 /  Neutraal 3 /  Mee oneens 2 /  Helemaal mee oneens 1

### Appendix 2 – Revised NEP Scale (Dunlap et al. 2000)

1. We are approaching the limit of the number of people the earth can support.
2. *Humans have the right to modify the natural environment to suit their needs.*
3. When humans interfere with nature it often produces disastrous consequences.
4. *Human ingenuity will ensure that we do not make the earth unlivable.*
5. Humans are severely abusing the environment.
6. *The earth has plenty of natural resources if we just learn how to develop them.*
7. Plants and animals have as much right as humans to exist.

8. *The balance of nature is strong enough to cope with the impacts of modern industrial nations.*
9. Despite their special abilities humans are still subject to the laws of nature.
10. *The so-called "ecological crisis" facing humankind has been greatly exaggerated.*
11. The earth is like a spaceship with very limited room and resources.
12. *Humans are meant to rule over the rest of nature.*
13. The balance of nature is very delicate and easily upset.
14. *Humans will eventually learn enough about how nature works to be able to control it.*
15. If things continue on their present course we will soon experience a major ecological catastrophe.

(reversed statements are in *italics*)

Appendix 3 – 26 item version of the GEB Scale (Wurzinger and Johansson, 2006)

1. I bring unused medicine back to the pharmacy.
2. *In the winter, I leave the windows open for long periods of time to let in fresh air.*
3. Usually, I do not drive my automobile in the city.
4. *If I am offered a plastic bag in a store, I will always take it.*
5. I am a member of an environmental organization.
6. *I use fabric softener with my laundry.*
7. I usually drive on freeways at speeds under 100 kph
8. I wash dirty clothes without prewashing.
9. *Sometimes I buy beverages in cans.*
10. *If there are insects in my apartment, I kill them with a chemical insecticide.*
11. I collect and recycle used paper.
12. *I use an oven-cleaning spray to clean my oven.*
13. *I use a chemical air freshener in my bathroom.*
14. For shopping, I prefer paper bags to plastic ones.
15. *I use chemical toilet cleaners.*
16. I often talk with friends about problems related to the environment.
17. I use phosphate-free laundry detergent.
18. I bring empty bottles to a recycling bin.
19. If it is possible in nearby areas [around 30 km], I use public transportation or ride a bike.
20. In the past, I have pointed out to someone his or her unecological behavior.
21. *I put dead batteries in the garbage.*
22. *I use a cleaner made especially for bathrooms rather than an all-purpose cleaner.*
23. I avoid buying goods with unnecessary packaging material.
24. I wait until I have a full load before doing my laundry.
25. I sometimes contribute financially to environmental organizations.
26. *In the winter, I keep the heat on so that I do not have to wear a sweater.*

(reversed statements are in *italics*)

Appendix 4 – 20 item scale of Place-attachment measure (Raymond et al., 2010)

*Place identity*<sup>a</sup> (Eigenvalue = 6.12; variance explained = 41.4%)

1. The Northern and Yorke region means a lot to me.
2. I am very attached to the Northern and Yorke region.
3. I have a lot of fond memories about the Northern and Yorke region.
4. The Northern and Yorke region is very special to me.
5. I identify strongly with the Northern and Yorke region.
6. I feel the Northern and Yorke region is a part of me.

*Nature bonding<sup>b</sup>* (Eigenvalue = 2.15; variance explained = 9.8%)

1. When I spend time in the natural environment in the Northern and Yorke region, I feel a deep feeling of oneness with the natural environment<sup>c</sup>.
2. I would feel less attached to the Northern and Yorke region if the native plants and animals that live here disappeared.
3. I learn a lot about myself when spending time in the natural environment in the Northern and Yorke region.
4. I am very attached to the natural environment in the Northern and Yorke region.
5. When I spend time in the natural environment in the Northern and Yorke region, I feel at peace with myself.

*Place dependence<sup>a</sup>* (Eigenvalue = 1.33; variance explained = 6.1%)

1. I get more satisfaction out of living in the Northern and Yorke region than any other place.
2. No other place can compare to the Northern and Yorke region.
3. I would not substitute any other area for the activities I do in the Northern and Yorke region.
4. Doing my activities in the Northern and Yorke region is more important to me than doing them in any other place.
5. The Northern and Yorke region is the best place for the activities I like to do.

*Family bonding<sup>b</sup>* (Eigenvalue = 1.12; variance explained = 5.1%)

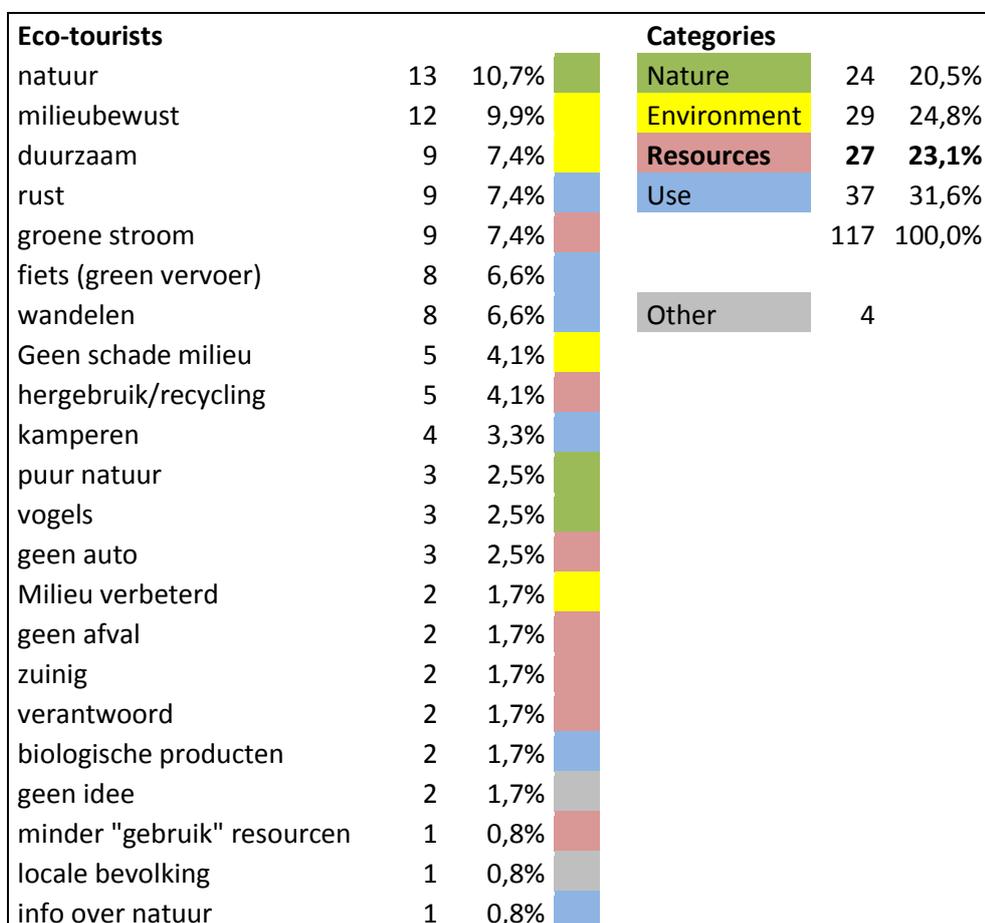
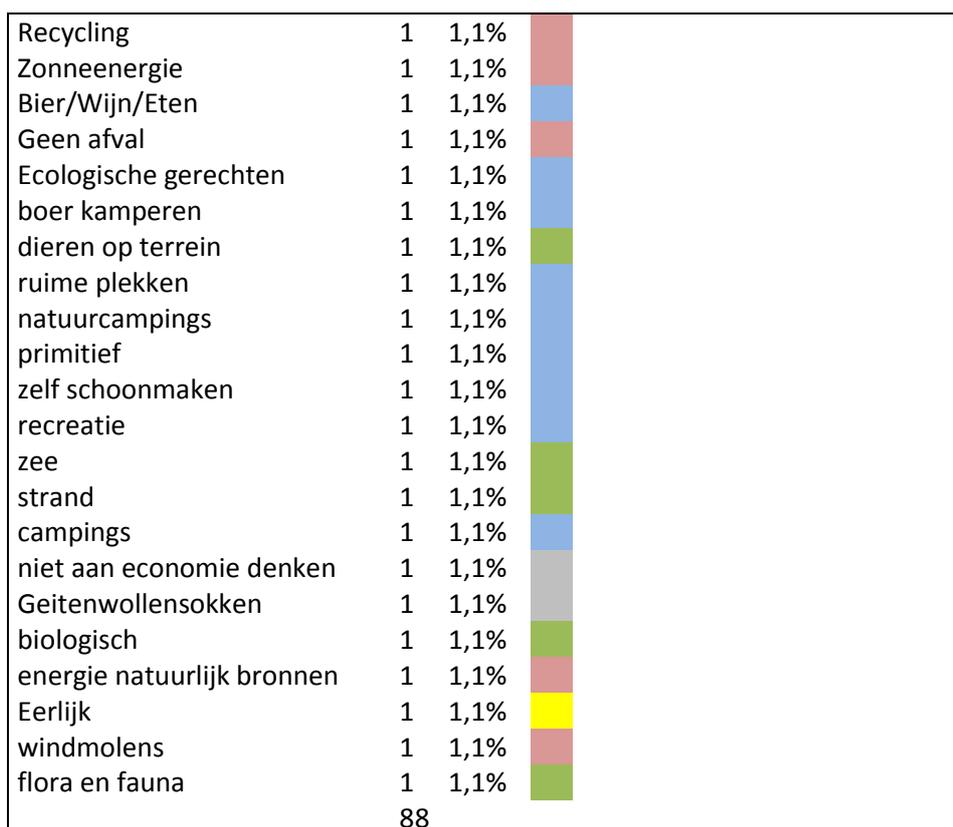
1. I live in the Northern and Yorke region because my family is here.
2. My relationships with family in the Northern and Yorke region are very special to me.

*Friend bonding<sup>b</sup>* (Eigenvalue = 1.03; variance explained = 4.7%)

1. The friendships developed through volunteer activities in the Northern and Yorke region are very important to me.
2. The friendships developed through sporting activities in the Northern and Yorke region are very important to me

Appendix 5 – Connotations General tourists / Eco tourists concerning Eco tourism

General Tourists			Categories		
Natuur	13	14,8%	Nature	21	26,6%
Denken om milieu	8	9,1%	Environment	25	31,6%
Duurzaam(heid)	8	9,1%	Resources	7	8,9%
geen idee	7	8,0%	Use	26	32,9%
wandelen	5	5,7%		79	100,0%
Rust	4	4,5%	Other	9	
Milieubewust	3	3,4%			
Fietsen	3	3,4%			
prijziger/duur	3	3,4%			
Schoonheid	2	2,3%			
Minder autos	2	2,3%			
Groen	2	2,3%			
milieuvriendelijk	2	2,3%			
Reinheid	1	1,1%			
Wadlopen	1	1,1%			
Natuurexcursie	1	1,1%			
Bewustzijn	1	1,1%			



natuur toerisme	1	0,8%	
balans	1	0,8%	
ontspannen	1	0,8%	
picknicken	1	0,8%	
<b>gratis</b>	1	0,8%	
vegetariers	1	0,8%	
zee	1	0,8%	
toekomst	1	0,8%	
duurzaam	1	0,8%	
respect	1	0,8%	
geld verdienen	1	0,8%	
zeehonden	1	0,8%	
strand	1	0,8%	
vrijheid	1	0,8%	
windmolens	1	0,8%	
	121	100,0%	

#### Appendix 6 – Linear Regression Analysis GEB-Scale (Dependent) and NEP-Scale

##### Variables Entered/Removed<sup>b</sup>

Model	Variables Entered	Variables Removed	Method
1	NEPScore <sup>a</sup>	.	Enter

a. All requested variables entered.

b. Dependent Variable: GEBScore

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,498 <sup>a</sup>	,248	,237	,141

a. Predictors: (Constant), NEPScore

##### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,447	1	,447	22,478	,000 <sup>a</sup>

Residual	1,352	68	,020		
Total	1,799	69			

a. Predictors: (Constant), NEPScore

b. Dependent Variable: GEBScore

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,149	,154		-,967	,337
	NEPScore	,218	,046	,498	4,741	,000

a. Dependent Variable: GEBScore

Appendix 7 – Independent Samples T-Test: Dependent (RESS-Scale) / Grouping (Eco-tourist)

**Group Statistics**

	Eco-tourist	N	Mean	Std. Deviation	Std. Error Mean
RESS-Scale	no	40	3,4250	,67087	,10607
	yes	48	3,7292	,62892	,09078

**Independent Samples Test**

		Levene's Test for Equality of Variances	
		F	Sig.
RESS-Scale	Equal variances assumed	,162	,688
	Equal variances not assumed		

**Independent Samples Test**

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
RESS-Scale	Equal variances assumed	-2,192	86	,031	-,30417
	Equal variances not assumed	-2,179	80,995	,032	-,30417

**Independent Samples Test**

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
RESS-Scale	Equal variances assumed	,13879	-,58007	-,02826
	Equal variances not assumed	,13961	-,58196	-,02638

Appendix 8 – Multiple Linear Regression Analysis: RESS-Scale (Dependent) and Place Identification, Nature Bonding, Place Dependence, Family Bonding and Friend Bonding

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,312 <sup>a</sup>	,097	,039	,66000
2	,311 <sup>b</sup>	,097	,051	,65603
3	,309 <sup>c</sup>	,096	,062	,65222
4	,304 <sup>d</sup>	,093	,070	,64928

a. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMFaBScore, PAMPDScore

b. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMPDScore

c. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore

d. Predictors: (Constant), PAMPIScore, PAMNBScore

**ANOVA<sup>e</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,657	5	,731	1,679	,150 <sup>a</sup>
	Residual	33,977	78	,436		
	Total	37,634	83			
2	Regression	3,634	4	,908	2,111	,087 <sup>b</sup>
	Residual	34,000	79	,430		
	Total	37,634	83			
3	Regression	3,603	3	1,201	2,823	,044 <sup>c</sup>
	Residual	34,031	80	,425		
	Total	37,634	83			
4	Regression	3,487	2	1,743	4,136	,019 <sup>d</sup>
	Residual	34,147	81	,422		
	Total	37,634	83			

a. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMFaBScore, PAMPDScore

b. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMPDScore

c. Predictors: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore

d. Predictors: (Constant), PAMPIScore, PAMNBScore

e. Dependent Variable: RESS-Scale

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,412	,410		8,315	,000
	PAMFrBScore	,056	,110	,069	,509	,612
	PAMFaBScore	-,019	,085	-,031	-,228	,820
	PAMPDScore	,045	,152	,045	,296	,768
	PAMNBScore	,263	,124	,265	2,124	,037
	PAMPIScore	-,302	,135	-,351	-2,240	,028
2	(Constant)	3,408	,407		8,363	,000
	PAMFrBScore	,045	,099	,055	,458	,648
	PAMPDScore	,040	,150	,040	,270	,788
	PAMNBScore	,267	,122	,269	2,187	,032
	PAMPIScore	-,308	,131	-,358	-2,347	,021
	3	(Constant)	3,424	,400		8,551
PAMFrBScore		,050	,096	,062	,522	,603
PAMNBScore		,273	,119	,275	2,292	,025
PAMPIScore		-,290	,112	-,337	-2,581	,012
4	(Constant)	3,472	,388		8,939	,000
	PAMNBScore	,273	,119	,275	2,303	,024
	PAMPIScore	-,267	,103	-,310	-2,595	,011

a. Dependent Variable: RESS-Scale

**Excluded Variables<sup>d</sup>**

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics	
					Tolerance	
2	PAMFaBScore	-,031 <sup>a</sup>	-,228	,820	-,026	,618
3	PAMFaBScore	-,026 <sup>b</sup>	-,192	,848	-,022	,629
	PAMPDScore	,040 <sup>b</sup>	,270	,788	,030	,521
4	PAMFaBScore	,007 <sup>c</sup>	,062	,951	,007	,788
	PAMPDScore	,053 <sup>c</sup>	,366	,716	,041	,541
	PAMFrBScore	,062 <sup>c</sup>	,522	,603	,058	,811

a. Predictors in the Model: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore, PAMPDScore

b. Predictors in the Model: (Constant), PAMPIScore, PAMFrBScore, PAMNBScore

c. Predictors in the Model: (Constant), PAMPIScore, PAMNBScore

d. Dependent Variable: RESS-Scale

**Appendix 9 – Multiple Linear Regression Analysis with RESS-Scale (Dependent) and GEB, NEP, Place Identification, Nature Bonding and Eco-tourist**

**ANOVA<sup>f</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,842	5	1,368	3,786	,005 <sup>a</sup>
	Residual	20,962	58	,361		
	Total	27,804	63			
2	Regression	6,841	4	1,710	4,814	,002 <sup>b</sup>
	Residual	20,963	59	,355		
	Total	27,804	63			
3	Regression	6,744	3	2,248	6,405	,001 <sup>c</sup>
	Residual	21,059	60	,351		
	Total	27,804	63			

4	Regression	6,169	2	3,085	8,698	,000 <sup>d</sup>
	Residual	21,634	61	,355		
	Total	27,804	63			
5	Regression	5,291	1	5,291	14,571	,000 <sup>e</sup>
	Residual	22,513	62	,363		
	Total	27,804	63			

a. Predictors: (Constant), GEBScore, PAMPIScore, Eco-tourist, NEPScore, PAMNBScore

b. Predictors: (Constant), GEBScore, PAMPIScore, Eco-tourist, NEPScore

c. Predictors: (Constant), GEBScore, Eco-tourist, NEPScore

d. Predictors: (Constant), GEBScore, NEPScore

e. Predictors: (Constant), GEBScore

f. Dependent Variable: RESS-Scale

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,898	,789		2,406	,019
	Eco-tourist	,200	,178	,150	1,122	,267
	PAMPIScore	-,049	,114	-,058	-,430	,669
	PAMNBScore	-,005	,144	-,005	-,035	,972
	NEPScore	,348	,265	,181	1,312	,195
	GEBScore	1,137	,554	,282	2,051	,045
2	(Constant)	1,894	,776		2,440	,018
	Eco-tourist	,198	,171	,148	1,160	,251
	PAMPIScore	-,051	,098	-,060	-,522	,603
	NEPScore	,346	,257	,180	1,348	,183

	GEBScore	1,136	,549	,281	2,069	,043
3	(Constant)	1,767	,732		2,412	,019
	Eco-tourist	,214	,167	,160	1,280	,206
	NEPScore	,329	,253	,172	1,300	,198
	GEBScore	1,157	,544	,287	2,127	,038
4	(Constant)	1,571	,720		2,182	,033
	NEPScore	,393	,249	,205	1,574	,121
	GEBScore	1,352	,525	,335	2,574	,012
5	(Constant)	2,621	,275		9,536	,000
	GEBScore	1,762	,462	,436	3,817	,000

a. Dependent Variable: RESS-Scale

Excluded Variablese

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics	
					Tolerance	
2	PAMNBScore	-,005 <sup>a</sup>	-,035	,972	-,005	,647
3	PAMNBScore	-,036 <sup>b</sup>	-,293	,770	-,038	,867
	PAMPIScore	-,060 <sup>b</sup>	-,522	,603	-,068	,952
4	PAMNBScore	-,014 <sup>c</sup>	-,114	,910	-,015	,884
	PAMPIScore	-,084 <sup>c</sup>	-,736	,465	-,095	,983
	Eco-tourist	,160 <sup>c</sup>	1,280	,206	,163	,805
5	PAMNBScore	,038 <sup>d</sup>	,320	,750	,041	,958
	PAMPIScore	-,067 <sup>d</sup>	-,580	,564	-,074	,991
	Eco-tourist	,192 <sup>d</sup>	1,557	,125	,195	,838
	NEPScore	,205 <sup>d</sup>	1,574	,121	,198	,754

a. Predictors in the Model: (Constant), GEBScore, PAMPIScore, Eco-tourist, NEPScore

- b. Predictors in the Model: (Constant), GEBScore, Eco-tourist, NEPScore
- c. Predictors in the Model: (Constant), GEBScore, NEPScore
- d. Predictors in the Model: (Constant), GEBScore
- e. Dependent Variable: RESS-Scale

Appendix 10 – Independent Samples T-Test: Dependent (Survey 3b Question 3) / Grouping (Eco-tourist)

**Group Statistics**

	Eco-tourist	N	Mean	Std. Deviation	Std. Error Mean
Survey 3b Question 3	no	41	2,78	,936	,146
	yes	48	3,38	,959	,138

**Independent Samples Test**

		Levene's Test for Equality of Variances	
		F	Sig.
Survey 3b Question 3	Equal variances assumed	,017	,896
	Equal variances not assumed		

**Independent Samples Test**

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
Survey 3b	Equal variances assumed	-2,947	87	,004	-,595

Question 3	Equal variances not assumed	-2,953	85,447	,004	-,595
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**Independent Samples Test**

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Survey 3b	Equal variances assumed	,202	-,995	-,194
Question 3	Equal variances not assumed	,201	-,995	-,194