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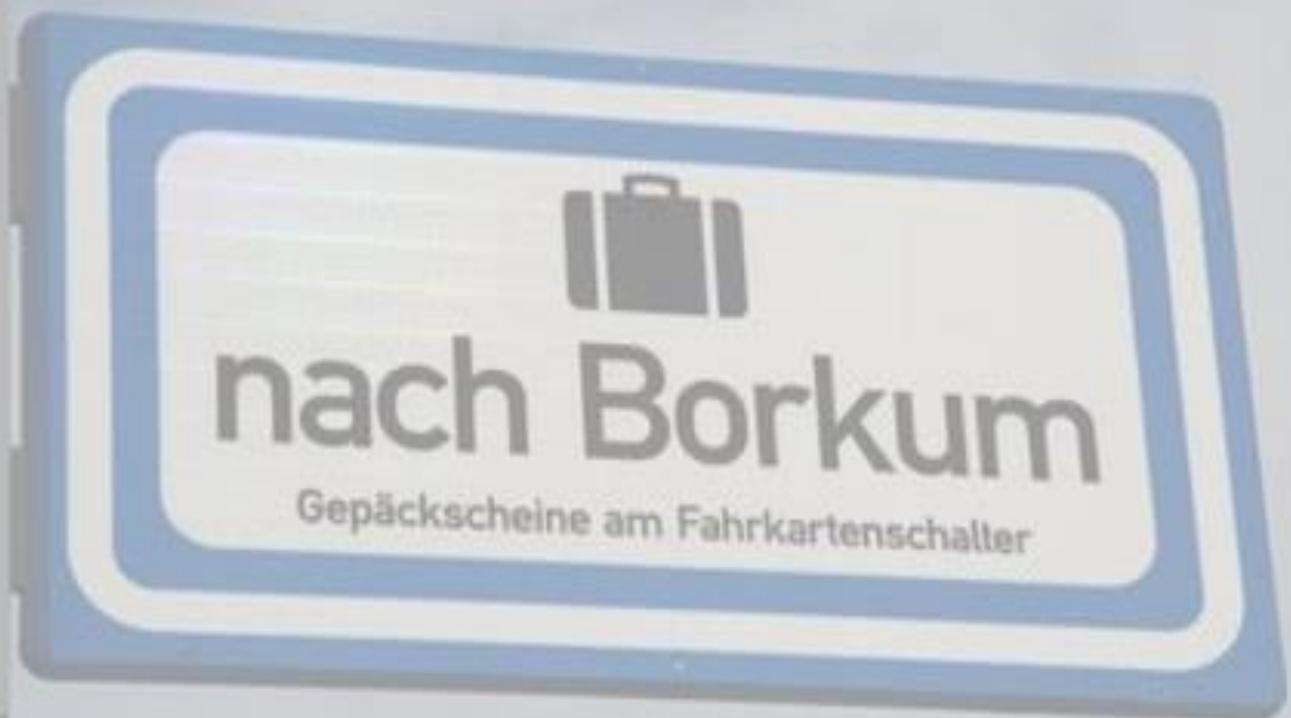
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The impacts of the RWE coal plant in the Eemshaven
on tourism at Borkum



SUMMARY

The German energy company Rheinisch-Westfälisches Elektrizitätswerk (RWE) and its Dutch daughter company Essent are building a coal plant in the northern part of the Netherlands in the Eemshaven. This triggered both local and international opposition focused on concerns regarding non-renewable ways of energy production and the negative local impacts the coal plant might have. This possible local impacts structured this research with the main question: 'What impacts will the RWE coal plant in the Eemshaven have on tourism at Borkum?'. This research relates to a Social Impact Assessment (SIA) which focuses on social consequences of planned interventions, as the focus here is on the consequences of a coal plant for the tourism at Borkum. A theoretical framework has been constructed with academic literature and primary data has been collected at Borkum by the means of surveys among tourists and semi-interviews among entrepreneurs. An analysis of the tourist surveys with the statistical program SPSS and the information from the entrepreneurs showed that both tourists and entrepreneurs fear negative environmental, esthetic and economic effects from the coal plant. The entrepreneurs mainly fear economic effects while the tourists are in general afraid of environmental impacts. The tourists will most likely still visit Borkum after the coal plant has been completed, although actual negative environmental impacts might influence their decision to visit Borkum in the future.

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1. INTRODUCTION

1.1. Motivation

In 2008, permission was granted to RWE and its Dutch daughter company Essent for building a coal plant in the Eemshaven (Verschuuren, 2011). Recently, this project has been the subject of major opposition as both individual citizens, local governments, and several organizations have protested against the plans for building this coal plant. Their arguments range from possible health issues, to negative economic effects and implications for tourism. The German Wadden islands announced for example that their governments will collaborate to stop the coal plant from being built and joint a resolution, as they feared negative effects for their islands (Waddenvereniging, 2013). Specifically the local opposition from the Wadden islands raised questions about the possible effects of the RWE coal plant on tourism at the Wadden islands, which eventually inspired this research. Borkum has been chosen as the focus of this study for it is an interesting case study. First of all, it is the island that most likely will experience the most impacts from the coal plant, because of all the Wadden islands it has the closest proximity to the Eemshaven. Second, Borkum has a lively tourism industry that could be affected. Also, using Borkum as a case study provides the research with a more defined structure as it deals with a well-defined area.

1.2. Problem Definition

Tourism is one of the most important economic sectors in the Wadden Sea Region (Eilmes et al., 2009). The RWE coal plant in the Eemshaven could have several impacts on this tourism. Since tourism at Borkum is facilitated amongst others by the clean and purifying air (Calck et al., 2005), negative environmental effects could have negative effects on the industry. This also accounts for negative esthetic impacts, as tourism depends on the attractiveness of the environment (Albrecht et al., 2013). Negative environmental and esthetic effects could lead to a decline in tourists numbers and in turn trigger negative economic impacts for Borkum's tourism industry. These effects can be investigated by integrating a SIA as this deals with the social consequences of planned interventions (Vanclay, 2003), such as the RWE coal plant. A SIA is an important aspect related to planned interventions, as it can show how projects are perceived in society. This could be valuable information for the stakeholders involved in particular. Therefore, the aim of this research is to investigate what impacts the RWE coal plant might have on tourism at the Wadden islands, the island of Borkum specifically.

1.3. Research questions

This research is structured around the following research question:

‘What impacts will the RWE coal plant in the Eemshaven have on tourism at Borkum?’

Several sub-questions have been developed in order to answer the main question and structure the research. These sub-questions have been defined as follows:

1. What does tourism at Borkum look like?
2. What environmental impacts will the coal plant have on tourism at Borkum?
3. What esthetic impacts will the coal plant have on tourism at Borkum?
4. What economic impacts will the coal plant have on tourism at Borkum?

Although this research specifies on the tourism industry at the island of Borkum, the outcomes of this research could provide a more general picture of the effects of a coal plant on tourism elsewhere.

1.4. Research area

This research deals with two areas. On the one hand the coal plant in the Eemshaven which might trigger effects for the second area, the island of Borkum. Borkum is one of the Wadden islands located in the Wadden Sea. The Wadden Sea forms the south eastern corner of the North Sea and stretches from Den Helder (the Netherlands) in the south west, up to Danish Blavandshuk in the north east (Wadden Sea Secretariat, 2013). See figure 1 for the position of Borkum in the Wadden Sea. Borkum is the most western German Wadden island, just in front of the Dutch coast. The island forms a municipality of the district of Leer, in the northwestern state Lower Saxony (Earth Explorer, 2013). One can reach the island by means of an airplane or boat departing from Ems in Germany or by boat from the Eemshaven in the Netherlands. The RWE coal plant is located in the Eemshaven in the northern part of the Netherlands. The Eemshaven belongs to the municipality of Eemsmond and the province of Groningen and is part of the energy port called ‘Energy Valley’ (Musch, 2012). Figure 2 shows the island of Borkum and the position of the coal plant in the Eemshaven.



Figure 1. (up) Position of Borkum in the Wadden Sea, the darker blue area (Source: own creation based on deepseawaters.com, 2013)



Figure 2. (right) Borkum and the RWE coal plant (Source: own creation)

1.5. Thesis lay-out

This thesis will begin by providing background information from academic literature on the topic in the chapter 'Theoretical framework'. In this part, the scientific literature used will be highlighted and a conceptual model will be given to illustrate the structure of the research. Secondly, chapter three will deal with the methodology of this research. This chapter contains a description of the way in which the research is carried out and what problems occurred. Chapter four consists of the main results of this thesis. By means of the sub questions mentioned above, the collected data will be discussed and compared with other scientific research in this field of study. The conclusions of this research can be found together with recommendations for further research in the chapter 'Conclusion'. In this section, the main points of the conducted research will be highlighted once more and the data will be reviewed against the background literature.

2. THEORETICAL FRAMEWORK

This chapter will provide academic background information and highlight the relevance of the research. First, information on the Dutch energy policy will be discussed. Second, a definition of tourism will be provided as it forms a key term within this research. Then, information will be given on SIA and how it is incorporated into this research through examining several impacts. These impacts will then be discussed separately, being divided in environmental, esthetic and economic impacts. Finally, the interconnectivity of the research is shown with a conceptual framework.

2.1. Dutch energy policy

Plans for building a new coal plant can be seen as odd in the current age of debates about renewable energy. Still, the coal plant of RWE is said to fit the picture of the Dutch energy policy. According to minister Verhagen of Economic Affairs, Agriculture and Innovation, the policy states that the investment in energy is up to the free market and that the aim is for a diversity of energy resources (Verhagen, 2011). Balat (2009) notes that coal and to a lesser extent other fossil fuels will still play a major role in the energy consumption for the next decades, which could explain the choice for building a coal-fired power plant. For several reasons, “the Eemshaven has been designated as a location for large-scale electricity generation” (Jager 2010, p.3). For example its deep waters, enabling production materials to be transported, and the availability of cooling water for power plants.

2.2. Tourism

One of the sectors that could fall subject to the impacts of the RWE coal plant is the tourism on the German Wadden island Borkum. Tourism has been defined as the activity of visitors, who can be further defined as “a traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited” (United Nations Statistical Commission 2010, p.10). Tourism defined as such includes visitors that come from abroad (inbound tourism) and also resident visitors taking trips within the country (domestic tourism). The tourism at Borkum is said to have a spa character, depending on fresh and purifying air (Calck et al, 2005). Moreover, the tourism at the Wadden Sea Region is said to be among the most important economic sectors of the region (Eilmes et al., 2009). Therefore, it is relevant to investigate what impacts the RWE coal plant in the Eemshaven might have on this industry at Borkum, as many entrepreneurs at the island depend on it for survival.

2.3. Social impact assessment

Possible impacts of the coal plant could be measured by conducting a SIA. This is relevant for further policy on energy, as severe negative impacts on tourism could indicate deficiencies in the current line of thinking about energy production and its impact on other economic sectors such as tourism. SIA relates to the “processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions” (Vanclay 2003, p.6). This research will be restricted to the analyzing process of a SIA, because of the scope and limitations of a bachelor thesis. In order to analyze social impacts of the coal plant, a division has been made in environmental, esthetic and economic impacts. These have been partially based on the main concerns that were expressed by those actors opposing the coal plant. These impacts will be investigated by the means of quantitative data collection through surveys among tourists, and qualitative data collection by the means of semi-interviews among entrepreneurs. The outcomes of these data will give an indication of the social impacts concerned with the establishment of the RWE coal plant in the Eemshaven.

2.4. Environmental issues

According to Philibert and Podkanski (2005), coal is the most polluting fossil fuel resource. The impacts of a coal-burning power plant can thus be highly disturbing for its environment. The burning of coal can result in pollution at the local, regional and even at the global level and “increased use of coal will exacerbate local, regional and global pollution problems unless cleaner and more efficient coal technologies are used” (Philibert and Podkanski 2005, p.8). The regions surrounding the Eems and Eemshaven have written an objection based on the ‘Natuurbeschermingswet’ (Law for Environmental Protection) regarding the built of the coal plant by RWE, in which the following possible environmental effects are mentioned: deepening of the harbor, effects for the marine life, nitrogen deposition at the German Wadden islands, problems regarding the cooling water systems and light pollution (Musch, 2012). An exploration of possible environmental effects of the RWE coal plant is necessary to analyze the impacts it might have on tourism at the island of Borkum.

2.5. Esthetic issues

Besides environmental pollution, a coal plant could also have esthetic effects. It is of relevance to take these into account while esthetic impacts from a coal plant could negatively affect tourism numbers, “since tourism depends on an attractive environment” (Albrecht et al. 2013, p.12). Blaydes et al. (2010) found that with the erection of a coal plant at a coastal area, only 61.1% of the visitors would come back to the same beach whereas 73.6% would come back if a wind farm had been erected. This hypothetical coal plant would thus mean a 12.5% higher loss of tourists than the hypothetical wind farm, although “the wind farm would be more intrusive on the ocean view” (Blaydes et al. 2010, p.13). The different results for a coal plant and a wind farm on future beach visits can be explained by other literature. It is said about wind farms that “most critical for its acceptance is not the fact of its visibility, but the associations it elicits in the viewer” (dena, 2008a; 2008b in Albrecht et al. 2013, p.13). Perhaps, people might be more willing to sacrifice on their ocean view as the associations with a renewable energy project are more positive than those with a non-renewable project. So, although both energy projects are visible and disturb the landscape, the coal plant could face more opposition than a wind farm.

2.6. Economic issues

The environmental and esthetic issues concerned with the erection of a coal plant could lead to a decrease in tourist numbers. However, “the assumption that tourists might stay away due to the existence of offshore wind farms is more a subjective fear than a measurable fact” (May, 2004 in Albrecht et al. 2013, p.15). This indicates that wind farms have not yet proven to affect tourist numbers in a negative way. This is supported by other data, as it is said “that the fears held by locals ahead of construction were mostly eliminated after completion of the wind farms” (Hübner and Pohl, 2012 in Albrecht et al. 2013, p.15). It is important to investigate whether the RWE coal plant could have negative economic effects for Borkum’s tourism, as many entrepreneurs at the island depend on tourists for survival. The above findings for wind farms could also be valid for other energy projects such as the coal plant in the Eemshaven. This too is a project which can face opposition at the start, since it will impact the landscape and therefore influence economies which depend on consumption of this landscape, like tourism. However, as stated by dena (2008a; 2008b in Albrecht et al., 2013), opposition is linked to associations with the projects at stake. Since the coal plant in the Eemshaven is an energy project based on non-renewable fossil fuel resources unlike a wind farm which thrives on renewable energy, the grounds for opposition and eventual impacts may vary.

2.7. Conceptual model

A conceptual model has been developed to show the interconnectivity of the included elements in this research. The coal plant in the Eemshaven is facilitated by the energy policy in the Netherlands, which fosters different forms of energy generation (Verhagen, 2011). The coal plant will be expected to have several effects, being divided in environmental, esthetic and economic impacts. These effects are then likely to play out on the tourism at the island of Borkum. Environmental effects might impact the behavior of tourists at the island of Borkum, triggering economic effects. Economic effects might include the impacts the entrepreneurs at Borkum will experience due to a change in touristic behavior. These economic effects can also be caused by esthetical effects as perceived by the tourists, possibly influencing Borkum's tourism industry as well.

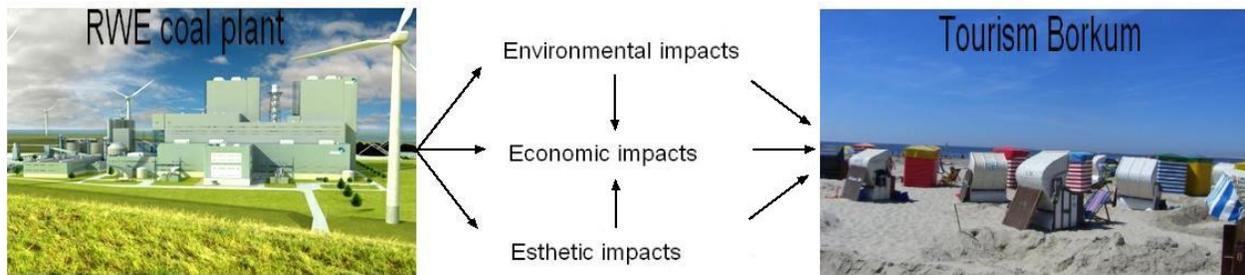


Figure 3. Conceptual model

3. METHODOLOGICAL FRAMEWORK

This paragraph describes how the research is conducted by the means of literature study and primary data collection. For an overview of the surveys used during the primary data collection, see appendix A and B.

3.1. Research methods

In order to investigate the impacts of the RWE coal plant concerning the tourism at Borkum, primary data has been collected and literature about related theories and concepts on the topic has been gathered. This has been done to link the main findings of the research back to academic research. Primary data has been conducted through surveys among tourists which 33 of the 35 tourists agreed to fill in, providing a response rate of 94%, and semi-interviews among eight entrepreneurs with different types of businesses at Borkum who all wanted to cooperate, giving a response rate of 100%. This means that this research consists of quantitative as well as qualitative data. The quantitative data through surveys among tourists revealed the main impacts these respondents expected to occur. These data have been analyzed with frequency tables to obtain percentages and cross-tables to indicate relations between variables, through the use of the statistical program SPSS. Unfortunately, through limitations of the data it was not possible to conduct any statistical tests. The semi-interviews held among the randomly chosen entrepreneurs at Borkum provided additional information to the surveys. This data has been used to gain more insight in the personal experiences and expectations of the entrepreneurs and map the social impacts of the coal plant by making use of statements provided by the entrepreneurs. Furthermore, maps have been created using ArcMap to indicate where the research is played out.

The first surveys among tourists were conducted at the boat departing from the Eemshaven to the island of Borkum. While sitting down, people were asked to fill in the short questionnaire accompanied by a map with the position of the coal plant in the Eemshaven towards the island of Borkum. Several more surveys were filled in during the short train trip taking the passengers from the harbour at Borkum to the city centre of the island. Aside from one or two surveys taken at the island itself, the rest of the surveys were conducted in the train back from the city centre of Borkum to its harbor and back on the boat from Borkum to Eemshaven. The surveyed entrepreneurs filled in a survey at the island itself and provided a lot of additional information through conversations. For the surveys, see appendix A and B.

4. RESULTS

In this chapter, the main results of the research will be presented by answering the sub-questions discussed above. The collected data will then be linked to the research as discussed in the theoretical framework in order to draw connections with other academic findings. See Appendix C for a full overview of the survey results.

4.1. Borkum's tourism industry

The tourist surveys had a response rate of 94% since of the 35 tourists approached, 33 agreed to fill in the survey. Almost 70% of the respondents were of German origin, visiting Borkum mainly to enjoy nature. Slightly more than a quarter of the respondents were of Dutch origin. The Dutch tourists who have been surveyed visited Borkum mainly for the beach. See table 1 for an overview of the main visiting reasons. The total amount of motivations provided in the table is slightly higher than the number of respondents, as several respondents answered the question with more than one option.

Table 1. Motivations for visiting Borkum to country of origin

			Country of origin ^a			Total
			German	Dutch	Other	
Reason for visit ^a	Beach	Count	8	5	0	13
	Nature	Count	14	3	1	18
	Spa	Count	1	2	0	3
	Culture	Count	0	2	0	2
	Other	Count	6	3	0	9
Total	Count	23	9	1	33	

The German respondents visited the island more often than the Dutch respondents, in general several times a year up to at least once a month. They also seemed to spend more time on the island once there, as they often indicated that their stay would be several days up to several weeks. The Dutch respondents visited the island of Borkum in general less than once a year and stayed for just one day as only one or two indicated that they would spend the weekend at Borkum. One of the tourists surveyed was from Switzerland. This person was going to spend ten days at Borkum and visited the island usually once a year. See table 2 to get an idea of the frequency of visits at Borkum. The Swiss respondent has been indicated with 'Other' for country of origin.

Table 2. Frequency of visits at Borkum to country of origin

	Country of origin			Total
	Germany	Netherlands	Other	
Frequency of visit >1x/month	9	0	0	9
>1x/year	8	0	1	9
<1x/year	6	9	0	15
Total	23	9	1	33

The characteristics of the respondents shown in table 2 matches with findings from previous studies. For example, a Dutch study about the travel behavior of Dutch towards Borkum also found that most Dutch tourist generally spend only one day at the island, whereas the number of multiple-night stays at Borkum exceeds the number of daily visits which shows that the majority of tourists at Borkum stays for a longer time span (Calck et al., 2005). According to Calck et al. (2005) this relates to the spa-like character of Borkum’s tourism, with spa treatments that could take one to three weeks. The observed motivations to visit Borkum thus do not seem to coincide with the literature as only one of the tourist respondents indicated that the motivations for visiting Borkum had a spa character.

4.2. Environmental effects on tourism industry at Borkum

All of the entrepreneurs asked, expressed deep concerns regarding the possible environmental effects of the coal plant for Borkum and its tourism. Their main concern showed to be the air becoming polluted, as shown by the answers provided to the question ‘what is your main concern with regard to the coal plant?’ stating mainly ‘luftverschmutzung’ (air pollution) and indicating a fear of a decrease in tourist numbers. This fear was also expressed in a written objection against the coal plant by the German regions surrounding the Eems region which mentioned environmental impacts through the deposition of nitrogen (Musch, 2012). While all the entrepreneurs stated that the coal plant would be disastrous for their business as they would lose their customers, only one of the entrepreneurs expressed mainly a concern for the health implications of his family. With regard to this question about environmental effects for Borkum, the focus of the entrepreneurial respondents thus seemed to be mainly on the personal level. They were concerned about their own business and their livelihood as well as for their personal family who might suffer from the consequences of the coal plant. The fear for air pollution was explained with the consequences it might have on spa tourism at Borkum, as it has been stated before that this type of tourism is facilitated by the clean and purifying air of the island (Calk et

al., 2005). Environmental effects of the coal plant like air pollution through for example nitrogen deposition could thus indeed have negative consequences for the tourism at Borkum.

With regard to the environment, it showed that the tourist respondents expected the effects for Borkum's tourism to be most negative. 23 Participants expected the coal plant to cause negative environmental effects, seven people stated that they believe the coal plant will cause no effects (either positive or negative) for Borkum's tourism and three people stated no opinion. If actual negative effects for Borkum were to occur from the coal plant, almost 80% of the respondents indicated that negative environmental effects would be the main reason for which they would choose not to visit Borkum in the future. This is shown in table 3.

Table 3. Main effects for decrease in visits

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Negative Environmental effects	26	78,8	86,7	86,7
Negative Esthetic effects	4	12,1	13,3	100,0
Total	30	90,9	100,0	
Missing				
System	3	9,1		
Total	33	100,0		

Many tourist respondents opposing the coal plant repeatedly asked why the focus of energy production still lies with fossil fuels instead of renewable energy. Their opposition to the coal plant thus mainly seemed to be based on a non-supportive view regarding fossil fuel energy production in general and not particularly the RWE coal plant in the Eemshaven, unlike the entrepreneurs interviewed. Although the spa tourists might be the most affected by air pollution, the respondents who visited Borkum for other reasons still indicated negative environmental effects as the main reason for which they might not visit Borkum in the future. As a report from Verschuuren (2011) notes, several German Wadden islands including Borkum will experience the deposition of nitrogen that varies from 5 mol/ha/year up to 8 mol/ha/year through emissions of the RWE coal plant. These environmental effects might indeed put the tourism at Borkum in jeopardy, as this acidizing of the air could result in a degradation of the clean and fresh air for which the island is such an attractive place.

4.3. Esthetic effects on tourism industry at Borkum

The esthetic impacts of the coal plant as expected by the entrepreneurs interviewed at Borkum, were described in all semi-interviews as negative. These entrepreneurs called the effects a 'störung in Landschaft' (disturbance of the landscape) and 'seht nicht aus' (does not look nice). One of the respondents showed mainly concerns for 'Negative Entwicklung am Südstrand' (negative developments at the southern beach). According to the answers, tourists attached high value to the esthetic characteristics of a landscape. This is in line with the academic findings of Albrecht et al. (2013) that an environment needs to be attractive to attract tourism. The entrepreneurs asked seem to fear that tourists will stop visiting Borkum because the attractiveness of Borkum's scenery will be impacted by the coal plant. This fear is not unfounded, as the research of Blaydes et al. (2010) showed that a coal plant erected at a coastal location could mean a 38.9% decrease in tourist visits at a beach.

With regard to the esthetic impacts the coal plant could cause, twenty tourist respondents expected negative effects for the tourism at Borkum whereas eight of them expressed the opinion that no effects would occur. Of the respondents, five stated to have no opinion on the topic. In contrast to the seemingly importance of the environment, only four people indicated that negative esthetic effects could be the reason for which they would not visit Borkum in the future. This relative unimportance of the esthetic effects might be explained by the geographical position of Borkum with regard to the coal plant. The coal plant is located on the north-eastern tip of the Dutch mainland and thus best, if not only, visible from Borkum's southern shores. As for most Wadden islands, the main beach is usually the one facing the North Sea. In the case of Borkum, this is at its northern shores. Even when the coal plant might be visible from Borkum's north shore if one faces south, the focus of the activities at this shore are mainly directed to the beach and the sea which are facing north. Another explanation could be the distance from Borkum to the Dutch shore. Tourists might feel like the coal plant would have no esthetic impacts on Borkum as they could presume its invisibility from the island. Although esthetic impacts do not seem to be the most important concern to the tourists, they are still relevant since touristic activities like cycling and walking take place around the island, therefore also at its southern shores. The tourist's answers seem to indicate that a major decline in tourist numbers will not be the case for Borkum. These findings contradict with those of Blaydes et al. (2010), who found a decrease in tourist numbers to the same beach after a coal plant had been erected. The surveyed tourists in general expect negative esthetic impacts for Borkum, but do mainly not see it as a reason for which not to visit Borkum

in the future. The coal plant in the Eemshaven is thus expected to have negative esthetic effects for Borkum, but it will most likely not cause a decline in tourist numbers according to the survey results.

4.4. Economic effects on tourism industry at Borkum

All of the entrepreneurs asked, showed a great fear for negative economic effects of the coal plant. They perceived esthetic, but mainly environmental effects of the coal plant to cause a decline in tourist numbers at Borkum. They feared that because of this declining number of tourists, their businesses would be affected in a negative way and might be closed as a result of this. These fears might prove to be unfounded as they have shown to disappeared elsewhere after an energy project of wind farms was completed (Hübner and Pohl, 2012 in Albrecht et al. 2013). However, if tourists decide not to visit Borkum anymore in the future, this could pose indeed serious economic effects for the entrepreneurs of Borkum. The economy of the island could be put in jeopardy since research has shown that it depends heavily on tourism for income (Eilmes et al., 2009). This was confirmed by information provided by the participating entrepreneurs who stated that tourists are their main type of customers.

However, the tourist's answers paint a more optimistic picture with regard to possible economic impacts of the coal plant. Although 24 out of 33 respondents indicated not to support the coal plant (table 4), it seems as if the coal plant will not cause a great decline in tourist numbers as 22 respondents answered 'no' when asked whether the coal plant would have consequences for future visits (table 5). The German respondents indicated that the coal plant might have consequences for future visits relatively more often than the Dutch. This seems plausible as the German respondents after all visit the island more often than the Dutch and would thus face a higher exposure to generated impacts.

Table 4. Opinion on coal plant to country of origin

			Country of origin ^a			Total
			German	Dutch	Other	
Opinion on coal plant ^a	Supporting coal plant	Count	2	0	0	2
	Not supporting coal plant	Count	15	8	1	24
	No opinion	Count	6	1	0	7
Total		Count	23	9	1	33

Table 5. Consequences of coal plant for future visits to country of origin

		Country of origin			Total
		Germany	Netherlands	Other	
Consequences for visit	Yes	6	1	1	8
	No	14	8	0	22
	No opinion	3	0	0	3
Total		23	9	1	33

Although eight people indicated that their decision to visit Borkum in the future could be influenced by the coal plant, only three German respondents stated that they would not visit Borkum anymore in the future because of the coal plant, according to table 5. Of all the respondents, 24 would still visit Borkum and six people yet have no opinion on whether the coal plant will keep them from visiting Borkum.

Table 6. Effects of coal plant on future visits to Borkum to country of origin

		Country of origin			Total
		Germany	Netherlands	Other	
No visiting anymore because of coal plant	Yes	3	0	0	3
	No	17	7	0	24
	No opinion	3	2	1	6
Total		23	9	1	33

These answers indicate that the respondents are likely to continue visiting Borkum after the coal plant will be finished, which again contradicts the findings of Blaydes et al. (2010) about declining numbers of tourists after the erection of a coal plant. This means that the coal plant is most likely not to cause the negative effects to Borkum's economy which are being feared so much by its entrepreneurs. However, this will only be the case when the coal plant will not have any negative environmental effects. As stated before, almost 80% of the respondents indicated that actual negative environmental effects would be the most important reason for which they would decide not to visit Borkum in the future. So according to the data, when the coal plant will cause actual negative environmental effects it will likely impact Borkum's tourism by a decreasing amount of visiting tourists.

5. CONCLUSION

In this part, conclusions will be drawn based on the results discussed in chapter four. After the main findings have been highlighted and reflected upon, recommendations will be given for further research in which both recommendations for the areas of interest that should be studied as well as for the way in which future research could best be carried out are being discussed.

5.1. Conclusions

First of all, the findings of the tourist surveys show that the main reason for the German respondents to visit Borkum was nature, whereas the Dutch respondents indicated to visit for several reasons, being mainly the beach. Also, the length of stay was related to the country of origin as the Dutch respondents indicated to visit the island only once a year mainly for one day, whereas the German respondents indicated to visit the island in general several times a year for one or more weeks. These findings partially match those of Calck et al. (2005), who also found a high number of multiple-night stays at the island with mainly Dutch tourists accounting for day trips. However, the findings did not show many visits for spa reasons to support the idea of a spa-like tourism industry at Borkum as mentioned by Calck et al. (2005).

Secondly, it can be concluded that the interviewed entrepreneurs oppose the coal plant based on a fear that the number of tourist will decline which will eventually cost them their jobs. This fear was created through the expectation of mainly negative environmental effects such as air pollution. Since literature has shown that the fresh air at Borkum is one of the main attraction points for spa- but also other tourists (Calck et al., 2005), air pollution can indeed be devastating for Borkum's tourist industry. Moreover, Blaydes et al. (2010) have shown that a coal plant could indeed create a decreasing number of tourists. The tourist surveys pointed out that these visitors too oppose the coal plant, rating negative environmental effects as the most important impacts. However, their opposition is based on more general concerns with regard to energy production and that they oppose the coal plant as a non-renewable energy source more than as a possible threat to their touristic activities.

Thirdly, the interviewed entrepreneurs showed a fear for negative esthetic impacts too, mainly at the southern beaches of Borkum which could keep tourists away. This linked to the findings of Albrecht et al. (2013) that tourism depends on an aesthetic appealing environment. The tourists surveyed expected also negative esthetic impacts, but stated that these would not be the main reason for which their

future visits could be influenced. Decreasing tourist numbers will thus most likely not depend on esthetic impacts, which coincides with the findings of dena (2008a; 2008b in Albrecht et al., 2013) that opposition is mainly linked to associations with a project rather than on its visibility.

In general, the tourist respondents indicated that the coal plant will most likely not affect their touristic behavior in the future. The majority of the participants stated that they would still visit Borkum in the future after the completion of the coal plant, even though they made clear that they will expect it to cause nothing but negative effects. This could be a reassurance for the entrepreneurial participants, as this would mean that the number of tourists would not decline substantially in the future. This is in contrast to the findings from Blaydes et al. (2010) who found a substantial loss of tourist numbers, but would be in line with findings about stable tourist numbers after the erection of wind farms (May 2004, in Albrecht et al., 2013).

However, although the tourist respondents stated they will still visit Borkum in the future, three participants also indicated that they might choose not to visit Borkum if actual negative environmental effects would be triggered by the coal plant. Thus, from the above can be concluded that after the coal plant in the Eemshaven has been completed, it is likely that tourists will continue to visit Borkum in the near future, except for when actual negative environmental effects will occur. If the latter is the case, the number of tourists at the island of Borkum might indeed decline.

5.2. Discussion and reflection

The data set as shown in this research consists of a small number of cases. Therefore no generalizations can be made about tourists and entrepreneurs at Borkum in general and no statistical tests could be conducted. Also, as this research only focuses on the analyzing part of a SIA in which the monitoring and managing part have been left untouched, the results of this research can only be seen as an indication of the social impacts at hand. A full SIA could only be conducted when social impacts would be measured from the moment that rumors about a planned intervention occur, until even after the project has been completed. Conducting research over a longer time span would thus enrich the research with more information and avoid the current issues of biased data. After all, not all touristic activities are evenly spread across the year as less people are expected to visit an island for the beach in winter than in summer. This could also be one of the reasons that no tourist have been found who visited Borkum for spa reasons, as this type of tourism is maybe in general practiced in other times of the year.

Besides the problems of biased data, other problems occurred during the research. For example with regard to the primary data collection, as many entrepreneurs were too busy or not in charge of the business to be able to fill in a short questionnaire. Moreover, the form of data collection was initially meant to be conducted through surveys, but mainly turned into semi-interviews in which a lot of information was shared. This proved the short survey insufficient in providing the entrepreneurs enough time and space to express their concerns. Therefore, these surveys and commentaries were used in this research as semi-interviews.

This research also faced issues of language. This research process was constructed using the Dutch, English and German language both in speech and in writing. Because of the use of multiple languages, a lot of time had to be devoted to translations. Also, conversations with German entrepreneurs and tourists were difficult because of this language barrier. Initially, the aim was to also conduct an interview with the spokesperson of tourism from Borkum, in order to get information about tourism characteristics and the expectations for possible impacts of the coal plant. However, because of language problems and the extensive organization behind the tourism industry it proved impossible to get in touch with the right person. This also accounts for an interview planned initially with someone at the province of Groningen, in order to gain some information about the way in which possible impacts of the coal plant would have been monitored in advance. Despite the efforts to arrange an interview, no results have been booked here either.

5.3. Recommendations

Future research about the impacts of the coal plant could be improved by extending the research. More tourists could be surveyed, when the researchers will not be subjected to the limitations of time and the scope of a bachelor thesis. Surveying perceptions and expectations of a broader public would strengthen the reliability of the findings. Also, by extending the research in the direction of a SIA, real effects of the coal plant could be measured. This research provides merely perceptions and expectations about future behavior patterns. Research conducted over a longer time span could actually measure and map the effects of the coal plant on tourism if patterns will indeed change over time. Future research will also benefit from dealing with the issue of language, to avoid precious data to get lost. For example by the use of interpreters or multi lingual researchers. This way, more information can be gathered from the respondents as they can be approached in their own language and will be able to provide answers in their own words.

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APPENDIX A. TOURIST SURVEY

INTRODUCTION

Thank you for filling in this questionnaire! My name is Loes Dragt and I'm studying Human Geography and Urban Planning at the University of Groningen. This research is about the consequences of the RWE coal plant in the Eemshaven (in the Netherlands) on the tourism at the island of Borkum (see map). This survey consists of 11 questions. *Please circle your preferred answer.*

SURVEY

1. Which country are you from?
Denmark/Germany/The Netherlands/Other
2. How often do you visit Borkum?
Once a week or more/Once a month or more/Once a year or more/Less than once a year
3. What is your main reason to visit Borkum?
Beach/Nature/Wellness/Culture/Other
4. Are you aware of the fact that a coal plant has been built in the Eemshaven (Netherlands) close to Borkum?
Yes/No
5. What is your stance towards the coal plant being built in the Eemshaven (Netherlands) close to Borkum?
Support/Don't support/No opinion
6. Do you think the tourism at Borkum will experience environmental impacts from this coal plant?
Positive impacts/Negative impacts/No impacts/No opinion
7. Do you think the tourism at Borkum will experience esthetic impacts from this coal plant?
Positive impacts/Negative impacts/No impacts/No opinion
8. Do you think the tourism at Borkum will experience economic impacts from this coal plant?
Positive impacts/Negative impacts/No impacts/No opinion
9. Will this coal plant influence your decision to visit Borkum in the future?
Yes/No/No opinion
10. Would you consider not visiting Borkum in the future when the coal plant in the Eemshaven has been built?
Yes/No/No opinion
11. Which of the impacts mentioned would increase the chance for you of not visiting Borkum again in the future?
Negative environmental impacts/Negative economic impacts/Negative esthetic impacts

APPENDIX B. ENTREPRENEUR SURVEY

INTRODUCTION

Thank you for filling in this questionnaire! My name is Loes Dragt and I'm studying Human Geography and Urban Planning at the University of Groningen. This research is about the consequences of the RWE coalplant in the Eemshaven (in the Netherlands) on the tourism at the island of Borkum (see map). This survey consists of 14 questions. *Please circle your preferred answer or fill in your answer in the space provided.*

SURVEY

1. What type of business do you own?
Retail/Food/Accommodation/Leisure
2. What are your main customers?
Locals/Tourists/Other
3. Are you aware of the fact that a coal plant has been established in the Eemshaven (Netherlands)?
Yes/No
4. What is your stance towards the coal plant being built in the Eemshaven (Netherlands)?
Support/Don't support/No opinion
5. Do you think the tourism at Borkum will experience environmental impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
6. Do you think your business at Borkum will experience environmental impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
7. If yes, which environmental impacts do you think your business at Borkum will experience from the coal plant?
8. Do you think the tourism at Borkum will experience economic impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
9. Do you think your business at Borkum will experience economic impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
10. If yes, which economic impacts do you think your business at Borkum will experience from the coal plant?
11. Do you think the tourism at Borkum will experience esthetic impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
12. Do you think your business at Borkum will experience esthetic impacts from the coal plant?
Positive effects/Negative effects/No effects/No opinion
13. If yes, which esthetic impacts do you think your business at Borkum will experience from the coal plant?
14. What is your main concern with regard to the coal plant?

APPENDIX C. RESULTS TOURIST SURVEY

Country of origin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Germany	23	69,7	69,7	69,7
	Netherlands	9	27,3	27,3	97,0
	Other	1	3,0	3,0	100,0
	Total	33	100,0	100,0	

Question 1. What country are you from?

Frequency of visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	>1x/month	9	27,3	27,3	27,3
	>1x/year	9	27,3	27,3	54,5
	<1x/year	15	45,5	45,5	100,0
	Total	33	100,0	100,0	

Question 2. How often do you visit Borkum?

Reason for visiting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Beach	5	15,2	20,8	20,8
	Nature	10	30,3	41,7	62,5
	Culture	1	3,0	4,2	66,7
	Other	8	24,2	33,3	100,0
	Total	24	72,7	100,0	
Missing	System	9	27,3		
Total		33	100,0		

Question 3. What is your main reason to visit Borkum?

Frequency of visit to country of origin

	Country of origin			Total
	Germany	Netherlands	Other	
>1x/month	9	0	0	9
Frequency of visit >1x/year	8	0	1	9
<1x/year	6	9	0	15
Total	23	9	1	33

Frequency of visits at Borkum to country of origin.

Reason for visiting Borkum to country of origin

	Country of origin ^a			Total
	German	Dutch	Other	
Beach Count	8	5	0	13
Nature Count	14	3	1	18
Reason for visit ^a Spa Count	1	2	0	3
Culture Count	0	2	0	2
Other Count	6	3	0	9
Total Count	23	9	1	33

Motivations for visiting Borkum to country of origin.

Awareness of coal plant

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	25	75,8	75,8	75,8
No	8	24,2	24,2	100,0
Total	33	100,0	100,0	

Question 4. Are you aware of the fact that a coal plant has been built in the Eemshaven?

Opinion on coal plant

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Support	2	6,1	6,1	6,1
Don't support	24	72,7	72,7	78,8
No opinion	7	21,2	21,2	100,0
Total	33	100,0	100,0	

Question 5. What is your stance towards the coal plant being built in the Eemshaven?

Awareness of coal plant related to opinion on coal plant

		Opinion on coal plant			Total
		Support	Don't support	No opinion	
Awareness of coal plant	Yes	2	22	1	25
	No	0	2	6	8
Total		2	24	7	33

Relation between awareness and opinion on coal plant

Expected environmental effects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative effects	23	69,7	69,7	69,7
	No effects	7	21,2	21,2	90,9
	No opinion	3	9,1	9,1	100,0
	Total	33	100,0	100,0	

Question 6. Do you think the tourism at Borkum will experience environmental impacts from this coal plant?

Expected esthetic effects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative effects	20	60,6	60,6	60,6
	No effects	8	24,2	24,2	84,8
	No opinion	5	15,2	15,2	100,0
	Total	33	100,0	100,0	

Question 7. Do you think the tourism at Borkum will experience esthetic impacts from this coal plant?

Expected economic effects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative effects	18	54,5	54,5	54,5
	No effects	11	33,3	33,3	87,9
	No opinion	4	12,1	12,1	100,0
	Total	33	100,0	100,0	

Question 8. Do you think the tourism at Borkum will experience economic impacts from this coal plant?

Consequences for visit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	8	24,2	24,2	24,2
No	22	66,7	66,7	90,9
No opinion	3	9,1	9,1	100,0
Total	33	100,0	100,0	

Question 9. Will this coal plant influence your decision to visit Borkum in the future?

Consequences of coal plant for future visits to country of origin

		Country of origin			Total
		Germany	Netherlands	Other	
Consequences for visit	Yes	6	1	1	8
	No	14	8	0	22
	No opinion	3	0	0	3
Total		23	9	1	33

No visiting anymore because of coal plant

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	3	9,1	9,1	9,1
No	24	72,7	72,7	81,8
No opinion	6	18,2	18,2	100,0
Total	33	100,0	100,0	

Question 10. Would you consider not visiting Borkum in the future when the coal plant in the Eemshaven has been built?

Effects of coal plant on future visits to Borkum

		Country of origin			Total
		Germany	Netherlands	Other	
No visiting anymore because of coal plant	Yes	3	0	0	3
	No	17	7	0	24
	No opinion	3	2	1	6
Total		23	9	1	33

Main effects for decrease in visits

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Negative Environmental effects	26	78,8	86,7	86,7
Negative Esthetic effects	4	12,1	13,3	100,0
Total	30	90,9	100,0	
Missing				
System	3	9,1		
Total	33	100,0		

Question 11. Which of the impacts mentioned would increase the chance for you of not visiting Borkum again in the future?