

**Trade-offs between seascape and offshore wind farming values:
An analysis of local opinions based on a cognitive belief framework**

Dissertation

zur Erlangung des mathematisch-naturwissenschaftlichen Doktorgrades

"Doctor rerum naturalium"

der Georg-August-Universität Göttingen

im Promotionsprogramm Geowissenschaften / Geographie
der Georg-August University School of Science (GAUSS)

vorgelegt von

Kira Gee

aus München

Göttingen 2013

Betreuungsausschuss:

Mitglieder der Prüfungskommission

Referent/in: Prof. Dr. Werner Kreisel, Geographisches Institut der Universität
Göttingen

Koreferent/in: Prof. Dr. Horst Sterr, AG Küstengeographie & Klimafolgen-
forschung, Geographisches Institut der Universität Kiel

weitere Mitglieder der Prüfungskommission:

Prof. Dr. Heiko Faust, Geographisches Institut der Universität Göttingen

Prof. Dr. Renate Bürger-Arndt, Fakultät für Forstwissenschaften und Waldökologie,
Universität Göttingen

Prof. Dr. Karl-Heinz Pörtge, Geographisches Institut der Universität Göttingen

Dr. Andreas Kannen, Helmholtz-Zentrum Geesthacht

Tag der mündlichen Prüfung: 15. Mai 2013

Acknowledgements

This research was carried out as part of the research project “Zukunft Küste – Coastal Futures”, which was funded by the German Federal Ministry of Education and Research (BMBF) (FKZ03F0404A). The project used offshore wind farming as a case study of changing spatial use in the sea and explored its impacts on the marine ecosystem and the local economy and infrastructure. Research on conflicts between stakeholders and social values formed an integral part of the project (Lange et al. 2010).

Many persons have contributed to the making of this research. Many thanks to my colleagues, friends and family for their patience, good advice and encouragement along the way. Special thanks are due to Andreas, Werner and Dave for their unwavering support. Without you this would not have been possible.

Related publications:

Selected preliminary and complementary results from the study have been published in the following articles:

- Gee, K. & Burkhard, B. (2010): Cultural ecosystem services in the context of offshore wind farming: a case study from the west coast of Schleswig-Holstein. *Ecological Complexity*: 7(3): 349-358.
- Gee, K. (2010): Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy* 27: 185-194.
- Gee, K. & Licht-Eggert, K. (2010): Stakeholder analysis in Coastal Futures. In: Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. (2010): Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study. *Zukunft Küste - Coastal Futures* Synthesis Report. LOICZ Research & Studies No. 36. GKSS Research Centre, Geesthacht, p. 97-108.
- Bruns, A & K. Gee (2009): Offshore wind farms in the German North Sea and the Implementation Process of the Water Framework Directive: From State-centred Decision-Making to Participatory Governance. *GAIA* 18 (2): 150-157.
- Licht-Eggert, K., K. Gee, A. Kannen, B. Grimm, S. Fuchs (2008). The human dimension in ICZM: Addressing people's perceptions and values in integrative assessments. In: Krishnamurthy, R.-R., B. Glavocic, A. Kannen, D.-R. Green, A.-L. Ramanathan, Z. Han, S. Tinti, T.-S. Agardy (Eds.): *ICZM – The Global Challenge*, Research Publishing, Singapore and Chennai, pp. 241–261.
- Gee, K. (2007): Nicht vor meiner Küste. *WZB Mitteilungen* 116, pp. 36-38.
- Gee, K., Licht-Eggert, K., Kannen, A. (2006): Stakeholder positions, conflicts and coalitions of interest vis-a-vis offshore wind farms. In: Forkiewicz, M. (Eds.): *New Approaches to Harbour, Coastal Risk Management and Education*. EUROCOAST-LITTORAL 2006, Gdansk University of Technology, Faculty of Management and Economics, pp. 99-106.

Abstract

This study explores the acceptance of offshore wind farming on the West coast of Schleswig-Holstein in Germany. It is an explorative, qualitative study owing to the fact that no offshore wind farms have yet been constructed in the German North Sea, which means it assesses expectations associated with offshore wind farming rather than actual experiences. Based on a non-representative questionnaire survey of local residents in selected municipalities in Dithmarschen and North Frisia (n = 387), it shows that residents are equally divided between supporters and opponents. The study uses the concept of values to uncover the reasons behind these attitudes. It shows that attitudes to offshore wind farming are driven by (1) beliefs about offshore wind farming (including the values associated with offshore wind and the impacts it is believed to have on the local environment), and (2) the importance assigned to potentially conflicting values, in particular seascape values. Attitudes to offshore wind farming are the result of trade-offs between offshore wind farming values on the one hand and nature and seascape values on the other.

A cognitive belief framework was constructed to assess the varying values and beliefs that lead to attitudes to offshore wind farming. It includes basic human beliefs as the first order of cognition, followed by beliefs about nature, the sea and the West coast before coming to attitude to offshore wind farming. The cognitive belief framework is used to trace the specific bifurcation points which are instrumental in forming an attitude to offshore wind farming. 'Value types' are established at different points of the cognitive belief framework indicative of different value constellations.

The study particularly focuses on seascape values as a potential point of contention. In order to establish the range of values carried by the sea, the concept of landscape was applied to the specific setting of the North Sea. A new definition of 'seascape' was developed as a full equivalent of landscape, encompassing physical properties (forms), visual-aesthetic elements as well as the 'sea of the mind'. The empirical part revealed that non-use values play a particular role in assigning value to the seascape, expressed for example in the visual aesthetic qualities of the seascape and the symbolic values assigned to it. Rather than abstract space, the sea is very much a place. Levels of attachment are high, and the sea yields a variety of intangible benefits to local residents. This is an aspect which has so far been neglected in offshore wind planning processes.

Qualitative links were established between particular images of nature, nature ideologies and sea values. These in turn have links to West coast values and with these offshore wind farming values. Values associated with offshore wind farming and moral convictions (such as the belief that renewable energies are relevant and important) are key factors in tipping the balance in favour of offshore wind, even if nature and sea values are also considered important. Certain moral convictions and beliefs about the sea (such as the view that nature is fragile) are more likely to lead to a negative attitude to offshore wind farming. However, unless the underlying value base is very strong and consistent, support or rejection of offshore wind farming is always the result of a complex internal process driven by subjective rationalities.

Since circumstances change, the results described in this study must be interpreted as a snapshot in time, reflecting a particular situation in the case study area and also the particular situation of each respondent at the time of questioning. Nevertheless, the cognitive belief framework presented and the overall approach can readily be transferred to other settings and contexts, enabling cross-cultural comparisons as well as assessment of changing opinions over time. The benefit of the approach is that it leads to better understanding of the positions taken up by stakeholders, facilitating process of negotiation and debate.

Table of contents

Acknowledgements	iii
Related publications:.....	iv
Abstract	v
Table of contents.....	vii
List of figures	xi
List of tables	xv
1 Introduction	1
Constraints of the study	3
Structure and chapters.....	4
2 Background	5
2.1 The development of offshore wind farming in Europe	5
2.1.1 Reasons for pushing offshore.....	5
2.1.2 Support from EU Policy	6
2.1.3 The German context.....	8
2.2 Public acceptance of renewables.....	15
2.2.1 General survey results for renewables.....	16
2.2.2 Acceptance of wind farming and reasons for objection.....	16
2.2.3 Acceptance of offshore wind	17
2.3 Concerns relating to (offshore) wind farming in Germany	20
2.3.1 Visual impact as a local concern	20
2.3.2 The issue of siting.....	21
2.3.3 Drivers of the visual aesthetic argument	22
2.4 Research purpose	23
3 Basic premises for research and case study area.....	26
3.1 Stakeholder views of offshore wind farming on the West coast of Schleswig- Holstein.	26
3.2 Premises for research	30
3.3 Towards a theoretical framework for assessing offshore wind farm attitudes.....	31
3.3.1 Stages in building attitudes to offshore wind farming	31
3.3.2 The role of personal interests and gains.....	31
3.3.3 Values as a central concept	32
3.3.4 Conceptual model for research design	34
3.3.5 Operationalising the conceptual framework: Three blocks of research.....	35
3.4 The case study region	36
3.4.1 Location and administrative structure.....	36
3.4.2 Humans and sea on the West coast: A complex relationship.....	38

3.4.3	Socio-economic character	43
3.4.4	Offshore wind farming on the West coast	53
3.5	Survey design	54
3.5.1	Sampling approach and municipalities selected	55
3.5.2	Sampling within the selected municipalities	58
3.5.3	Random and active group	59
3.5.4	Basic demographic characteristics of the sample	60
4	Values as a driver of acceptance	64
4.1	Some basic concepts	64
4.2	Objects of preference: The things we value	68
4.3	Types of assigned value: How we value objects	69
4.4	Typologies of environmental value	70
4.5	Basic human values and personal value orientations	74
4.5.1	Held values as innate driving forces: origins	74
4.5.2	Held values as innate driving forces: essential characteristics	75
4.5.3	Typologies of basic human (held) values	76
4.5.4	Identifying basic human values	77
4.5.5	Biocentric and anthropocentric value orientations	80
4.5.6	Personal value systems	81
4.5.7	The role of the social environment in shaping and maintaining values	82
4.6	Cognitive belief frameworks	83
4.7	Bringing together different value concepts: A cognitive belief framework for the case study	87
4.8	Eliciting values, beliefs and attitudes by means of a questionnaire survey	90
4.8.1	Basic (held) values	90
4.8.2	General beliefs about nature	92
4.8.3	Rating abstract value bases	93
4.9	Empirical results	94
4.9.1	Basic human values on the West coast of Schleswig-Holstein	94
4.9.2	General beliefs about nature	100
4.9.3	The importance of abstract value bases on the West coast of Schleswig-Holstein	108
5	Landscape and seascape perception on the West coast of Schleswig-Holstein	111
5.1	Constituting landscape	113
5.1.1	The physical/material landscape	116
5.1.2	The immaterial landscape	119
a)	Landscape as a visual-aesthetic concept	120
b)	The internal perspective: Landscapes “made” and landscapes as an emotional construct	123

5.1.3	Comprehensive models for the study of landscape	126
5.2	The sea as a space and the seascape	129
5.3	General associations with West coast, North Sea and sea	132
5.3.1	Origin of data	133
5.3.2	Categorisation.....	133
5.3.4	Comparative analysis of the categories	138
	a) Quantitative analysis	138
	b) Analysis of specific categories	141
5.3.5	Overall assessment	156
	a) Key differences between the three settings.....	156
	b) Towards a more comprehensive model of seascape	157
5.3.6	Values in the settings.....	161
5.4	How residents use the coast and the sea	162
5.5	The relative importance of different values	164
5.6	Synthesis	167
6	Attitudes to offshore wind farms	169
6.1	General associations with offshore wind farming.....	170
6.1.1	Energy.....	172
6.1.2	Economy	172
6.1.3	Aesthetics	173
6.1.4	Emotional	174
6.1.5	Nature conservation.....	175
6.1.6	Other categories	175
6.2	Positions on offshore wind farming on the West coast	176
6.2.1	Absolute positions.....	176
6.2.2	Arguments fielded to support offshore wind farming positions	181
	a) Arguments in support of offshore wind farming in the case study region (pro) ..	181
	b) Arguments against offshore wind farming in the case study region (con).....	183
6.2.3	Feeling directly affected by offshore wind farms	184
6.2.4	The image of nature and attitudes to offshore wind farming.....	186
6.2.5	Consistency of arguments: General attitudes to offshore wind farming and attitudes to offshore wind farming on the West coast	189
6.2.6	The ability to personally profit from offshore wind farms.....	191
6.2.7	Offshore versus onshore wind farms.....	192
6.2.8	Perceived alternatives to offshore wind farming	196
6.3	Specific beliefs about offshore wind farming on the West coast and their relative importance	196
6.4	Summary of results.....	203
6.4.1	Objects of value and assigned values.....	203

6.4.2	Links to basic human values	206
6.4.3	The group of strong active opponents.....	208
6.4.4	The role of the seascape as a value base.....	209
6.4.5	The role of perceived threats in bringing out the importance of values	209
7	Summary of results.....	210
7.1	Key socioeconomic forces at play in the case study area	210
7.2	Conceptualisation of the seascape	211
7.3	Perception of offshore wind farming: Revisiting the hypotheses of the study	214
7.3.1	Assessing the expected impacts of offshore wind farming	216
a)	Pre-existing knowledge	216
b)	Types of expected impacts.....	216
c)	Beliefs influencing the perception of expected impacts	217
d)	Expected gains and losses in the context of values	217
e)	Comparison to results obtained in the stakeholder analysis	218
7.3.2	Evaluating the likely impacts of offshore wind farming.....	221
a)	Visual impact	221
b)	Economic benefits of offshore wind farming	222
c)	The specific offshore setting: Views of nature and ethical considerations	223
d)	Long-term interests and ideals: The role of altruistic values and moral imperatives	224
e)	NIMBYism.....	225
f)	Mistrusts	225
7.4	The cognitive belief framework revisited	226
7.4.1	A profile of basic human value orientations.....	228
7.4.2	General beliefs about nature	230
7.4.3	General beliefs about the sea and sea values	231
7.4.4	West coast values.....	233
7.5.5	Offshore wind values	234
7.4.6	A closer look at bifurcation points and trade-offs	236
a)	General beliefs about nature and general beliefs about the sea	236
b)	Sea values/general beliefs about the sea and general West coast values	236
c)	Beliefs about offshore wind farming	237
8	Conclusion.....	242
	References	246
	Appendix: Questionnaire survey in German and English	266

List of figures

- Figure 1: Map of sea uses in the German EEZ (North Sea) as of August 2002. Source: BSH 2002, Contis Information System.
- Figure 2: Map of sea uses in the North Sea as of April 2012. Source: BSH 2012, www.bsh.de/de/Meeresnutzung/Wirtschaft/CONTIS-Informationssystem/index.jsp, accessed 02/05/2012
- Figure 3: Planned offshore wind farms in the German EEZ (North Sea) as of February 2008. Source: BSH 2008, Contis information system (accessed 09/05/2008)
- Figure 4: Giant wind turbines in front of Timmendorf beach. Would you still come on holiday here? Source: BILD daily newspaper, 19.12.2003
- Figure 5: Action-theoretical model of human-environmental interactions (adapted from Weichart 2008 p.263)
- Figure 6: Conceptual framework of the study
- Figure 7: Location of the case study area within Germany and the North Sea context. Source: Gee 2010, map © Benjamin Burkhard
- Figure 8: Administrative Districts in Schleswig-Holstein as of 31/12/2005. Source: Statistischer Bericht 2005, Statistisches Amt für Hamburg und Schleswig-Holstein
- Figure 9: Natural areas in Schleswig-Holstein. 681 Nordfriesische Marschinseln und Halligen, 682 Nordfriesische Marsch, 683 Eiderstedter Marsch, 684 Dithmarscher Marsch. Unterelbe-Niederung: 671 Holsteinische Elbmarschen. Schleswig-Holsteinische Geest: 680 Nordfriesische Geestinseln, 697 Schleswiger Vorgeest, 690 Lecker Geest, 691 Bredstedt-Husumer Geest, 692 Eider-Treene-Niederung, 693 Heide-Itzehoer Geest. Source: Statistisches Amt für Hamburg und Schleswig-Holstein
- Figure 10: North Frisia before the 1362 storm surge. Source: Naudiet, no year
- Figure 11: North Frisia before the 1634 storm surge which led to the loss of the island of Nordstrand. Source: Naudiet, no year
- Figure 12: Spatial types in Germany. Red circle: Dithmarschen and North Frisia. Light green: very peripheral, rural; medium green: very peripheral, some evidence of urbanisation. Source: BBR, http://www.bbsr.bund.de/nn_103086/BBSR/DE/Raumbeobachtung/Werkzeuge/Raumabgrenzungen/Raumtypen2010/Raumtypen2010.html, accessed 14/06/2008
- Figure 13: Wadden Sea areas of North Frisia and Dithmarschen (Nationalpark Schleswig-Holsteinisches Wattenmeer. Source: <http://www.wattenmeer-nationalpark.de/karte/national.htm>, accessed 08/05/2008.
- Figure 14: Key structural data for Schleswig-Holstein. Source: Statistisches Amt für Hamburg und Schleswig-Holstein 2007
- Figure 15: Location of the postcode areas surveyed (Map: own design based on 2011 administrative boundaries)
- Figure 16: Age distribution in the active and random groups (N = 387, n (r) = 245, n (a) = 142)
- Figure 17: Educational level of respondents (percentage of total returns received). Hauptschulabschluss = secondary modern school qualification (most basic level in Germany). Mittlere Reife = former UK O-levels. Fachhochschulreife/Abitur = higher education entrance qualification/A-levels. Residents were asked to state their highest qualification.
- Figure 18: Distribution of occupational groups found in the random and active groups (N=387, n (r) = 245, n (a) = 142)
- Figure 19: Average household income as estimated by the respondents (N=387, n (r) = 245, n (a) = 142)

- Figure 20: A classification of forest values (adapted from Xu and Bengston 1994)
- Figure 21: The relationship between valuer and object and held and assigned values (adapted from Brown 1984)
- Figure 22: Hierarchy of needs according to Maslow. Re-drawn from http://en.wikipedia.org/wiki/File:Maslow's_hierarchy_of_needs.svg (accessed 06/02/2009)
- Figure 23: A typology of basic human values according to Rokeach (1973)
- Figure 24: A cycle of universal human values (from Bilsky & Schwartz 1994 p. 168)
- Figure 25: A general model of a cognitive belief framework
- Figure 26: A conceptual model for investigating the role of basic values and sea and offshore wind values in shaping attitudes to offshore wind farming (adapted from McFarlane and Boxall 2000)
- Figure 27: Basic value orientations for the random sample (n = 245, category not shown: no answer (less than 1%); disagree = categories "do not agree" and "do not agree at all"; do not really agree = categories "do not really agree" and "agree to a degree")
- Figure 28: Basic value orientations for the active sample (n = 142, category not shown: no answer (less than 1%); disagree = categories "do not agree" and "do not agree at all"; do not really agree = categories "do not really agree" and "agree to a degree")
- Figure 29: Images of nature: Comparison of the random and active groups (percentage answers, n = 245 (r) and 142 (a))
- Figure 30: Images of nature: Comparison of island and mainland residents (percentage answers, n = 119 (island) and 243 (mainland))
- Figure 31: Value types in the case study area: Beliefs about nature in relation to felt responsibility towards nature and biocentric vs anthropocentric view of nature
- Figure 32: Basic value orientations of those that consider nature to be tolerant (n = 209, random and active respondents shown together; only agreement and disagreement shown)
- Figure 33: Basic value orientations of those that consider nature to be capricious (n = 86, random and active respondents shown together; only agreement and disagreement shown)
- Figure 34: Basic value orientations of those that consider nature to be ephemeral (n = 66, random and active respondents shown together; only agreement and disagreement shown)
- Figure 35: Comparison of the relative weight of all categories (percentage of all mentions). N (mentions) = 1293 (West Coast), 1367 (Sea) and 1438 (North Sea)
- Figure 36: A model of the relationships between objects, benefits and meanings in the landscape and seascape.
- Figure 37: Comparative overview of the percentage responses received in the three superordinate categories of objects/things, benefits and meanings
- Figure 38: Frequency of mentions across six value categories in the three settings West coast, North Sea and Sea
- Figure 39: The view of the West coast (WC) and the North Sea (NS) as a part of people's home, as a natural space, an economic space, and a recreational space (N=387, multiple answers possible)
- Figure 40: When did you last take a walk on the shore/when did you last take a boat trip? N = 387
- Figure 41: The relative importance of "life on the West coast values" to random and active group members (n = 245 (random), n =142 (active), multiple mentions possible).
- Figure 42: The relative importance of "life on the West coast values" to island and mainland residents (n = 118 (island), 243 (mainland), multiple mentions possible).
- Figure 43: Comparative positions on offshore wind farming off the West coast of Schleswig-Holstein
- Figure 44: Attitudes to offshore wind farming of island and mainland residents within the random group (n = 237)

- Figure 45: Attitudes to offshore wind farming of island and mainland residents within the active group (n = 142)
- Figure 46: Male and female attitudes to offshore wind farming compared (N = 387). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.
- Figure 47: Attitudes to offshore wind farming and level of education (N = 387). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.
- Figure 48: Attitudes to offshore wind farming and level of income (self-assessment, N = 382). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.
- Figure 49: Attitudes to offshore wind farming across the various age groups (N = 387). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.
- Figure 50: Arguments fielded in favour and against offshore wind farming on the West coast of Schleswig-Holstein, separated into the random (n = 245) and active (n = 142) sample.
- Figure 51: Reasons for feeling affected by offshore wind farms, random and active groups (only those who feel affected, n = 82 (random) and n = 92 (active)), percentage of answers received.
- Figure 52: Do you personally feel affected by potential offshore wind farms? Percentage answers shown according to place of residence (islands versus mainland, n = 118 (islands), n = 243 (mainland)).
- Figure 53: Images of nature and attitudes to offshore wind farming (random group, n = 245).
- Figure 54: Images of nature and attitudes to offshore wind farming (active group, n = 142).
- Figure 55: The importance of attractive landscape in life on the West coast correlated with attitudes to offshore wind farming (random group, n = 245, percentage answers).
- Figure 56: The importance of attractive landscape in life on the West coast correlated with attitudes to offshore wind farming (active group, n = 142, percentage answers).
- Figure 57: The importance of the wide, open sea in life on the West coast correlated with attitudes to offshore wind farming (random group, n = 245, percentage answers).
- Figure 58: The importance of the wide, open sea in life on the West coast correlated with attitudes to offshore wind farming (active group, n = 142, percentage answers).
- Figure 59: Consistency between attitudes to offshore wind farming generally and positions on offshore wind farming on the West coast of Schleswig-Holstein (percentage respondents, n = 245 (random), n = 142 (active)).
- Figure 60: Could you envisage personally profiting from offshore wind farms? Random and active samples compared (n = 245 (r) and 142 (a)).
- Figure 61: Links between the general attitude to offshore wind farming (strongly in favour to strongly against, see Figure 43) and the possibility to personally profit from offshore wind farms. Random and active sample were analysed together (N = 387)
- Figure 62: Comparative positions on onshore wind farming in Dithmarschen and North Frisia
- Figure 63: Attitude to offshore and onshore wind farming compared (random group, n = 245). x-axis: Attitude to onshore wind
- Figure 64: Attitude to offshore and onshore wind farming compared (active group, n = 142). x-axis: attitude to onshore wind.
- Figure 65: Percentage of respondents perceiving alternatives to offshore wind farming, shown against the general attitude to offshore wind farming. Random and active groups together, N = 387
- Figure 66: Beliefs about offshore wind farming: Percentage answers of how offshore wind farming is expected to impact on objects of value. Random and active groups together, N = 387
- Figure 67: Percentage rating of the objects of value affected by offshore wind farming. Random and active groups together, N = 387

- Figure 68: Percentage answers “Did you arrive at your opinions on wind farming based on actual information or more on a gut feeling?” (n = 245 (r) and 142 (a))
- Figure 69: Percentage answers “Have you ever attended any information events on wind farming?” (n = 245 (r) and 142 (a))
- Figure 70: Percentage answers trustworthiness of different sources of information (random group, n = 144; 101 had not provided any data)
- Figure 71: Value groups identified in the respondents
- Figure 72: Physical properties, the aesthetic experience and the seascape of the mind as overlapping constituent elements of the seascape. Landscape and seascape have no clear demarcation, but merge into one another.
- Figure 73: Stages in the formation of an opinion on offshore wind farming.
- Figure 74: A summary of the expected gains and losses associated with offshore wind farming.
- Figure 75: The conceptual model used to investigate the role of basic values and sea and offshore wind values in shaping attitudes to offshore wind farming (adapted from McFarlane and Boxall 2000, see also Figure 26).
- Figure 76: The relationship between basic human values, general beliefs about nature and nature ideologies. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships.
- Figure 77: The relationship between basic human values, general beliefs about nature, nature ideologies and sea values (general beliefs about the sea). Blue indicates strong relationships between the respective elements, lighter blue indicates less strong relationships.
- Figure 78: The relationship between basic human values, general beliefs about nature and nature ideologies, sea values and West coast values. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships. Pink indicates a strong relationship between the elements in question.
- Figure 79: The relationship between all layers of the cognitive belief framework. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships. Orange indicates a strong relationship between the elements in question.
- Figure 80: Trade-offs made by the ‘conservationist type’ leading to the rejection of offshore wind farming
- Figure 81: Trade-offs made by the ‘aesthetic type’ leading to the rejection of offshore wind farming
- Figure 82: Trade-offs made by the ‘clean energy proponent type’ leading to the acceptance of offshore wind farming
- Figure 83: Trade-offs made by the ‘utilitarian type’ leading to the acceptance of offshore wind farming

List of tables

- Table 1: Approved offshore wind farms in the German North Sea and Baltic Sea EEZ (as of 18 February 2009); redrawn from www.bsh.de.
- Table 2: Topics used to defend positions on offshore wind farming, with figures indicating the percentage of use of each argument relative to the total number of arguments used. J = argument in favour of offshore wind farms, □ = argument in opposition to offshore wind farms, ! = condition or demand. Grey lines separate topics mainly used to support offshore wind farms from those mainly used to oppose them and specific demands raised in the context of offshore wind farms (adapted from Licht-Eggert et al. 2008).
- Table 3: Municipalities selected for the questionnaire survey. NF = North Frisia, HEI = Dithmarschen (Figures: 2004 für Dithmarschen, 1.9.2005 für Nordfriesland) Sources: District Administrations of North Frisia and Dithmarschen.
- Table 4: Municipalities selected, questionnaires sent and questionnaires returned. NF = North Frisia, HEI = Dithmarschen (Figures: 2004 for Dithmarschen, 1.9.2005 for North Frisia) Sources: District Administrations of North Frisia and Dithmarschen.
- Table 5: Objects of value commonly associated with the sea
- Table 6: A typology of instrumental and intrinsic values
- Table 7: Wildland values and the potential conflict level associated with them (adapted from Ewert 1995)
- Table 8: Ten universal motivational types and the value measures associated with each (adapted from Schwartz 1992)
- Table 9: Brief value scale according to Stern et al. (1998) (cited in Dietz et al. (2005) p. 351)
- Table 10: Definitions of values and other layers of cognition that may be relevant in the context of cognitive belief frameworks
- Table 11: Options for the compatibility of sea values with offshore wind farming and acceptance/rejection of offshore wind farming
- Table 12: Items from the ESS instrument used in the survey (adapted from Schmidt et al. 2007, translation by the author; in brackets the item codes of the European Social Survey)
- Table 13: Images of nature elicited in the questionnaire
- Table 14: The importance of abstract value bases elicited in the questionnaire
- Table 15: “How important is... for your life at the west coast of Schleswig-Holstein?” (random and active groups taken together, N = 387) (other values not shown here)
- Table 16: Models of different dimensions of landscape (adapted from Stephenson 2007)
- Table 17: Categories denoting objects perceived in the environment
- Table 18: Categories denoting various uses of the environment and associated benefits
- Table 19: Descriptors of “environmental distinctiveness” for the categories of West Coast, North Sea and sea.
- Table 20: Categories denoting specific meanings assigned to the environment
- Table 21: Comparison of terms and concepts mentioned within the category ‘elements and properties of the physical environment’. AM = absolute mentions. Total cat = total categories mentioned. Red = specific landward features.
- Table 22: Comparison of terms and concepts mentioned within the category ‘recreation benefits’. AM = absolute mentions. Total cat = total categories mentioned.
- Table 23: Comparison of terms and concepts mentioned within the category ‘aesthetic visual qualities’. AM = absolute mentions. Total cat = total categories mentioned

- Table 24: Comparison of terms and concepts mentioned within the category 'aesthetic non-visual qualities'. AM = absolute mentions. Total cat = total categories mentioned.
- Table 25: Comparison of terms and concepts mentioned within the category 'Heimat'. AM = absolute mentions. Total cat = total categories mentioned.
- Table 26: Terms and concepts mentioned within the category 'symbolic meanings'. AM = absolute mentions. Total cat = total categories mentioned.
- Table 27: Number of total mentions of selected terms compared across the three settings. The 'top setting' is the setting in which the respective term appears most frequently. Terms that strongly define one setting but not the others are marked pink. Similarities between settings are marked light blue. !!! indicates significant differences between settings. The table counts the exact terms as stated, so the number of mentions is equal to the same number of respondents (only birds is cumulative).
- Table 28: Adjectives or qualitative descriptions used to characterise the West Coast landscape
- Table 29: Comparison of beliefs about offshore wind farming and the importance of objects of value (all respondents together (N = 387), ranking based on the percentage of respondents in the categories "agree" and "very important", respectively)
- Table 30: Trade-offs between offshore wind farming values and sea values
- Table 31: A typology of offshore wind farming values and the overall rating of these values
- Table 32: A typology of seascape values and the overall rating of these values
- Table 33: Trade-offs between offshore wind farming values and sea values
- Table 34: Positions on offshore wind farms: results of different elements of the stakeholder analysis (adapted from Gee et al. 2010)
- Table 35: Topics used to defend positions on offshore wind farming including statements of the local population. Figures indicate the percentage of use of each argument relative to the total number of arguments used. J = arguments in this category predominantly used in favor of offshore wind farms, □ = arguments predominately used in opposition to offshore wind farms ! = condition or demand for lending support to offshore wind farming. n.r. = not relevant (from Gee & Licht-Eggert 2010).



© *The New Yorker*, May 10, 2010

1 Introduction

In most European countries, climate change has provided the context for an ongoing debate over energy generation and the role of renewables in the future energy mix. In Germany, this debate has acquired particular topicality by the decision taken in summer 2011 to phase out nuclear energy. If current plans remain in place, Germany will cease to produce nuclear energy by 2021, seeking to partially offset the resulting shortfall by a roll-out of renewable energies¹. Wind energy as the most mature form of renewable energy generation is set to play a key role. Hopes are particularly resting on offshore wind farming, which got off to a slow start in the early 2000s but is now making steady headway in the German North and Baltic Sea. Key to the continued expansion of offshore wind farming is a convergence of national and international policy trends (leading to a veritable boom in the offshore wind industry in the North Sea as a whole, especially in the UK), a favourable institutional environment such as the feed-in tariffs paid under the German Renewable Energies Act (Deutscher Bundestag 2000), and a broad level of public support. Investment is largely carried by international engineering and utility companies, increasingly concentrating offshore wind expansion in the hands of a few key players. The growing confidence in the offshore wind business is signalled by the fact that several companies have recently moved their operational headquarters from southern Germany to coastal locations in Lower Saxony and Hamburg.

Building on a mature environmental movement and decades of anti-nuclear groundswell, Germany has perhaps embraced renewables more readily than other countries. Investment in onshore wind farms occurred early and comprehensively in Germany, particularly in the structurally weak and wind-rich regions of the northern and eastern federal states. Solar power and PV for private households have also proven popular, helped by governmental incentives and feed-in tariffs but also supported by the general view that renewable energies are an ethical choice.

However, the decision to abandon nuclear energy generation has led to some apprehension with respect to the implications of an all-out “energy turn”. Recent changes in local planning law have increased local debates on how much of what form of renewable is suitable where, and what the advantages and disadvantages and not least the ethical trade-offs of the various options might be. Despite the growing concerns over bioenergy and the impacts this has on crops, land prices and the landscape, wind farming has so far borne the brunt of this debate. Given the scale of planned investments and the high visibility of wind farms in the landscape, citizens are not only counting the monetary costs of wind energy, but also non-monetary costs such as aesthetic impacts on the landscape. What is the price to be paid for supposedly ‘sound’ wind energy, and is this a price worth paying? Other bones of contention include the ability of the technology to deliver enough energy at the right time (linked to

¹ Noch zehn Jahre deutscher Atomstrom, Zeit Online, 27 May 2011, <http://www.zeit.de/politik/deutschland/2011-05/akw-umweltminister-konferenz>

issues such as the development of smart grids and conceivable storage schemes), its impact on the natural environment (such as the impact of wind turbines on birds), and its impact on local communities and perceived quality of life (for residents and tourists alike).

Offshore wind farming, the construction of large-scale wind farms in the North and Baltic Sea, has been billed as a perfect alternative. A long way from potentially precious landscapes and without any direct impacts on neighbourhoods, offshore wind appears ideally placed to take the pressure off the mainland. An expensive and technologically challenging solution for certain, but due to the larger turbine sizes and steadier wind conditions also one that is able to deliver greater and more reliable amounts of energy. Technological development has made considerable progress with the engineering and logistics side of placing wind turbines in the sea, leaving the transport of offshore wind energy from the site of generation to the end user and the associated need for grid expansion the only unresolved issue to date.

But is it really as simple as shifting wind farming from one space and medium to another? Given the many existing marine uses, it is clear that the sea is no blank canvas available to industrial use whenever and in whatever form required. If current plans are realized, large areas of the German EEZ will be taken up by offshore wind farms which will lead to impacts on the marine environment and other sea uses and the values associated with them. Conflicts over sea use are thus pre-programmed, constituted through individual or collective interests, structural conditions (such as the planning and licensing system), and the spatial imaginations of the various stakeholders.

Despite much recent research, many uncertainties continue to be associated with offshore wind farming. Whilst some stakeholder conflicts such as offshore wind farming versus shipping are purely spatial and can probably be resolved by rational technocratic approaches such as marine spatial planning, other lines of conflict are less easy to deal with. This particularly concerns coastal communities potentially affected by offshore wind farming, which are only marginally involved in licensing processes and tend to have little say in siting decisions. To local coastal communities the benefits of offshore wind farming may appear uncertain; conflict lines such as offshore wind farming versus tourism, fishing and nature conservation tend to be fuelled by the unclear consequences of offshore wind farming. This can lead to views of offshore wind farming as an unnecessary risk and even existential threat.

But what exactly lies behind these fears and concerns? Do the uncertainties associated with offshore wind farming mostly threaten utilitarian interests, or are other, less easily quantifiable and even emotional factors at play? What role is played by the sea itself and the mental images and values associated with the sea by local residents? A simple self-test reveals the sea as a carrier of specific and personal values and images not dissimilar to the landscape. The sea is memories of holiday experiences, a setting for recreational pursuits, or recalls previous professional, artistic or imaginative encounters with sun, sand and water. It is likely that attachments have formed to particular aspects of "sea", which we might seek to revisit again and again. If we ask ourselves honestly, we would probably find ourselves reluctant to give up these specific values should we think them under any form of threat, all

the more so if our attachment to them runs deep. At the very least, if given the choice, we would want to ask very carefully whether the trade-off is worthwhile and whether giving up these values will give us something even more valuable in return.

This study is dedicated to exploring local attitudes to offshore wind farming and the factors that may lead to different outcomes in individual mental trade-offs. Since many conflicts over onshore wind farming arise over landscape-related issues, a central aspect of this study is to investigate whether the seascape represents a marine equivalent of the landscape. A key aim of the study is thus to contribute to better understanding of the seascape, eliciting the constituting elements of “seascape” in the case study region and the values potentially threatened by offshore wind farming. The study also asks whether specific local dilemmas may emerge over offshore wind farming in a region where onshore wind farming has already left a considerable mark on the landscape.

Views of the seascape, however, are unlikely to fully explain attitudes with respect to offshore wind farming. People with similar views of the seascape might still come to different conclusions with respect to the desirability of offshore wind farming. A role is probably played by external factors, including prior knowledge of the proposed new technology, the promise it carries with respect to employment, or general willingness to support renewables. Literature on environmental values suggests that attitudes to offshore wind farming could also be related to the wider values people ascribe to the sea, the images they hold of nature, and the beliefs they have about the importance of these values. Although some public survey results exist on offshore wind farming, these fall short of probing such deeper driving forces that lead to the formation of individual attitudes. A significant part of this study is thus dedicated to exploring the links between personal values, images of the sea and offshore wind farming from this more theoretical, value-based perspective.

The overall aim of the study is to use a case study based, explorative approach to test a broader conceptual framework which can be transferred to other renewable contexts. The theoretical framework contributes to explaining why individuals may translate the uncertainty associated with offshore wind farming into risk or opportunity, or why some consider the risk worth taking while others do not. It thus provides a new approach to researching the acceptance of renewable energy options which goes beyond mere opinion surveys or NIMBY-based discussions. It is also innovative by focusing on the sea as a value base that has so far been under-researched.

Constraints of the study

The purpose of this research is to unravel the complex bundle that is offshore wind farming and the values and preferences associated with the sea in local coastal residents. It consciously separates the views of ordinary people from the “official” view of offshore wind farming put forward by politics and the industry or the view of groups such as environmental NGOs, which was investigated in a separate study (referred to in chapter 2, Gee et al. 2006, Licht-Eggert et al. 2008).

The empirical basis is a non-representative questionnaire survey of local residents in the administrative districts of Dithmarschen and North Frisia. Although non-representativeness can be interpreted as a constraint, the point here is to establish and test a theoretical framework for tracing the nature of the connections that exist between offshore wind farming and sea values. Results should therefore be understood as a pointer for future, more representative investigations.

Since no large-scale offshore wind farms have yet been built in Germany, it must also be emphasized that this research is explorative in that it is concerned with *expectations* of offshore wind farming and *imagined impacts* rather than *ex post facto*. Given this anticipatory setting, and given the lack of tangible comparable examples of offshore wind farming in practice (with the exception of a nearby offshore wind farm in Denmark), analysing arguments fielded by local residents *vis-à-vis* offshore wind farming is doubly intriguing.

Another point is that this is a local study, a snapshot that does need to be seen in its particular temporal and geographical context. Research was carried out in the years 2005/2006, and the description of the context also refers to that period in time. Results must therefore be interpreted from within that period, although the situation in the case study area remains largely unchanged and offshore wind farming is only slowly gathering pace in Germany. This makes Germany quite distinct from other European countries such as the UK, where recent years have seen a remarkable expansion of offshore wind farming.

Despite these constraints, the author believes that results can hold valuable lessons for the development of offshore wind farming and the expansion of sea uses generally. If current trends are to be believed, the sea is undergoing considerable change already, moving from a largely natural space characterized by fleeting uses to an increasingly industrial space characterised by a dense mix of fixed uses (Gee et al. 2006, Schultz-Zehden et al. 2008). This trend, and with it likely conflicts of use, is widely considered to become more acute as new forms of large-scale sea use develop, potentially requiring new forms of planning and higher degrees of participation in decisions concerning the sea.

Structure and chapters

Chapter 2 sets the scene by giving an overview of the development of offshore wind farming in Europe and Germany, leading up to the state of developments in the German North Sea in 2006. Chapter 3 presents the research questions, the methodological approach that was chosen and an overview of the case study region. Chapter 4 is concerned with environmental values, presenting a theoretical overview as well as the first survey results. Chapter 5 deals with definitions of landscape and seascape and presents local views of the seascape. Chapter 6 then takes a look at offshore wind farming and relates local views to personal values, sea values and views of the seascape. Results are summarized and a conclusion is offered in chapter 7.

2 Background

Offshore wind farming is a relatively recent arrival in the European renewables scene. Judging by the investments taken by countries such as the UK or Denmark, it is a technology considered to hold great promise in terms of the energy yield to be achieved. However, on the West coast of Germany's most northerly state of Schleswig-Holstein, the prospect of offshore wind farming has not been greeted with universal enthusiasm. Although there is strong support of offshore wind farming at the regional political level (mostly driven by the desire to encourage economic investment), and although the idea of a citizen's offshore wind farm has been moderately successful, a local citizens group campaigning against offshore wind farms is drawing considerable attention in the local media and local support. Judging by some accounts in the media, offshore wind farming appears to have become an emotionally charged issue in the case study region which draws both supporters and strongly voiced opponents. It is this constellation of local contention that made the West coast an interesting case study in the first place; strong views backed by strong beliefs can be expected on the part of the local inhabitants.

The West coast of Schleswig-Holstein, however, does not exist in isolation. Before considering the case study region in more detail, it is useful to understand the current context of offshore wind farm development in Germany and specifically in the North Sea. It is also helpful to understand the barriers to offshore wind expansion, as well as the specific research needs arising from this.

2.1 The development of offshore wind farming in Europe

2.1.1 Reasons for pushing offshore

Since its beginnings in Europe in the 1990s offshore wind farming has been promoted on the back of an apparent dual advantage. Higher and more predictable wind speeds offshore combine with the ability to avoid potential conflicts with other land uses, providing a convenient alternative to often contentious wind farm projects on land. Although it would be naïve to assume a conflict-free environment altogether – conflicts have already arisen between offshore wind farming and shipping, fishing and marine nature protection, for example - it is certainly true that offshore wind farming has become a highly popular renewable. This is the result of a chance convergence of a number of driving forces. The most obvious of these is the on-going debate on climate change, which has received considerable impetus from publications such as the Stern review (Stern 2006) and led to high political support for renewables in general. Another is that many environmental organisations are finding it difficult to argue against offshore wind farming, firstly because there are few good reasons against offshore wind farming in principle and secondly because they are caught in their own campaigns for the expansion of the renewable energy base (see for example Byzio 2005). Few negative impacts of offshore wind farms have become apparent to date; on the contrary, monitoring carried out in Denmark between 1999 and 2006 for

example has shown that turbine foundations and scour protections can act as sanctuaries for vulnerable sea bed species, increasing biodiversity through increases in habitat structure. This has led the Danish Energy Authority to conclude that it is possible to run offshore wind farms in an environmentally sustainable way and that “offshore wind farms stand out as attractive options for the development of sustainable energy, as long as authorities and developers respect the vulnerable marine environment” (Danish Energy Authority 2006, <http://www.ens.dk/sw42947.asp>).

On top of what might be called external or international drivers, internal or country-specific drivers also play a role in making offshore wind farming popular. Apart from national targets such as sustainability or climate targets, it is particularly financial incentives such as the Renewable Energies Act (2000) that have made offshore wind farming an attractive investment opportunity which is increasingly taken up by large international energy companies. Better grid connection and the designation of suitable areas for offshore wind farming have also contributed. A key argument for national and in particular regional governments, however, is another dual or even triple benefit, which would have offshore wind farming not only to help reduce CO₂ emissions, but also generate much-needed jobs and technological innovation. Around 70,000 people are employed by companies in the German wind industry already, with offshore developments expected to generate another 20,000 jobs (BMU 2007). This is a particularly attractive proposition for coastal regions, many of which are structurally weak and continue to suffer from a vicious circle composed of lack of opportunities, high unemployment and negative population growth. It is not surprising that offshore wind farming has come to be perceived as new lease of life both for rural and industrial regions such as ports. Lower Saxony, Hamburg, Bremen, Schleswig-Holstein and Mecklenburg-Western Pomerania all developed sea-based visions for economic growth and innovation (for example, Schleswig-Holsteins programme “Sea our Future” (Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein 2004), which set ambitious targets for maritime development and new marine industries. An indication that this has hit a nerve is the wide range of networks that are beginning to spring up, which in the specific case of offshore wind bring together plant manufacturers, assembly firms, suppliers, port management companies, shipbuilders and logistical specialists. What emerges thus is an unusual coalition of interest. Pushed by various convergent driving forces, members of this coalition are actively pushing for an expansion of offshore wind farming. Offshore wind is therefore an international as much as a national project.

2.1.2 Support from EU Policy

In 2007, the total offshore capacity in Europe amounted to 1079 MW, with Denmark (409 MW or 39%) and the UK (404 MW or 37%) representing the largest suppliers (EWEA 2008). Representing around 2% of the cumulative installed capacity of wind power in the European Union, this is projected to significantly increase in 2008-2012 when planned projects in the UK and Germany become operational. Given that wind markets in Europe are still dominated by onshore developments and that only very mature markets such as Germany, Denmark, and the Netherlands are so far preparing for large-scale offshore wind developments,

significant room for growth still seems to exist. Ambitious predictions are made by industry: Developing less than 5% of the North Sea surface area would enable offshore wind to supply roughly one-quarter of the EU's current electricity needs, and given the success of certain energy efficiency measures, offshore wind could meet more than 4% of EU power consumption (EWEA 2007). Is offshore wind farming then poised for a real take-off, and what does the future hold for offshore wind in the specific German context?

The EU has created a highly favourable political framework for offshore wind farming. In 2007, it agreed to a binding target where 20% of the EU's overall energy consumption has to be derived from renewable sources by 2020. Differentiated targets have since been put forward for each EU member state based on the per capita GDP. Offshore wind is considered one of the key technologies for achieving these targets. In its 2007 Strategic Energy Review, the European Commission states that wind could contribute 12% of EU electricity by 2020, one-third of which is likely to come from offshore installations. Despite the considerable enthusiasm, member states are also encouraged to be realistic in their estimates of what can be realised. 60 GW of installed capacity are considered achievable by 2020 EU-wide (Commission of the European Communities 2007a).

Since 2004, important debates have taken place that set out how the EU seeks to encourage speedy development of offshore wind farming. Two significant strands are the so-called Egmond Process (2004), resulting in the Declaration of the EU policy workshop on the development of offshore wind energy, and the Copenhagen Strategy (2005), which is the result of a European Policy seminar on Offshore Wind Power. The most recent development is the 2007 Berlin declaration on offshore wind power deployment, which was drafted under the German EU presidency. The EU Blue Book and Maritime Strategy also explicitly refer to offshore wind as a key marine use.

Although long-term prospects for offshore wind power are promising, there are still a number of challenges in terms of technological performance, lack of skilled employees, a shortage of appropriate auxiliary services (e.g. crane vessels), impact on the local environment, competition for space with other marine users, compatibility with the European grid infrastructure and secure integration into the energy system. The main challenges have been identified by industry as follows:

- a “one-stop shop office approach” - the convenience of defining division of responsibility among different layers of the public administration in Member States;
- a need for long-term grid planning;
- the importance of more efficient consenting procedures, which build on past experience and are in proportion with the scale of the project;
- a need to ensure good quality assessments and clear rules for allocation of grid costs; and
- the establishment and use of marine spatial planning instruments to reach optimal site selection (EWEA 2008)

In order to speed up developments, the Berlin Declaration has called upon the Commission to consider a project identifying risks and barriers to the large scale development of offshore wind power in Europe. A European Action Plan for offshore wind power in Europe is now being developed as proposed in the Copenhagen Strategy including national targets for capacity in 2020. The Commission is also encouraged to consider opening up the EU structural funds to the deployment of offshore wind power and cross border offshore grids, possibly including necessary onshore - investments, e.g. in the grid. Last not least, the Commission is called upon to encourage further streamlining of consenting procedures for offshore wind farms, providing greater planning security and easier access to projects for potential investors. From an EU point of view, therefore, the development of offshore wind farming is considered a priority and is actively promoted as an environmentally friendly and innovative maritime technology.

Apart from the issue of renewable ocean energies, several policies for marine areas have emerged at EU level. While the EU Integrated Maritime Policy (IMP) stresses the role of marine areas for economic development and (sustainable) anthropogenic activities (Commission of the European Communities 2007b), the Marine Strategy Framework Directive (MSFD) focuses on the “Good Environmental Status” of Europe’s seas (European Community 2008). Within these policies Maritime Spatial Planning (MSP) emerges as a new instrument for managing the increasing diversity of marine uses. However, discussions around MSP show the need for a more fundamental debate on where future priorities for marine use should lie and for a broader debate on visions for marine areas within society and politics, not least on renewable energy generation in the sea. This debate needs to recognize and build on people’s interests as much as on people’s perception of the sea and underlying attitudes and values (Kannen et al. 2010 p. 170ff).

2.1.3 The German context

Germany is one of the few European coastal states where offshore wind farms are only just beginning to be built. This is not due to a lack of political will. On the contrary, national policies such as the 2005 National Climate Protection Programme and incentives such as the 2000 Renewable Energies Act provide fertile ground for the construction of offshore wind farms. Nationally, Germany has set itself a target to increase the proportion of power generated from renewable energies to at least 12.5% by 2010, reaching at least 20% by 2020. In terms of primary consumption, the proportion of renewables is set to increase incrementally, going up by 4.2% annually compared to the base year of 2000 and reaching a share of 50% by 2050 (Die Bundesregierung 2004). The Environment Ministry believes that even more ambitious targets are feasible.

Much of this, so government believes, can be achieved by investing in wind energy. Since capacities on land are limited, hopes are once again riding on offshore. This was expressed as early as 2001 in a position paper drafted by the German Environment Ministry, which calls for gradual expansion of offshore wind capacities in the German North Sea and Baltic Sea (BMU 2001). Currently, the overall proportion of electricity generated from wind power is set

to increase to 25% by 2030, of which offshore wind would supply 15%. Optimistic scenarios predict an installed offshore output of up to 12,000 MW by 2020, with a long-term target of up to 25,000 MW by 2030 (BMU 2005).

In line with these targets, the German Government and Bundestag have implemented a range of measures aimed at promoting construction offshore. In 2004, the Renewable Energies Act was amended, guaranteeing a feed-in tariff of 9.1 cents/kWh to electricity from offshore wind farms that commence operation prior to the end of 2010. To provide an added incentive for speedy commencement of construction, the feed-in tariff is set to decrease by 2% per year from 2008 onwards. The feed-in-tariffs are payable for a period of twelve years, but this can be extended depending on distance from the coast and water depth. Upon expiry of the deadline, the rate will be reduced to 6.19 cents/kWh, with feed-in-tariffs payable for 20-year period in total. The Infrastructure Planning Acceleration Act forces grid operators to provide grid connections for offshore wind farms whose construction has been commenced prior to 1 December 2011. This means that offshore wind farm operators, theoretically anyway, enjoy equal status with their onshore counterparts who are already able to utilise the existing grid connections.

So why is offshore wind in Germany off to a slow start? "It's long been known what ails the German offshore business: The machines have to be located far outside the sensitive coastal region, up to 100 km from shore, in water depths from 20 to more than 40 metres", states a recent article in a magazine published by the German Wind Energy Association (BWE) (Arzt and Weinhold 2007 p. 26). This makes German offshore wind a costly proposition. Although there are technical solutions for problems posed by construction far out in the sea, it is difficult to carry out a detailed evaluation of the economic viability of such projects. Estimates are that one megawatt of offshore wind power capacity costs € 2.65 million to install in German seas, which is about a third more than UK offshore projects and twice as much as a German onshore wind project (ibid). Despite the provisions made above, grid connection is still expensive, especially since every wind farm needs to plan for its own connection. On land, no provisions have been made for cable routes, making the landward expansion of the grid a slow administrative process. The costs of offshore wind farms are currently higher than what can be recouped from the provisions made by the Renewable Energies Act, contributing to an overall reluctance of credit institutions and insurance companies to provide upfront cash.

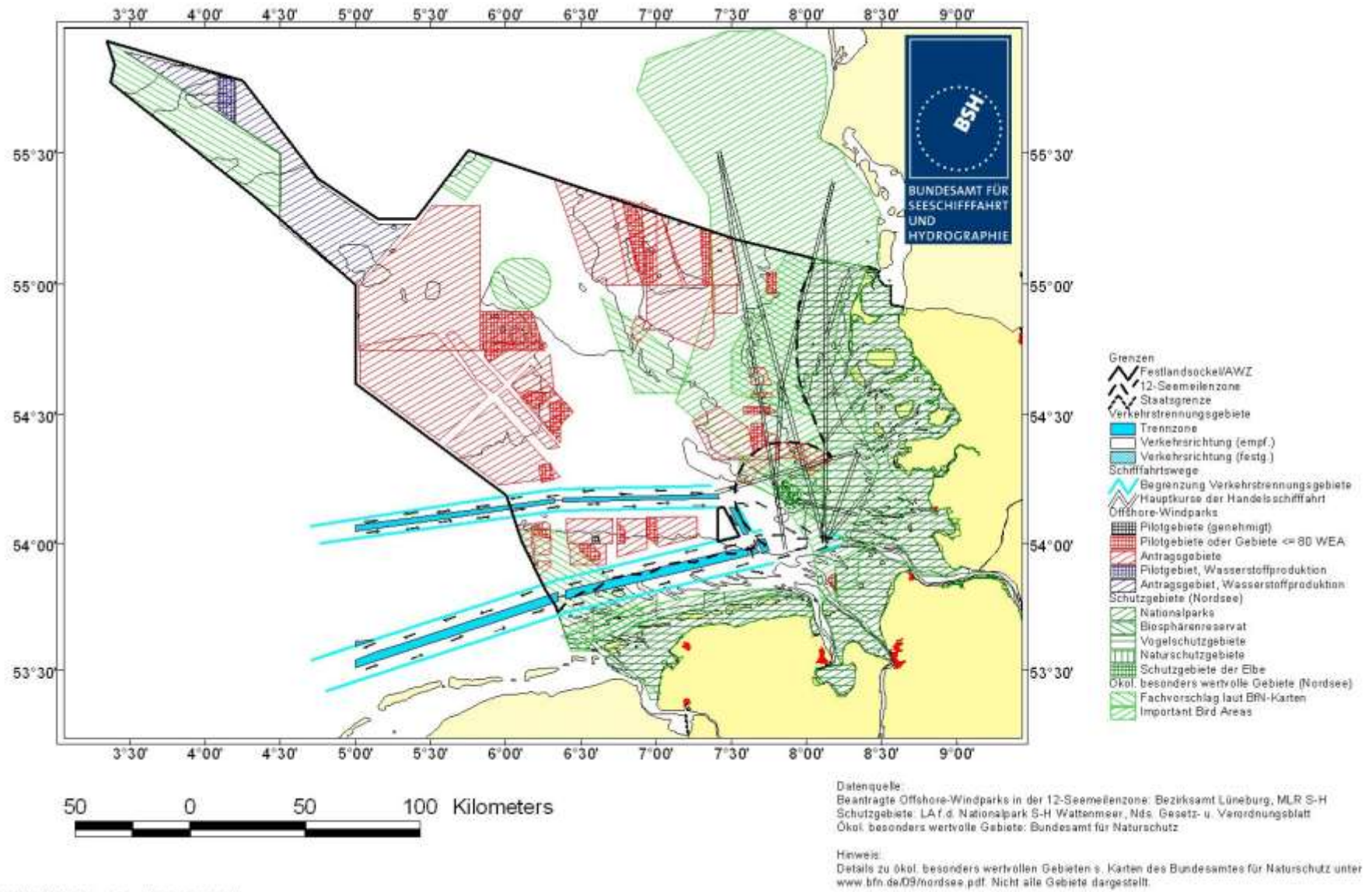
On the North Sea coast, offshore wind farms have to be placed outside the Wadden Sea National Park. This is the result of a bargaining process between potential operators, planners and conservationists, which not only involved the siting of the wind farms themselves, but also the difficulty of routing of their cable connections through the National Park onto the mainland. The Wadden Sea National Park is a wide belt of protected area that stretches all the way from Denmark to the Netherlands; nature conservation and ecosystem integrity are clear priorities here over other forms of resource use. Although there is a price to pay in terms of more expensive and delayed construction, this solution could also be interpreted as a win-win-situation: Wind energy operators can justly claim that they are making every effort to respect the marine environment, whilst nature conservation interests

can demonstrate that sensitive siting of offshore wind farms is possible. To their sometimes sceptical constituency, conservation organisations can therefore show that it is possible to achieve the dual aim of protecting the marine environment and generating renewable energy offshore.

Bringing together marine conservation interests and offshore wind in the German seas has also been a long and difficult process for planners. Far from being an empty expanse of water, German seas are busy places where space is in increasingly short supply and where conflicting demands on space abound. When offshore wind farming first arrived on the scene, planners were faced with the dual task of not only allocating marine space in a fair and equitable manner, but also developing a planning approval procedure and assigning responsibilities for that planning and approval process. Wind farms in coastal waters are subject to a different legal framework than wind farms in the Exclusive Economic Zone (EEZ). In Germany's coastal waters, i.e. the 12 nautical mile zone, the licensing of offshore wind farms is the responsibility of the respective state ministries. The spatial planning system, extended to coastal waters in an amendment of the federal Spatial Planning Act, is of particular significance here since it governs the provision of 'suitable areas' for offshore wind farms and sets aside other areas for other uses. Only one licensed offshore wind farm currently exists in coastal waters at all, which is situated in the Baltic Sea.

The construction and operation of offshore wind farms in the Exclusive Economic Zone (EEZ) is based on the Federal Maritime Responsibilities Act in conjunction with the Offshore Installations Ordinance (SeeAnIV). These state that the construction, operation and significant alteration of fixed or floating structural or technical equipment for the generation of energy from wind must be licensed by the Federal Maritime and Hydrographic Agency (BSH). The licence must be refused if the plant impairs the safety and passage of shipping traffic or poses a threat to the marine environment, such as contamination or risk to migratory birds. Before issuing a licence, the BSH must obtain the approval of the responsible local Hydrography and Shipping Directorate. An environmental impact assessment is required for offshore wind farm projects, but simpler and faster licensing procedures apply to offshore wind farms that are sited in areas that have been designated as 'areas suitable for offshore wind farming'. Initially, planners envisioned that much of the sea (always referring to areas outside the National Park) could be regarded as suitable areas for offshore wind, but technical and financial constraints and pressure from other sea uses have led to only some of these eventually being selected. Fig. 1 and 2 show the progression of maps from 2002 to 2012 (www.bsh.de)

Figure 1: Map of sea uses in the German EEZ (North Sea) as of August 2002. Source BSH 2002, Contis information system



BSH / M5212 - Stand: 20.08.2002

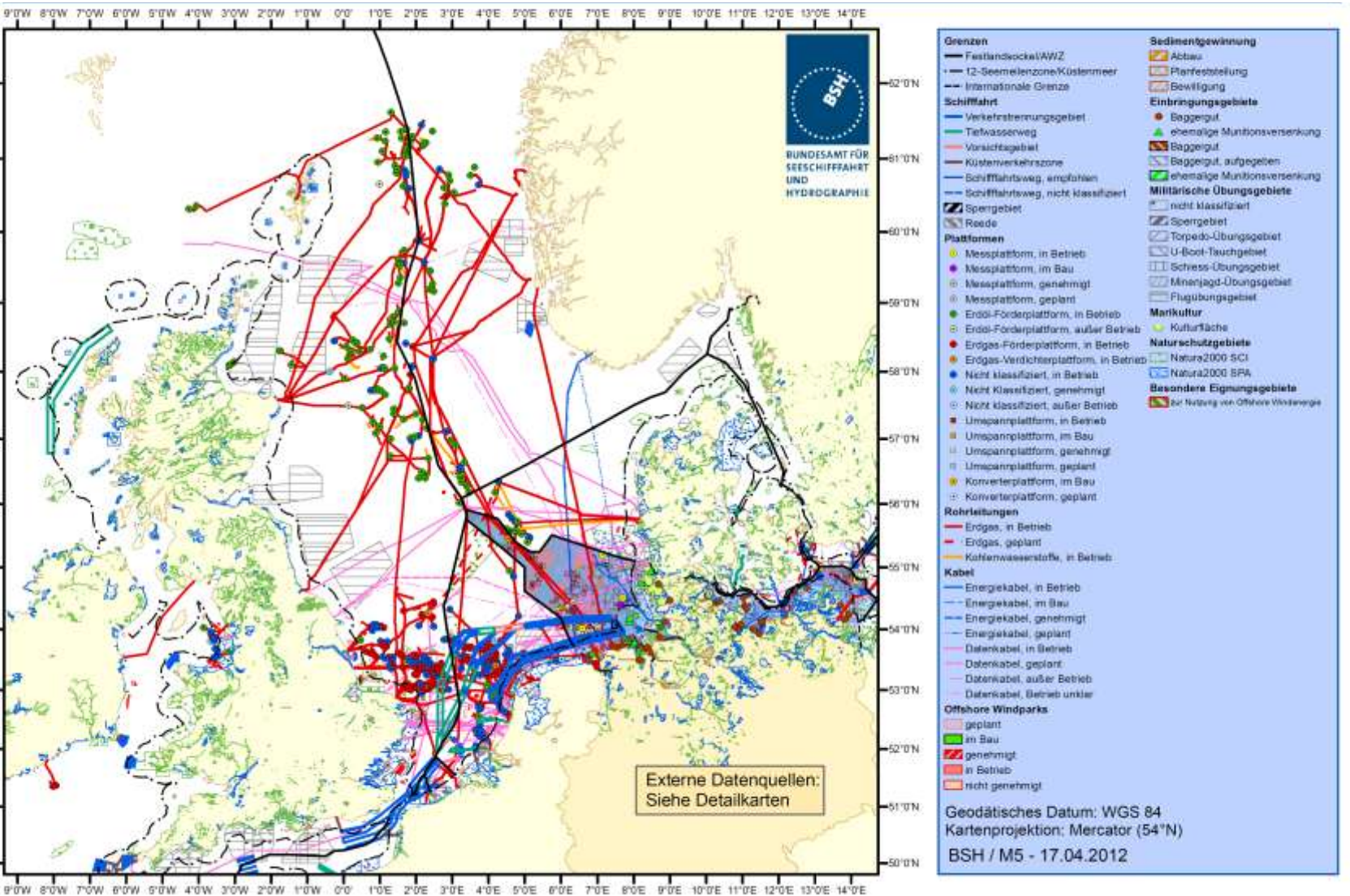


Figure 2: Map of sea uses in the North Sea as of April 2012. Source: BSH 2012, www.bsh.de/de/Meeresnutzung/Wirtschaft/CONTIS-Informationssystem/Index.jsp, accessed 2/05/2012

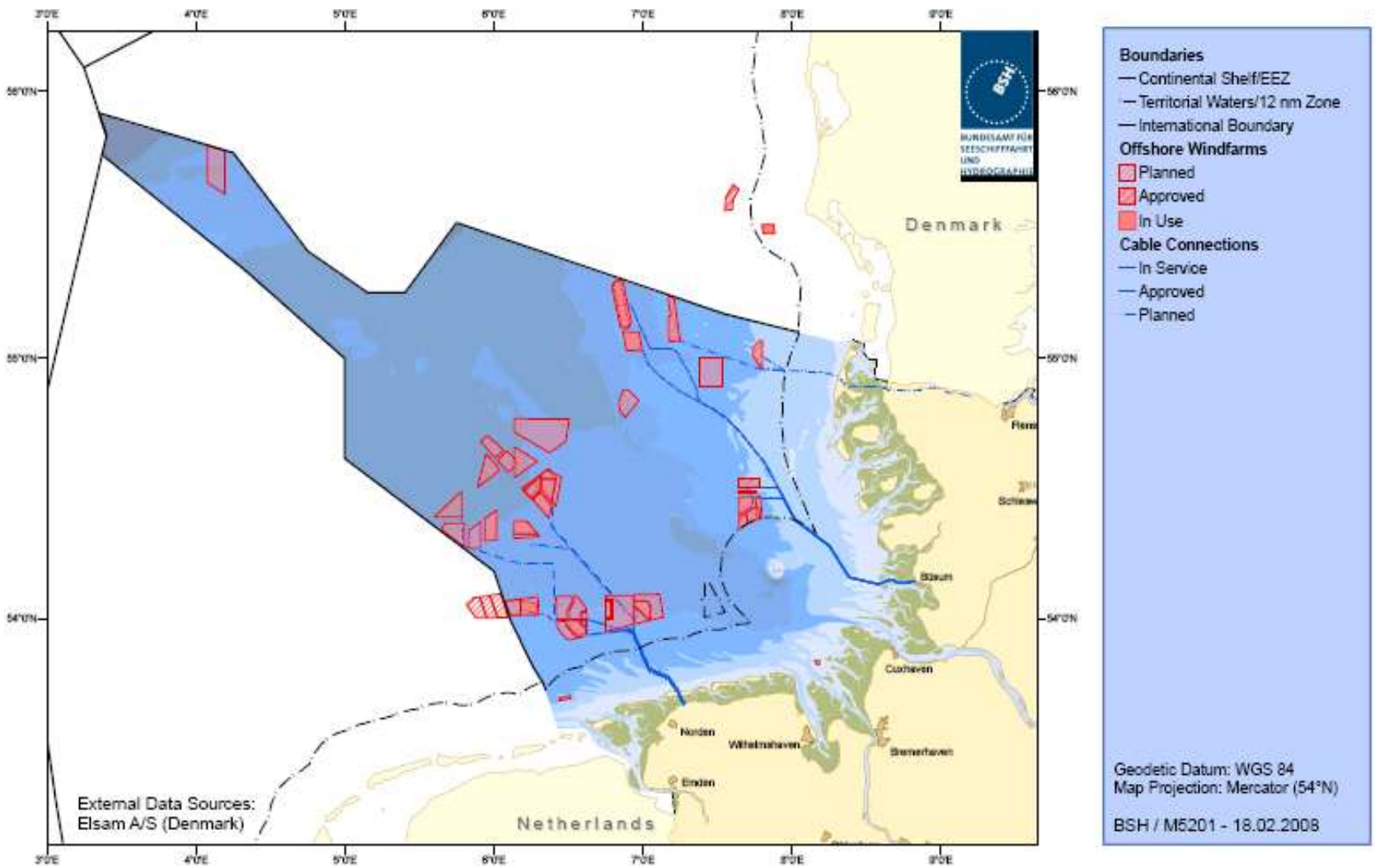


Figure 3: Planned offshore wind farms in the German EEZ (North Sea) as of February 2008. Source: www.bsh.de. Cortis information system (accessed May 2008)

In September 2009, the German cabinet approved plans to dedicate special zones in the North Sea EEZ to house up to 40 offshore wind farms. The plan involves setting aside zones between 12 and 200 kilometres offshore. Of the 40 wind farms, 30 would be in the North Sea and 10 in the Baltic Sea. Of these, 25 have already received approval: 22 in the North Sea and three in the Baltic Sea. At present, approval is restricted to so-called pilot areas with a maximum of 80 turbines, implementing a staged strategy of expanding offshore wind (allowing technology to be tested and also better assessment of the impact of offshore wind farms on the marine environment) and reaching maximum expansion step by step.

Table 1: Approved offshore wind farms in the German North Sea and Baltic Sea EEZ (as of 18 February 2009); redrawn from www.bsh.de

Wind farm	Approved number of turbines/ total turbines planned	MW/turbine	Total capacity in MW *	Water depth (metres)	Distance from the shore (km)
North Sea (Exclusive Economic Zone (EEZ))					
Alpha Ventus	12/12	5		28-30	43
Amrumbank West	80/80	5	400	20-25	35
Bard Offshore I	80/320	3-5		39-41	87
Borkum Riffgrund	77/180	3-5	231 (746)	23-29	34
Borkum Riffgrund West	80/458	2.5-5	280 (1800)	30-35	40
Butendiek	80/80	3	240	16-22	35
DanTysk	80/300	5	400 (1500)	up to 30	45
Delta Nordsee	48/251	4-5		25-33	40
Enova Offshore Ems-Emden	1/1	4.5		3	< 10 m
Globatech I	80/320	4.5	4000 (1200)	39-41	75
Gode Wind	80/224	3-5		26-35	45
Hochsee Windpark Nordsee	80/508	n.s.		up to 39	75
Meerwind	80/270	5		22-32	15/80
Nördlicher Grund	80/402	max. 5	400 (2010)	23-40	86
Nordsee Ost	8	4-5	400 (1250)	19-24	30
Offshore Windpark Nordergründe	25/25	5		2-18	13
Sandbank 24	80/980	3-5	400 (4720)	30-40	100
Wilhelmshaven	1/1	5		5	< 10 m

Baltic Sea (Exclusive Economic Zone (EEZ))					
Kriegers Flak	80/80	3-5	400	20-40	31
Ventotec Ost 2	50/200	3		21-34	104
Arkona Becken Südost	80	5	400	21-38	34

The planning approval procedure for offshore wind farms is a complex one that takes place in several stages. Both the general public and other stakeholders are involved in a bid to take into account their interests early on and reduce conflicts of use. In a first round, it is limited to statutory consultees at the federal level. These are public authorities and institutions with a national remit in the marine environment, including authorities and companies responsible for shipping safety, marine aggregate extraction, telecommunication, pipeline construction and marine nature conservation. As with any other form of offshore installation, there is a presumption that developments must go ahead unless legitimate objections are raised. Whilst the principle of offshore wind farming cannot therefore be questioned, modifications can be suggested to any proposals submitted, such as restricting the size of offshore wind farms or suggesting alternative locations. Once these actors raise no further objections, a second round of consultation begins. Further actors are now included, mostly comprising national or regional associations, organisations or interest groups and local district administrations. In this second round of consultation, decisions concerning the size and siting of offshore wind farms can no longer be influenced, and it has been suggested that the second round of consultation is thus purely cosmetic (Bruns & Gee 2009). The last stage of the approval procedure is concerned with informing the public. This mostly takes place through notices placed in national and local newspapers. For a certain period of time, the public can also view the application documents and submit comments as a private individual (Licht-Eggert & Gee 2006).

2.2 Public acceptance of renewables

Given the apparent contradiction between high support for renewables on the one hand and sometimes fierce local resistance on the other, a growing body of academic work has emerged that specifically deals with barriers to acceptance. The socio-political sphere is one focal point of research, with key impediments comprising institutional arrangements (Wolsink 2000), public resistance to particular wind farm schemes (Devine-Wright 2005a, 2005b, Wolsink 2006, Bell et al. 2005), or other dimensions of the local politics of planning (Toke 2005). Public opinion has been shown to be a key area of argumentation between regulators, developers and objector interests, with each using different portrayals of wind energy and varied claims of public support to endorse their respective positions in the public debate (Hagget and Smith 2004, Szarka 2004, Devine-Wright and Devine-Wright 2006). This section provides an overview of public opinion of renewables in Germany and elsewhere.

2.2.1 General survey results for renewables

Public acceptance is widely considered a key for the future development of renewables in Europe. In 2007, an EU-wide survey confirmed widespread public support for renewable energy sources (European Community 2006). The survey differentiated between various energy sources and asked citizens to rate the desirability of each in their respective countries. 80% support the use of solar energy, 71% wind energy, 65% hydroelectric energy, 60% ocean energy (defined as tidal/wave/marine currents) and 55% biomass energy. In comparison, 42% of EU citizens appear in favour of the use of gas and about a quarter accept the use of oil (27%) and coal (26%). Nuclear power divides public opinion as 37% express their opposition towards this energy form. Looking specifically at wind energy, the barometer found that support for wind energy was highest in Denmark, with 93% of respondents in favour and virtually no opposition. In Germany, 71% were in favour, with 21% undecided and 7% opposed (the remainder did not know). In the UK, where specific wind farm proposals have been highly contentious, only 63% are in favour and 5% are opposed. An interesting correlation was noted in that the greatest supporters of wind energy were those that are also concerned about reducing energy consumption in their country. A third of respondents spontaneously associated energy issues with energy prices first. Emphasis of energy prices is even found in a group of so-called “environmentally oriented” respondents who associate energy issues more often with the environment, a fact that the authors explain with the sharp rise of energy prices at the time of the survey. By 2035, respondents expect that use of fossil fuel will decrease significantly, with renewable energies taking up the shortfall, in particular solar and wind energy. The authors argue that this shows the perceived potential of renewable energy sources across the EU.

2.2.2 Acceptance of wind farming and reasons for objection

Many national surveys have been carried out to chart public opinion on renewable energies generally and wind farming in particular, both with and without explicit reference to offshore wind farming. Throughout Europe, there is a substantial public majority in support of wind farming, with wind energy clearly preferred over other energy options such as coal or nuclear. A 2006 survey done in the UK revealed that 82% are in favour of wind power and 59% would be happy to live within 5 km of a wind power development (www.berr.gov.uk, last accessed 12 January 2008). The industry itself likes to emphasise that public acceptance of wind farming is much higher than generally assumed. On its UK website, E.on states: “The results of surveys into public attitudes to wind farms are remarkably consistent. They typically suggest that 70-80% of the UK public support wind farm development. (...) Those who oppose wind energy typically make up only 8-16% of the population. It’s this minority who often lead resistance to wind developments. Following construction, the level of opposition generally decreases whilst the level of support rises” (<http://www.eon-uk.com/generation/publicattitudes.aspx>). Judging from surveys carried out in France, Spain, Germany, the UK, Denmark and Sweden, the most convincing arguments in favour of wind energy appear to be that it is non-polluting, sustainable, independent and able to create local income and jobs (EWEA 2003).

There is an interesting difference between the perception of wind farming generally (such as perception in the general population), perception by local residents before the installation of a wind farm and perception by local residents after installation. It is well known that high regard of wind power generally does not automatically translate into local acceptance. Given the apparently convincing macro-environmental benefits of renewables, the strength of local opposition movements has sometimes come as a surprise to developers. While the benefits of wind farming are counted at a wider global level, the costs appear to be counted most at a local level.

In Germany, one of the most common reasons quoted for rejecting new wind farm proposals on land is the reduction in the value of existing landscapes (Hoppe-Klipper and Steinhäuser 2002). Often however, patterns of perception change once wind farms are built, and perception is not uniform either. In France for example, in a national survey carried out in 2002, 63% of the general public thought that wind turbines would make the countryside less attractive, but in a separate survey carried out in parallel in the Aude region, 55% of residents living near a wind farm thought that wind turbines were aesthetically pleasing. In Spain, various studies carried out in different regions between 2001 and 2003 show that landscape impacts of wind farms are considered a negative effect, but this does not appear to outweigh the perceived advantages associated with wind farms such as their providing a clean energy source (EWEA 2003). In Germany, a poll carried out on the North Sea coast in 2005 found that 27% of residents and tourists in coastal communities had a positive attitude to wind farms, with another 38% confirming a neutral attitude. The study showed that attitudes were more positive in younger respondents, but also showed that attitudes became more positive the further respondents lived away from a wind farm. Noise was a significant argument against wind farms (Vogel 2005). Siting and proper planning do appear to be crucial: The 2002 German EMNID poll, which surveyed the general population, showed that 88% of those questioned supported the construction of more wind farms in Germany, but only as long as certain planning criteria are met. Expectations prior to any direct experience of wind farm construction and operation generally appear to be worse than the actual fact. In Scotland, a 2003 poll showed that people's negative expectations of wind farms (both construction and operation) were not confirmed or were not as bad as they had thought (Braunholtz 2003). Surveyed in a parallel poll, tourists in Scotland were more critical of the visual impact of wind farms, but 63% said this would not affect their decision to holiday at a particular place. Another common finding is that consultation with local communities is essential, especially in rural areas where particularly high value is placed on the landscape amenity. Acceptance is more likely where there has been a clear assessment of the impacts of a proposed wind farm, and the mitigation measures have been properly explained (EWEA 2004).

2.2.3 Acceptance of offshore wind

Public acceptance of offshore wind farming has been surveyed far less frequently than that of wind farming on land or wind farming generally, although some specific surveys do exist. In 2000, when offshore wind farming was much discussed in the context of coastal tourism, a survey carried out in Schleswig-Holstein amongst residents and tourists found that none of

the respondents objected to offshore wind farming in principle. On the contrary, acceptance of offshore wind farms was greater than that of onshore wind farms because they were considered to have less impact on the landscape. A correlation was found between visitor attitudes and the distance offshore wind farms would be placed from beaches. A distance of 15 km was considered acceptable for wind turbines with a hub height of 80 m (Institut für Tourismus- und Bäderforschung in Nordeuropa 2000). The 2002 German EMNID poll is one of the few national ones that also include a specific question about offshore wind farms: 82% of respondents said they would support offshore wind farms if they also had to meet strict standards, although it is not clear what these standards would need to be. In the same year, surveys of the general public were also done in Belgium and Wales. In Belgium, 78% of the public were neutral to very positive in their attitude to an offshore wind farm that would be built at a distance of ca. 6 km from the coast (Wizelius 2007 p. 197). In Wales, 87% of people said they would prefer to see 600 offshore wind turbines than one nuclear power station, which would produce roughly the same amount of energy (Friends of the Earth Cymru 2002). In 2005, residents and tourists were polled on the Lower Saxony North Sea coast in Germany. The poll included the following question: "Since many wind farms already exist on land, plans are now being made to build wind farms in the sea, situated many kilometres from the mainland. What do you think of this?" Averaging responses given on a scale from 1 (very positive) to 5 (very negative), only cautious approval emerged. The authors note a large standard deviation, indicating considerable polarisation of responses. However, the number of respondents that considered plans to construct offshore wind parks 'very positive' was twice as high as those that thought them 'very negative'. Although visibility from the shore is not specifically mentioned here, a subsequent question did establish a clear preference for offshore wind farms to not be visible from the mainland. Opinions of residents on two North Sea islands (Norderney and Borkum) did not differ from those of other residents, which was taken to indicate that island residents were no more or less concerned about offshore wind farms and did not consider them a particular threat to tourism (Vogel 2005). The latest German survey referring to offshore wind farming is that of the German SOKO Institute, which has regularly polled the general public on wind farming and tourism since 2003 and includes a question on offshore wind farming in its 2007 poll. 81.8% of respondents said they were supporters of wind farming, with 18.2% describing themselves as opponents. For offshore wind farming, the figures are 89.9% and 10.2%, respectively (Studie: Windkraft und Tourismus, Ergebnisbericht (Auszug), download from www.soko-institut.de).

At a 2007 conference², stakeholders from Mecklenburg-Western Pomerania concluded that offshore wind farming would not only create jobs, but also attract other maritime industries to the region. They also thought that greater public awareness of the impacts of climate change and drive towards greater energy independence would lead to changing values, enhancing public acceptance of offshore wind farming and also making more acceptable the fact that previously 'untouched' nature might not be able to remain untouched forever. Although

² Workshop „Windparks vor der Küste Mecklenburg-Vorpommerns im Spannungsfeld zwischen Klimaschutz und regionaler Wirtschaft“, Mittwoch, 12. Dezember 2007, Industrie- und Handelskammer zu Rostock

regenerative energies were considered to have a positive image, participants cautioned that this does not automatically translate into acceptance of offshore wind farms. Pro-active public information and working with the tourism industry in Mecklenburg are considered essential, for instance in informing tourists openly and honestly on any imminent changes to the landscape. Encouragement was drawn from Denmark, where overnight stays in Nysted and prices for holiday homes have gone up despite the presence of the offshore wind farm. The greatest danger for the region was considered to be the increased likelihood of shipping accidents and potential pollution incidents (conference summary on <http://www.offshore-wind.de>).

The above surveys have in common that they refer to offshore wind farming in the abstract. At the time of polling, none of the three countries mentioned had any offshore wind farms in operation. This is different from the situation in Denmark, where two offshore wind farms have been up and running since 1991. Two offshore wind farms exist in the North Sea, constructed in 2002 (Horns Rev) and 2003 (Nysted). The Horns Rev offshore wind farm is located 14 km west of Blåvandshuk in an area dominated by holiday homes with only 3,300 permanent residents. The offshore wind farm is only visible from just a few houses. The Nysted offshore wind farm is located 10 km from the coast and some of the approximate 4,300 permanent residents in the area can see the wind farm from their homes. The wind farm is also visible from Nysted harbour. In-depth interviews were carried out with local residents to test their attitudes to the offshore wind parks as part of an environmental monitoring programme. An environmental economy survey was also carried out in which local questionnaire surveys were supplemented by surveys among a national reference group. The environmental economy survey shows that more than 80% of the respondents are either positively or extremely positively disposed towards offshore wind farms. The greatest support is to be found in the area around Horns Rev, whilst there were most negative reactions in the Nysted area, though opposition here was restricted to a mere 10% of the respondents. In the opinions of almost two thirds of the population, offshore wind farms have either a neutral or positive visual impact on the coastal landscape. Least opposition was found at Horns Rev. The surveys also charted attitudes to the future extension of offshore wind farm building. When given the choice between fewer and larger farms or more small farms, attitudes are clearly more positive towards concentrating building. There was a clear willingness to pay more via electricity bills to reduce visual impact. Residents at Nysted were those prepared to pay most to have new wind farms located further offshore. The sociological survey showed that the original opposition in the Blåvandshuk area has gradually diminished after the Horns Rev offshore wind farm was commissioned, and by 2004 the general attitude was already neutral or even slightly positive. Opposition in Nysted has been more persistent. The original opposition in Blåvandshuk stemmed from worries concerning the visual impact and resistance to a “centralised decision-making process”. Results from Horns Rev and Nysted are largely confirmed by a representative survey of the Danish population carried out in 2003 and 2004 (Ladenburg 2008), where 95% of respondents were in favour of more offshore wind farms.

2.3 Concerns relating to (offshore) wind farming in Germany

Offshore wind farm schemes provide a strategic opportunity for the wind energy business, yet are under-researched, particularly in terms of the types of public reaction they elicit. As set out above, support of renewables is generally high within the general German population. Nevertheless, plans to build offshore wind farms do draw considerable local suspicion (see Figure 4). Similar contradictions exist in other countries. Northern Ireland is ranked amongst the most supportive regions of wind farm projects within the UK (Department of Trade and Industry 2003), but a recent offshore wind farm proposal led to strong opposition from a range of individuals and organisations both in Northern Ireland and the Republic of Ireland. Kempton (2005) and Firestone & Kempton (2007) show a similar situation for Cape Cod, USA. Is this a typical NIMBY phenomenon or what explains this apparent contradiction?

2.3.1 Visual impact as a local concern

One aspect that emerges strongly in local debates about offshore wind farming is that of visual impact on the landscape. In Germany, the most vociferous critics of offshore wind farm proposals are those that make use of the visual qualities of the seascape. These include tourism operators, who rely on a specific image of the coast or sea, visitors to coastal holiday areas and also residents of coastal communities who enjoy the coast and sea for their amenity and recreational value. On the North Sea island of Sylt, a local campaign was founded to oppose offshore wind farms on the grounds that it would despoil the horizon, not only constituting a visual nuisance but also severely impacting on tourism because it would remove the essential landscape qualities tourists come to enjoy (Gegenwind Sylt, no year). Although the tourism argument is not borne out by research (e.g. Benkenstein et al. 2003), concerns about visual impacts have persisted in newsletters, newspapers (Figure 4) and specific statements during the consultation phase of offshore wind farm planning consent procedures (Licht-Eggert et al. 2008). This particularly applies to those coastal communities that are physically closest to proposed offshore wind farms. This gives rise to the notion that visual intrusion is the most prominent local fear. This is confirmed by the stakeholder analysis on the West coast of Schleswig-Holstein which found that aesthetic arguments vis-à-vis offshore wind farms and fears of “losing the open horizon” are unimportant at a Länder and national level, but are repeatedly brought up by local authorities and other local groups (Licht-Eggert et al. 2008). Wind farms are an abstract entity to non-local stakeholders, who can therefore afford to support offshore wind farming in principle because they are unlikely to be affected by any direct negative impact (Gee 2007a). Expected negative impacts on the coastal landscape have been a significant reason for opposing a proposed offshore wind farms elsewhere. A well-documented example is that of Cape Cod, although other factors were also shown to come into play (Kempton et al. 2005). Estimates of visual impacts are not uniform either; Bishop and Miller (2007) for example found that older people were likely to consider offshore wind farms more visually intrusive than younger persons.

Wahnsinn! Riesen-Windräder vorm Timmendorfer Strand

Riesen-Windräder vorm Timmendorfer Badestrand. So wie auf dieser Montage könnte es bald an der Lübecker Bucht aussehen

Würden Sie da noch Urlaub machen?

Von ECKARD GHM: Muss ein Offshore-Windpark ausgerechnet vor der schönsten Küste im Norden gebaut werden? Ja, sagt die Kieler Landesregierung und treibt den Bau von „SKY 2000“ in der Lübecker Bucht voran. Die Fundamente sollen schon Ende 2004 gegossen werden, in vielen Ostsee-Urlaubsorten sind die Menschen erschüttert. „SKY 2000“ wird eine Anlage mit 50 Windrädern, darunter gewaltige Generatoren der 5-Megawatt-Klasse. Die Rotoren dieser Kolosse wie der des „RE Power 5M“ haben einen Durchmesser von 125 Metern. Innenminister Klaus Buß (SPD): „Das Projekt hat Forschungscharakter, liefert uns Erkenntnisse für kostenarme Windparks in der Nordsee.“ Die Lübecker Bucht als Forschungsstation? In Timmendorfer Strand ist man entsetzt. Bürgermeister Volker Popp (parteilos): „So eine Anlage gehört einfach nicht in ein Urlaubsgebiet.“ In Dahme (19 Kilometer von „SKY 2000“ entfernt) sagt Bürgermeister Heinrich Pflon (CDU): „Von unserem Strand aus werden die Windräder zu sehen sein. Wir leben vom Tourismus, wie kann die Landesregierung uns da so etwas vor die Nase setzen? Außerdem werden orgelartige Fischgründe gesperrt.“ Allein auf Fehmarn, wo bereits 140 Windräder stehen, ist die Freude groß. Man erwartet den Zuschlag für den Wartungshafen und damit neue Arbeitsplätze.

Foto: MAURITIUS, DDP

Figure 4: Madness! Giant wind turbines in front of Timmendorf beach. Would you still come on holiday here? Source: BILD daily newspaper, 19/12/2003

2.3.2 The issue of siting

Just like with wind farming on land, siting of offshore wind farms may therefore emerge as a central issue. ‘Wrong’ siting could be a contributing factor in generating negative attitudes to offshore wind farms despite the generally high acceptance of offshore wind farming. Studies of wind farming on land have made clear that it is not a case of ‘anything goes anywhere’, although it has also been shown that NIMBY (not in my backyard) may be too simple a label. Wolsink (2000) for instance notes that most opponents to local wind projects in the Netherlands cannot be accurately be characterised as NIMBY. Ek (2005) also finds that attitudes to wind power in Sweden are more accurately characterised by levels of income, age and interest in environmental issues rather than NIMBY (see also Devine-Wright 2005a). Most importantly, however, NIMBY leaves the causes of opposition unexplained. Vitte et al. (1993) argue that rather than labelling attitudes NIMBY, focus should shift to the core cultural values people bring to an issue, the manner in which an issue is presented to the public, and the ways in which people make preferred connections between their core values and resulting positions. The example of Cape Cod and also the West coast of Schleswig-Holstein show that in the eyes of local residents, the expected changes caused by offshore wind

farms can be considerable, and despite its many attendant benefits, 'renewable energy' may not be a principle that overrides all other concerns. One issue that deserves more in-depth investigation is therefore local stakeholder perception of the costs and benefits associated with offshore wind farm developments and the degree to which they consider them compatible with other landscape values.

2.3.3 Drivers of the visual aesthetic argument

Investigations of the driving forces behind the visual aesthetic argument point in a similar direction. Visual aesthetic arguments are symptomatic of much deeper issues that are brought to bear in the context of wind farm proposals. In England, it has been noted that three-quarters of onshore wind farm proposals fail because of industry's failure to grasp the important links among landscape, memory and beauty in achieving a better quality of life (Short 2002, p.45). Other authors go as far as saying that local residents felt "expelled from their homeland" by wind farm development (Schwahn 2002). This is interpreted as a "public sense of angst brought about by the rapid changes in the landscape that wind power can bring" (ibid., p.139). This however is often a subjective feeling that residents are reluctant to express directly and mask by resorting to criticism of the economic performance of wind farms or other environmental concerns.

Pasqualetti (2000, 2002) found that local residents value the permanence of landscape. Using a desert site as a case study, he suggests that much of the opposition to a large wind farm proposal is related to the conversion of the desert into an 'industrial landscape', which is contrary to the (unvoiced) expectation of the nearby residents that this desert would remain unchanged. On the mainland, an important driver of local resistance to wind farm proposals is therefore specific views of place. Perceived threats to existing landscape values have been identified as one contributing factor (Hoppe-Klipper and Steinhäuser 2002), with links between the perceived beauty of a landscape and memory another (Short 2002).

Although the desert landscape characterised by Pasqualetti is strangely reminiscent of the wide expanse of the ocean, it is an open question whether similar driving forces apply to the sea. Clearly, offshore wind farming lends a different spatial dimension to the visual-aesthetic dimension of renewable electricity generation. The question is how local residents view the sea, and what role their perception of landscape and seascape plays in shaping their attitude to offshore wind farms. This is a particularly intriguing question when the sea is taken to represent a key element in constructing local identity. Many coastal communities have a special relationship to the sea and a strong sense of identification derived from past use of the sea, expressed not only in traditions, but also stories, music, art. Kempton et al. (2005) were first to conclude that values about the ocean in general and about specific sea areas represent a key source of opposition to offshore wind development above and beyond the visual-aesthetic. As a special place, with unique qualities that set it apart from the mainland, the sea thus possesses its very own and distinct sense of place. As a place, the sea would appear to be just as complex in its construction than places on land, with elements of the natural landscape (flora, fauna, water etc.), human use of the sea (including traditions and

history) and personal experience all playing a role (Schmidt-Höhne 2006). The relationship between acceptance of offshore wind farming and perceptions of the sea as a particular place and/or space is therefore a topic that merits further investigation, not least because offshore wind farming could be taken to represent the emergence of an altogether new type of marine landscape.

2.4 Research purpose

So what of the future of offshore wind farming in Germany? Will it become a key player in providing renewable energy, as envisaged by federal government policy, or will it face an uphill struggle in the face of various constraints? And what about the consequences of different scenarios of expansion: Will large-scale scenarios for offshore wind farm expansion be accepted by various stakeholders, or will limits of acceptance emerge? If limits of acceptance do emerge, then, of course, the most interesting question will be what drives these limits and whether they can be overcome or not.

It is understood that public perception of wind farms “is a multi-dimensional phenomenon, constituted through a range of complex cultural, contextual, socio-economic, political and physical factors” (Ellis et al. 2008 p. 519) and that the NIMBY syndrome is given much more credence than its due. Despite the large body of literature, criticism persists that much of the existing research is quantitative and falls short of identifying the constitutive elements of public acceptance. Devine-Wright (2005a) states that “literature has been more successful in describing perceptions of wind farms rather than providing explanations of these” (p.136). Ellis et al. (2008) are also critical and argue that research has been undertaken without reference to a deeper theoretical framework, resulting in an “incoherent body of research that struggles to develop a cumulative understanding of this issue” (p.520).

It is increasingly clear that key issues facing wind farm development are not what might be called ‘objective blockages’. An important role is played by “dynamic subjectivities” (Ellis et al. 2008) – clashes of values that are related to governance, technology, landscape aesthetics, to issues of participation and also power inequalities. Woods (2003) for instance suggests that research should not focus on the individual motivations of participants but the “complex negotiation of discourses of nature, landscape, environment and rurality which frame collective and individual actions” (p. 287). Haggat & Smith (2004) do point to the importance of different stakeholder perspectives and suggest that different values could be important – values that are projected through debates and can be tapped through discourse analysis. Devine-Wright & Devine-Wright (2006) use a similar approach to show how discourses on wind energy reflect the wider worldviews and values of those engaged in wind power debates.

There is a more general shift in research on wind farming acceptance in that it seeks to explore less of the ‘if’ and more of the ‘why’ the public may or may not accept wind farming or specific wind farm proposals. If positions of support and objection are not just constructed from scepticism of the technology or the location of specific proposals, for example, but reflect deeper values, then research is challenged with identifying those values and possible

patterns of value that might constitute core drivers of support and objection to wind farming. Links of these values to the use of and the relationship to specific landscapes is one of many focal points identified by Ellis et al. (2008) for further research.

But what, then, are the particular values linked to the sea? If the sea as a place is just as complex in its construction than places on land, with elements of the natural landscape (flora, fauna, water etc), human use of the sea (including traditions and history) and personal experience all playing a role, the question is whether any specific constructs exist of the sea and seascape that are suitable for explaining different attitudes to offshore wind farms, or whether other factors (values, attitudes, expectations) are more important. Do trade-offs occur or not, and is it possible to explain these in terms of particular constellations of values? Is it possible, for instance, to identify a “clash of value” between the desirability of renewable energies on the one hand and specific sea values on the other? And what of the third dimension, that of local economic development and the benefits that could be derived from this?

This study takes a look at the drivers of acceptance of offshore wind farms at the level of local residents. It does this by looking at personal values, perceptions of the sea and the seascape, and attitudes to offshore wind farming on the West coast of Schleswig-Holstein. The purpose is to probe local limits and conditions of acceptance, with a particular view on the arguments local people employ when weighing potential advantages and benefits against perceived disadvantages and risks. Since no offshore wind farms have yet been built in the case study area (although the area is one of the prime locations for onshore wind farming in Germany), it is important to note that this is a perception study which is solely focused on local residents' expectations and their personal evaluation of the likely impacts. The study does not set out to measure any actual impacts (e.g. economic or environmental impacts), neither is it concerned with the willingness of people to act.

Taking a closer look at local residents' attitudes, and in particular the reasoning behind these attitudes, is important on two further accounts. Although the precise impacts of offshore wind farm development on local ecological and socioeconomic systems will remain uncertain for some time to come, it is possible to establish whether any principal objections emerge to offshore wind farming at a local level or not. This will make it easier to evaluate some of the risks and opportunities associated with offshore wind farm investment. Could local communities be persuaded of the benefits of offshore wind farms, for example, or are other factors at play that prevent this? Although it is not the only deciding factor, the degree of acceptance by the local community also matters in the longer term: If local desirability is high and conflicts are low, then offshore wind farming is likely to develop at a certain location; if local desirability is low and conflicts high, developers might decide to invest elsewhere. Estimates of the local conflict potential are thus a contributing factor towards overall planning security and are likely to guide decision-making on the part of offshore investors.

Better understanding of the driving forces behind support and opposition, and especially the role of visual aesthetic arguments, is also important in the context of siting potential offshore wind farms. Attempts have repeatedly been made to quantify the visual impact of offshore

wind farms through variables such as distance from the shore, different forms of placement in the water and turbine colour (e.g. Runge and Nommel 2006). In the UK, guidance has been published for assessing the visual impact of offshore wind farms on the seascape in an attempt at restricting their visual impact and enhancing public acceptance (Department of Trade and Industry (UK) 2005). It could be argued that visibility is not an issue in the German case because of the considerable distance of the planned offshore wind farms from the coast (Table 1). Still, future offshore wind farms may well be located within Germany's coastal waters, considerably closer to the coast than those that have been approved so far in the EEZ. A recent study carried out by the German Federal Environment Agency states: "Relatively low strategic importance has so far been placed on plans for wind power close to the coast. The research consortium recognizes certain additional potential here (...)" They go on to state that although focus for additional sites should remain on the EEZ, it did seem reasonable to also consider sites within the coastal sea regions and to assess their suitability (UBA 2007). This might upset the carefully crafted offshore consensus between different stakeholders and re-open a debate that many had hoped could be avoided altogether. Ultimately, sustainable development, even in the context of pressing climate change, cannot be achieved through technological innovation alone. Acceptance of specific technologies, as well as change resulting from their application (real and perceived) is at least as important if solutions are to be implemented.

3 Basic premises for research and case study area

3.1 Stakeholder views of offshore wind farming on the West coast of Schleswig-Holstein

In 2005 and 2006 a stakeholder analysis was carried out as part of the Coastal Futures project on the West coast of Schleswig-Holstein (Licht-Eggert et al. 2008). Complementary to the survey targeting individuals, this specifically sought to establish the positions of institutions and organisations on offshore wind farming (Gee & Licht-Eggert 2010). Like its local resident equivalent, the idea was to uncover the arguments that fuel these positions. What drives the prevailing attitudes, and why do institutions and organisations argue the way they do? For instance, support for offshore wind farms could be based on expectations of political or economic gain, but could also be driven by purely emotional reactions or certain deeply held world views, which may not even be rationalised or consciously argued. Another aim was to determine the degree to which arguments are NIMBY-driven (“not in my backyard”), and to identify irreconcilable positions and potential coalitions of interest that emerge on account of similar (world) views. The results are summarized here as a useful background and context for the local residents study.

A total of 430 institutions and organisations with an interest or involvement in offshore wind farming were identified at four spatial levels of stakeholder activity: international, national (federal Germany), regional (the state of Schleswig-Holstein) and local (the districts of Dithmarschen and North Frisia). Each stakeholder was coded for organisational type (e.g. public authorities, NGO etc) and assigned to a thematic sector (e.g. “nature conservation”). This resulted in an organisational matrix which could be analysed according to sector strength (e.g. the total number of stakeholders in each thematic sector) or composition of stakeholders at the different spatial levels (e.g. public bodies versus NGOs, number of national vs. local organisations etc) (see Licht-Eggert et al. 2008 and Gee & Licht-Eggert 2010 for a more detailed description of methods).

For each of the 430 stakeholders identified, publicly available documents such as position papers, information on the website or press releases were then scanned for positions vis-à-vis offshore wind farming. Written statements given during the planning consultation on the three offshore wind farms Sandbank 24, DanTysk and Butendiek were also scanned. This enabled some comparison of positions of principle (i.e. attitudes to offshore wind farming per se) and the positions of these stakeholders on specific wind parks proposed in the German North Sea EEZ.

From the public documents it became clear that surprisingly few institutions and organisations actually take a clear public position on offshore wind farming. Relevant documents were only found for 90 out of 430 key stakeholders. Predictably, it is political stakeholders, nature conservation organisations and the wind energy sector that are most vociferous. Whilst this may be a question of resources, especially for small local organisations, it could also indicate that offshore wind farming is considered tangential, that the position is subsumed in another stakeholder’s position (e.g. a local view taken up by a regional association), or a “wait and see”

type attitude where the stakeholder is unwilling or unable to take up a position based on the currently available information (Gee & Licht-Eggert 2010 p. 100)

Favourable attitudes to offshore wind farming (“strongly in favour” and “in favour”) were expressed in 83% of all public documents assessed, with 8% taking a neutral and 9% a negative attitude (“against” and “strongly against”). Positive attitudes are found across all sectors and stakeholder types, with nature conservation organisations, regional governmental organisations, political parties, companies or federal ministries all arguing in support. This suggests broad organisational and institutional consensus on the general desirability of offshore wind farming in the German EEZ. This points to a convergence of different lines of argument, with offshore wind farming not only seen to provide environmental benefits, but also incentives to the local economy and the German wind industry in general (BMW 2008). Opposition to offshore wind farms in the public documents mainly comes from local organisations, in particular those from island communities.

In contrast, only 17% of the respective stakeholders state their explicit support for offshore wind farms in the consultation documents; at 25% the share of opponents is also significantly greater than in the public documents. Some of this difference may result from the fact that the consultation phase asks stakeholders to comment on specific offshore wind farms rather than offshore wind farming in general, which is why stakeholders giving a negative statement here may well have a positive attitude in the public documents. The high percentage of neutral statements in the consultation documents could suggest uncertainty, mask a more negative attitude or simply a ‘take it or leave it’ attitude. It may also be an example of a potential NIMBY-syndrome, i.e. supporting the principle of offshore wind farming, but not wishing to see specific offshore wind farms ‘in their backyard’. It might also point to concerns about the proposed offshore wind farms that have not yet been adequately addressed. Again, stakeholders with negative attitudes to offshore wind parks are almost exclusively found at the local level, indicating greater caution the closer the proposed offshore wind farms are perceived to hit home (Gee & Licht-Eggert 2010 pp. 101-102).

One of the most contentious arguments surrounding wind farms is their visual impact. Document analysis however shows that this is by no means a dominant argument for organisations and institutions. Table 2 indicates the percentage use of each argument type relative to the total number of arguments counted as an estimate of the relative importance of each argument type. Table 2 also indicates which perspectives are primarily employed to argue for and against offshore wind farming, and where acceptance of offshore wind farming is attached to certain conditions.

Table 2: Topics used to defend positions on offshore wind farming, with figures indicating the percentage of use of each argument relative to the total number of arguments used. ☺ = argument in favour of offshore wind farms, ☹ = argument in opposition to offshore wind farms, ! = condition or demand. Grey lines separate topics mainly used to support offshore wind farms from those mainly used to oppose them and specific demands raised in the context of offshore wind farms (adapted from Licht-Eggert et al. 2008).

Argument thematic group	public documents (% of total arguments)		statements in public consultation procedure (% of total arguments)	
Arguments mainly used in favour of offshore wind farms				
<i>climate change</i>	3,3	☺	0,2	☺
<i>energy</i>	7,9	☺	2,1	☺
<i>port and harbour development</i>	0,6	☺	0,2	
<i>local economy and jobs</i>	9,0	☺	0,2	☺
Arguments mainly used against offshore wind farms				
<i>nature conservation</i>	13.0	☹	20.2	☹
<i>aesthetic qualities of the landscape</i>	1.5	☹	5.3	☹
<i>fisheries</i>	0.3		6.3	☹
<i>shipping safety</i>	6.1	!	19.4	☹!
<i>tourism</i>	2.5	☹!	1.3	☹
Demands raised to qualify support for offshore wind farms				
<i>legal issues</i>	1.3	!	1.3	!
<i>planning procedure and process</i>	14.1	!	24.8	!
<i>feasibility/technology/financing</i>	18.0	!	15.8	!
<i>economic viability</i>	7.5	!	2.1	!
<i>policy</i>	3.0	!		
<i>science</i>	7.0	!	0.2	!
<i>other</i>	4.7		0.6	!

The first aspect to note is that comparatively few arguments are actually fielded in clear support of offshore wind, offering an apparent contradiction to the high degree of support in principle lent to offshore wind farming in the public documents. A simple explanation is that stakeholders consider the advantages of offshore wind to be apparent, or are finding it difficult to find convincing arguments against this technology or a comparable renewable alternative (Gee 2006). Another is that institutional and organisational support represents an opportunistic strategy that makes use of a particular set of circumstances to realise political and economic gains. That said, there is also a considerable amount of qualified support given to offshore wind farms in the consultation documents as the concerns listed there are not insurmountable. Concerns mostly refer to technological feasibility or expense; for others the long-term economic feasibility is a

concern. Much hope is also placed in an appropriate spatial planning framework in terms of reducing environmental impacts and providing greater planning security for investors.

In terms of the actual arguments fielded, nature conservation and shipping safety concerns are two main reasons for objecting to offshore wind farms. Shipping safety is a particular issue in the consultation documents and a predominantly local concern, whereas nature conservation has similar shares of the total number of arguments across all three categories. In this latter the level of detail in the arguments raised suggests good knowledge of the issues involved; numerous individual marine protected species and habitats were quoted as a specific concern (e.g. heightened risk of bird collisions. effects of noise and vibration on marine mammals). As pointed out above, the category “aesthetic qualities of the landscape” hardly features at all in the public and only a little more in the consultation documents.

Looking at arguments primarily fielded in support of offshore wind, the category “energy” emerges as important but it is not a key driver of argumentation here. “Energy” comprises arguments such as clean/ green/ renewable energy or ‘an alternative to nuclear and coal’; but the green energy argument only accounts for 7.9% of all arguments raised in support in the public and 2.1% in the consultation documents.

Seen through public documents, opportunities associated with offshore wind farms seem to relate primarily to their impact on the local economy and potential to generate jobs. 9% of all public document arguments name local economy and jobs as a reason to support offshore wind farms. This however is not matched by local opinions voiced in the consultation documents where the employment argument hardly features at all.

From the arguments used, three main camps can be identified, two in favour and one in opposition to offshore wind farms. One small camp brings together local and regional stakeholders who argue offshore wind farms to be a key in securing economic advantages and possibly local jobs. Not surprisingly, these tend to be political organisations, stakeholders from industry, and also administrative institutions, although it should be questioned whether these arguments reflect the real potential of job generation on Schleswig-Holstein’s West coast. The second, larger camp is led by nature conservation organisations who almost universally endorse offshore wind farming as a renewable source of energy. Taken together, these two camps make for a strong coalition of interest in favour of offshore wind farming which extends across sectors and scales. As long as it is linked to appropriate siting, ecological monitoring and continued policy support, this support also seems to include the more skeptical stakeholders. Clearly, these institutions and organisations see no good reason not to push ahead with offshore wind farming, in particular since the visual aesthetic argument does not appear to feature at the national and regional level at all (Gee & Licht-Eggert 2010 pp. 103-105). The skeptics are predominantly local stakeholders whose main concern is shipping safety.

The results from the stakeholder survey reveal an interesting range of arguments fielded with respect to offshore wind farming. For some of these stakeholders, in particular political ones, it is safe to assume that they put forward these arguments in pursuit of an agenda within a wider game of power. Others are clearly caught out between two sides of the argument: Environmental NGOs for example tread a careful line between climate protection on the one hand and marine

nature conservation on the other, causing them to put forward a range of conditions for offshore wind farm development and siting (Byzio et al. 2005). Local stakeholders often feel it difficult to comment during planning processes at all since they are limited in terms of time and resources and constrained by the many hundreds of pages to read and understand for each proposed offshore wind farm (Bruns & Gee 2009).

Although they have no influence in the statutory consultation and decision-making process on offshore wind farms, local residents can – and do - make their views known, for instance through protest movements. “Gegenwind Sylt” represents the first dedicated anti-offshore wind farm association in the case study area which currently has around 300 members. It was founded in 2004 with the aim of “preserving the free horizon and preventing danger to beaches and coastal waters, as well as protecting habitats for the indigenous population and fauna” (www.gegenwind-sylt.de, accessed 23 May 2007, § 2 articles of association, translated by the author). Although this only represents a small protest movement, it does indicate that local views may diverge from the official positions put forward by organisations and institutions. This re-emphasizes the need for probing local views more directly. What do local people actually expect of offshore wind farming, and what drives their acceptance or rejection of this new technology? Do their views and attitudes match those put forward by institutions and organisations, or does an entirely different picture emerge?

3.2 Premises for research

Research into local resident’s acceptance of offshore wind farming on the West coast of Schleswig-Holstein builds on the central premise that offshore wind farming in the case study region is contentious among the local population; evidence from formal (newspapers, Fuchs 2006) and informal sources (personal conversations) as well as “Gegenwind Sylt” certainly points this way. Two hypotheses are put forward that may explain contrasting mindsets:

1. Local residents regard the sea as a convenient setting and good alternative to wind farming on land. The sea is more or less an abstract mental category which is of no outstanding value but conveniently available to save the landscape from becoming despoiled.
2. Local residents consider the sea valuable in its own right. More complex interpretations of “sea” mean it is not just an abstract setting, but a place that carries intrinsic meaning and value. The benefits the sea offers, such as aesthetic or emotional benefits, outweigh the potential benefits of offshore wind farming; this leads to resistance to change. Because of the close relationship between man and the sea in the case study region, there is a distinct possibility that the sea holds some very specific meanings related to sense of place.

In order to identify the mental constructs of the sea that act as a driver of acceptance for offshore wind farming, a theoretical framework needs to be developed that allows these constructs to be unravelled and brings them together with the mental constructs of offshore wind farming.

3.3 Towards a theoretical framework for assessing offshore wind farm attitudes

3.3.1 Stages in building attitudes to offshore wind farming

Conceptually, this study builds on the premise that attitudes to offshore wind farming, and with these acceptance of offshore wind farms, develop in a two-stage process.

Assessment stage

The first stage reflects residents' beliefs about offshore wind farming and the impacts it is thought to have on the sea and the marine environment. Given that no offshore wind farms have been built in Germany, these views are unlikely to be the result of direct personal experience. Instead, they will be shaped by the media, by portrayals of offshore wind farming by interest groups, and by local discussions of specific projects.

One hypothesis is that land-based arguments, derived from 'real' experiences of onshore wind farming, are simply transferred to the offshore context. In this case, the view of offshore wind farming would be coloured by similar issues that are raised on land, with ready developed attitudes to wind farming on the mainland acting either as a deterrent (suggesting a spoilt offshore environment) or inducement ("out of sight, out of mind"). Another hypothesis would be that, because of its rather unusual setting, the offshore environment raises a whole different set of expected impacts unrelated to wind farms on land. Apart from the seascape and the marine environment, this might relate to the economics of operating offshore wind farms (driving up electricity prices) or conflicts with other sea uses, reflecting some of the arguments put forward by institutions and organisations in the stakeholder analysis.

Evaluation stage

To develop an opinion on offshore wind farming, residents then need to rate the expected impacts as either desirable and/or acceptable or undesirable and/or unacceptable. This second stage is an evaluation stage, where people relate their beliefs about offshore wind farming and its expected impacts to themselves (e.g. their personal sense of well-being) and their everyday world. In arriving at a conclusion as to the desirability of this impact, trade-offs occur in that different values and preferences are weighed against one other.

3.3.2 The role of personal interests and gains

Looking at the evaluation stage superficially, some of the criteria that could be used to arrive at a trade-off may seem simple. Interests such as immediate personal gain or the expectation of a direct tangible benefit from offshore wind farming is one possibility. An unemployed person expecting new job opportunities for example can easily be imagined to rate offshore wind farming differently than a person not expecting any such personal benefit. One hypothesis is therefore that *immediate needs* can play a strong role in a trade-off depending on specific external factors, such as the socio-economic situation of the individual at a particular point of time. Another hypothesis is that attitudes to offshore wind farms are driven by some form of *NIMBYism*, where personal gain would be an unspoilt (or less spoilt) landscape or seascape.

Immediate personal gains, however, may only tell part of the story. A third, more complex factor at play could be the *long-term interests and gains* of a person, for instance the desire that one's children should find work in the region or continue to enjoy certain qualities of the local environment. There may also be the view that nature should not be disturbed any further, or views of offshore wind farming associated with climate change. Personal interests can therefore cut both ways, leading to support or opposition of offshore wind farming.

3.3.3 Values as a central concept

Despite their obvious relevance, interests and personal goals may still not go far enough to explain the underlying reasons for developing certain attitudes to offshore wind farming. This research therefore uses values as a central concept for probing these reasons in greater depth. Values are used first of all as a conceptual entity that allows a more precise description of what each person considers important about the sea and offshore wind farming. This is the understanding of values as assigned value, which has the advantage of allowing both tangible and intangible values to be captured (chapter 4). At the same time, values come into play during the actual process of weighing different options, where they refer to deeply held convictions and world views about what is important and right (see also chapter 4).

Action-oriented social geography offers a useful framework to explain how values and meanings relate to goal- and value-based conflicts and how these in turn influence human action. A simple model of human action (Weichhart 2008 p. 263) presupposes that every human subject is embedded in the physical-material world which has various feedback loops to society. A person's values, needs and affects serve as a basis for the development of specific aims or goals. Two types of goals are emphasized: goals that are taboo in a particular social context, and other goals that are required and need to be subscribed to. As an example, the former may comprise acts of violence towards other persons, whilst the latter may contain action to preserve the environment. It could also conceivably include support of renewable energies for the purpose of climate protection as a socially desired goal. Socialization has anchored taboo and required values and goals in every person; they internalize them and make them their own. The development of individual values and goals in turn feeds back to the social system: certain fashions created by individuals can become part of generally binding value structures (Weichhart 2008 p. 263). Again, broad social support for renewable energies could be understood as an example of such development as it grew from a niche conviction into a broader desired and even socially demanded attitude. Weichhart confirms that the social system generates pressure to conform with respect to the goals that are permissible and the means that can be used to achieve these goals. Subjective action is thus limited by the degrees of freedom society allows in assigning meaning, the prevalent material culture (including the repertoire of admissible actions) and the given power structures within society (Figure 5).

The action-centered model postulates that subjects will make efforts to reach the goals they have formulated based on values and meanings. But even if no action results, values, needs and affects and the meanings and goals flowing from these constitute a subjective and rational *anticipation* of possible activities. Although the present research is not concerned with action, the model shows that values and meanings are instrumental in understanding goal- and value-related conflicts. Part of the action-centered framework proposed by Weichhart therefore constitutes a useful framework for probing the value-based conflicts that may exist in subjects in the case of offshore wind farming. Here too, it can be assumed that goal- and value-oriented conflicts may result from individual values, needs and affects and from different meanings and goals. These will partly depend on the social system and pressure to conform to certain broadly accepted views, but partly also on the personal life situation, personality and socialization of the individual concerned.

Weichhart points out another interesting aspect, which is that processes of weighing up different options often fail to conform to rational logic (p. 268). Processes of awareness formation and action are more often in line with subjective rationalities which seem logical to the person concerned but not necessarily to others. A part is played by the quality and quantity of the available information upon which subjective causalities are based. Overall, research on subjective causalities points out that actors have a large and highly flexible repertoire of acts of consciousness allowing the construction of literally any causal relationships between meanings

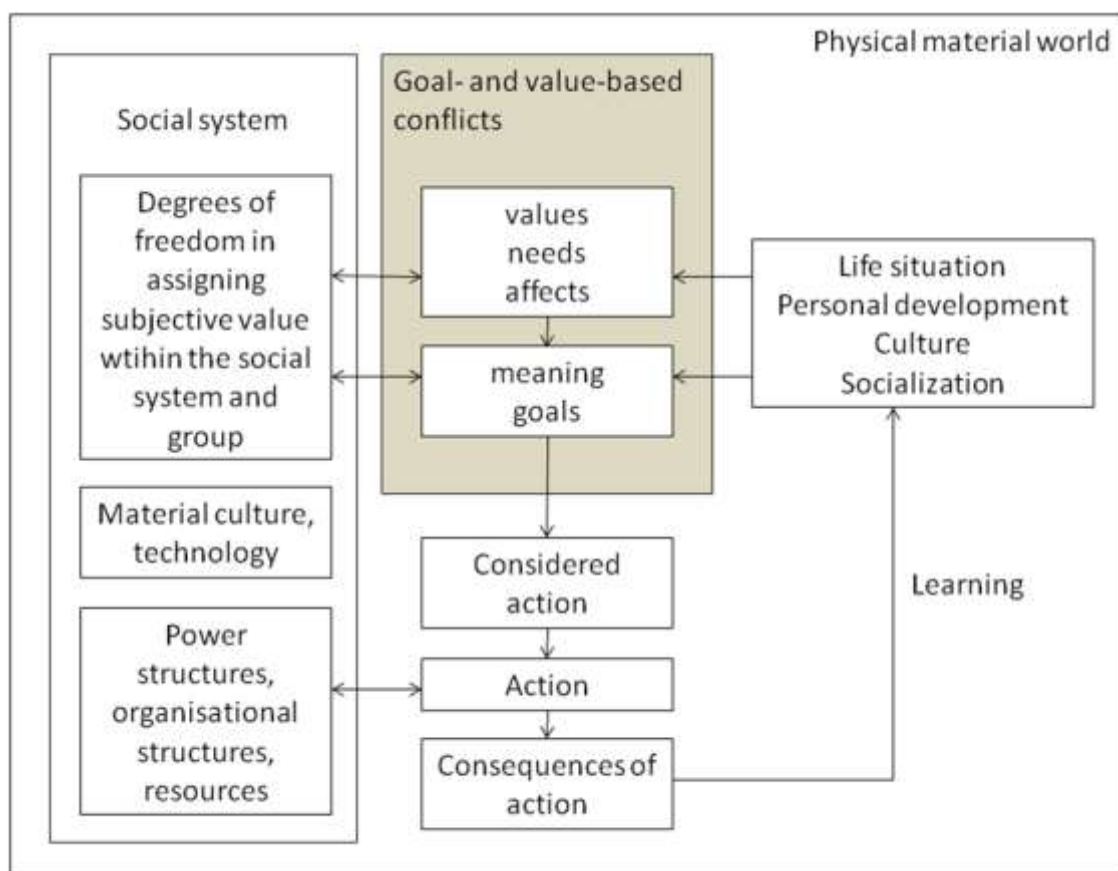


Fig. 5: Action-theoretical model of human-environmental interactions (adapted from Weichhart 2008 p.263)

and goals of action. Nearly every conclusion can thus be derived from a certain configuration of meaning in a highly convincing, subjectively logical way (Weichhart 2008 p. 269).

Conceptually, the challenge is thus to establish the specific value set a person carries and then connect this to their attitudes to offshore wind farming. Given that value sets can vary, it is imaginable that the same attitude to offshore wind farming could be driven by different value constellations and varying subjective rationalities. A person might reject offshore wind farming because they consider it a threat to specific sea values, such as the aesthetic qualities of the sea. A person subscribing to the belief that 'ecosystems should be safeguarded' may also reject offshore wind farms, but from a different value set where the interests of nature are placed above any human interests. Similar examples can be constructed for support of offshore wind farming: Support may be down to short-term interests, specific offshore wind values, or to moral convictions that conventional forms of energy generation are polluting and should not be pursued. Each line of argument will therefore be based on a particular subjective rationality, which may or may not be similar to that employed by other people.

3.3.4 Conceptual model for research design

Figure 6 summarises the above in a conceptual model that served as a basis for designing the research. The central column (top to bottom) illustrates the stages that lead individuals to develop an attitude to offshore wind farming. Perception of the local area and landscape sit at the top, as do beliefs about offshore wind farming and the sea, followed by evaluation of expected offshore wind farming impacts, argumentations and trade-offs and eventually a personal attitude to offshore wind farming. Pink boxes indicate the factors influencing the various stages depicted in the central column. Personal interests, beliefs and values are shown to influence immediate and long-term interests; together these influence various stages of attitude development including the trade-offs people make.

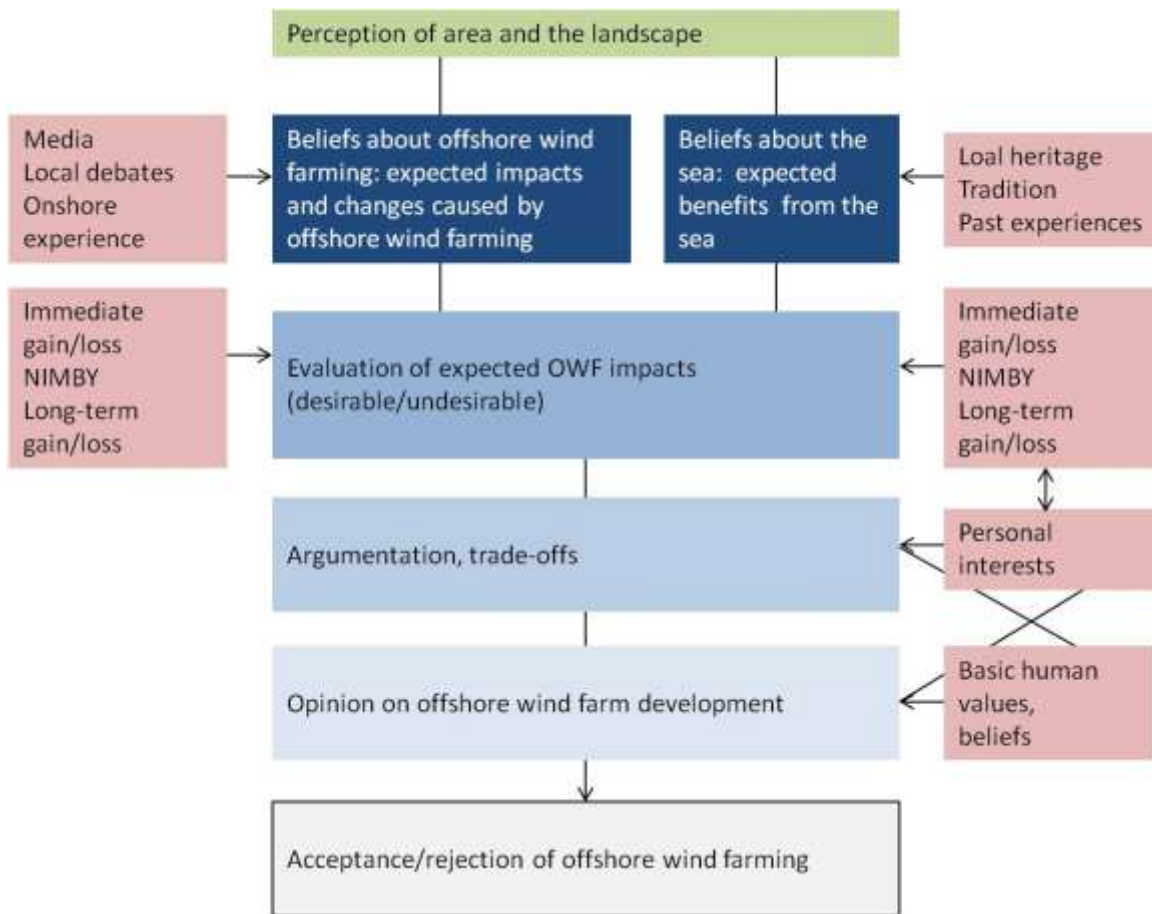


Figure 6: Conceptual framework of the study

3.3.5 Operationalising the conceptual framework: Three blocks of research

Three blocks of research were conceived in order to operationalize the above conceptual framework.

a) *Establishing a theoretical framework capturing values, beliefs and attitudes*

The first block is concerned with establishing a theoretical framework for the discussion of values, beliefs and attitudes. This is based on a review of existing literature on environmental values and the interrelationship between values, attitudes and norms (chapter 4). The main outcome of this element is a cognitive belief framework which sets out the links between values, beliefs and attitudes in this particular case study. The theoretical framework thus established lays the foundation for evaluating empirical survey results

b) Perception of the sea and sea values

The second block represents one of two key empirical part of the study, drawing largely on the results of a questionnaire survey. It seeks to establish how the sea is perceived and what it signifies to local residents. Do the seascape and/or coastal landscape carry values in their own right, and if so, what are these specific values? Results of this empirical work are presented in chapter 5 and related back to the concept of values set out in chapter 4.

a) Perception of offshore wind farming and offshore wind values

The third block, again an empirical block, takes a closer look at offshore wind farming and the values associated with it. This is done by looking at the arguments brought forward by residents in support and rejection of offshore wind farming. Results are classified into similar thematic categories as employed in the stakeholder analysis (see Table 2, Licht-Eggert et al. 2008). The overall frequency with which arguments are raised can be used as an indication of their relative importance. Results of the empirical work are outlined in chapter 6.

Chapter 7 relates the results discussed in chapters 5 and 6 back to the context of earlier chapters and the conceptual premises outlined above. It establishes the relative significance of sea values in determining local residents' attitudes to offshore wind farming in the case study area. A model is presented to highlight how these factors interact.

3.4 The case study region

The case study is set in the two administrative districts of Dithmarschen and North Frisia, which together form the West Coast of Schleswig-Holstein. There is a strong sense of place amongst local residents and also tourists who have been visiting the region for long periods of time. This makes the West Coast of Schleswig-Holstein a particularly interesting case study for exploring attitudes to offshore wind farming.

3.4.1 Location and administrative structure

The administrative districts of Dithmarschen and North Frisia are located on the North Sea coast of Schleswig-Holstein, Germany's most northerly federal state (Figures 7 and 8). Together, they comprise around 3,500 km², which represents about one fifth of the total area of Schleswig-Holstein (Statistisches Amt für Hamburg und Schleswig-Holstein 2005). North Frisia extends over 2,048 km² and is best known for the five islands of Sylt, Föhr, Amrum, Pellworm and Nordstrand and its 10 Hallig islands, which have come to define the West coast's image as one of Germany's most popular tourist destinations (promoted for instance on the district's website, www.nordfriesland.de). Dithmarschen extends over 1,429 km² and is surrounded by the Eider River to the north, the Kiel Canal to the east, the Elbe River to the South and the North Sea to the west. This lends it a quasi island status, which forms an important part of the self-image of the district (e.g. www.dithmarschen.de, see also below).

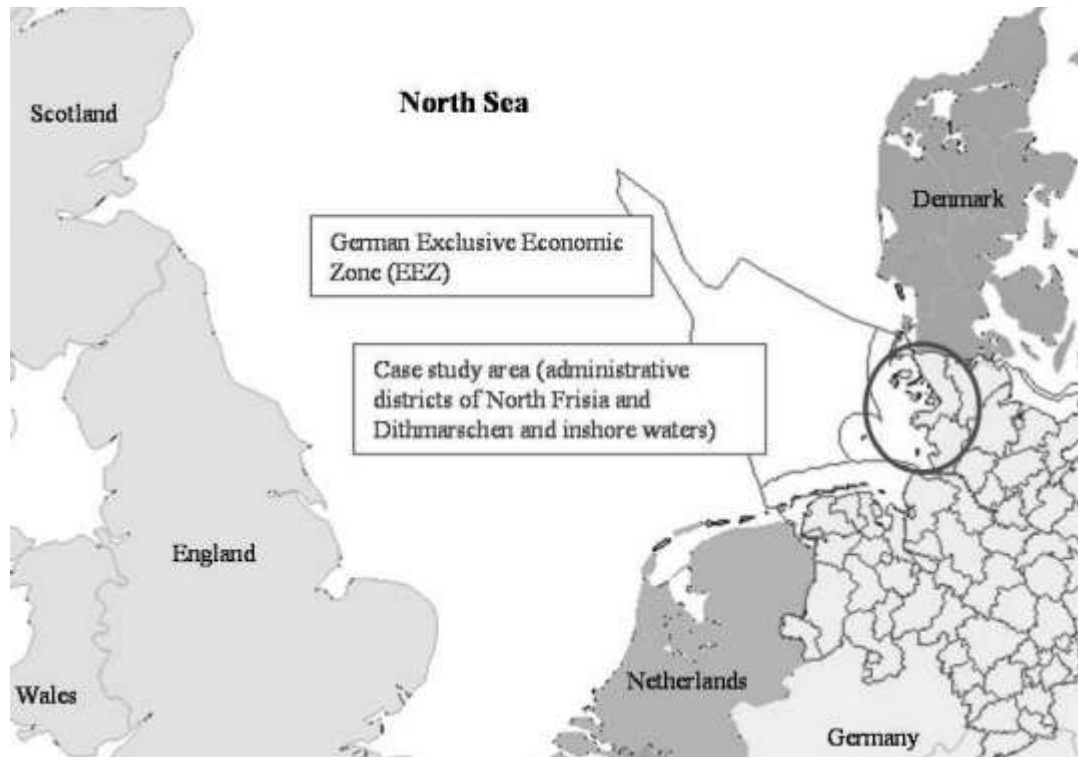


Figure 7: Location of the case study area within Germany and the North Sea context. Source: Gee 2010, map © Benjamin Burkhard

Both districts are characterised by a large number of small municipalities. The smallest municipality, an island community in North Frisia, has a mere 13 inhabitants. The fact that these have survived to this day is an indication of the strong sense of local identity that is characteristic of both districts. At the time of surveying in 2005/6, North Frisia had a total of 136 municipalities, including 8 towns and 3 so-called *amt-free municipalities*³, with the remaining 125 municipalities brought together in 16 administrative units (*Ämter*²). In North Frisia, 78.77% of the population live on the mainland, 21.23% on the larger islands and 0.14% on the Hallig islands. 29.27% live in towns numbering more than 5,000 inhabitants (Kreis Nordfriesland 2005). In Dithmarschen, 137,525 inhabitants – or five per cent of the population of Schleswig-Holstein – lived in 112 municipalities (divided into 12 administrative boroughs) and five towns (Kreis Dithmarschen 2005⁴).

³ “An *Amt* is subordinate to a district and is subdivided into municipalities (*Gemeinden*). The *amt* is lower than county-level government, but higher than municipal government, and can be described as a supra-municipality or “municipal confederation.” Normally it consists of very small municipalities; larger municipalities do not belong to an *amt*, and are called “*Amt-free municipalities*” (*amtsfreie Gemeinden*.” Adapted from http://en.wikipedia.org/wiki/Amt_subnational_entity_wikipedia.de/, accessed 10 March 2008.

⁴ Self-portrait of the district on www.dithmarschen.de (accessed 14 October 2005). Figures presented on the website reflect the population count of 30/06/2004

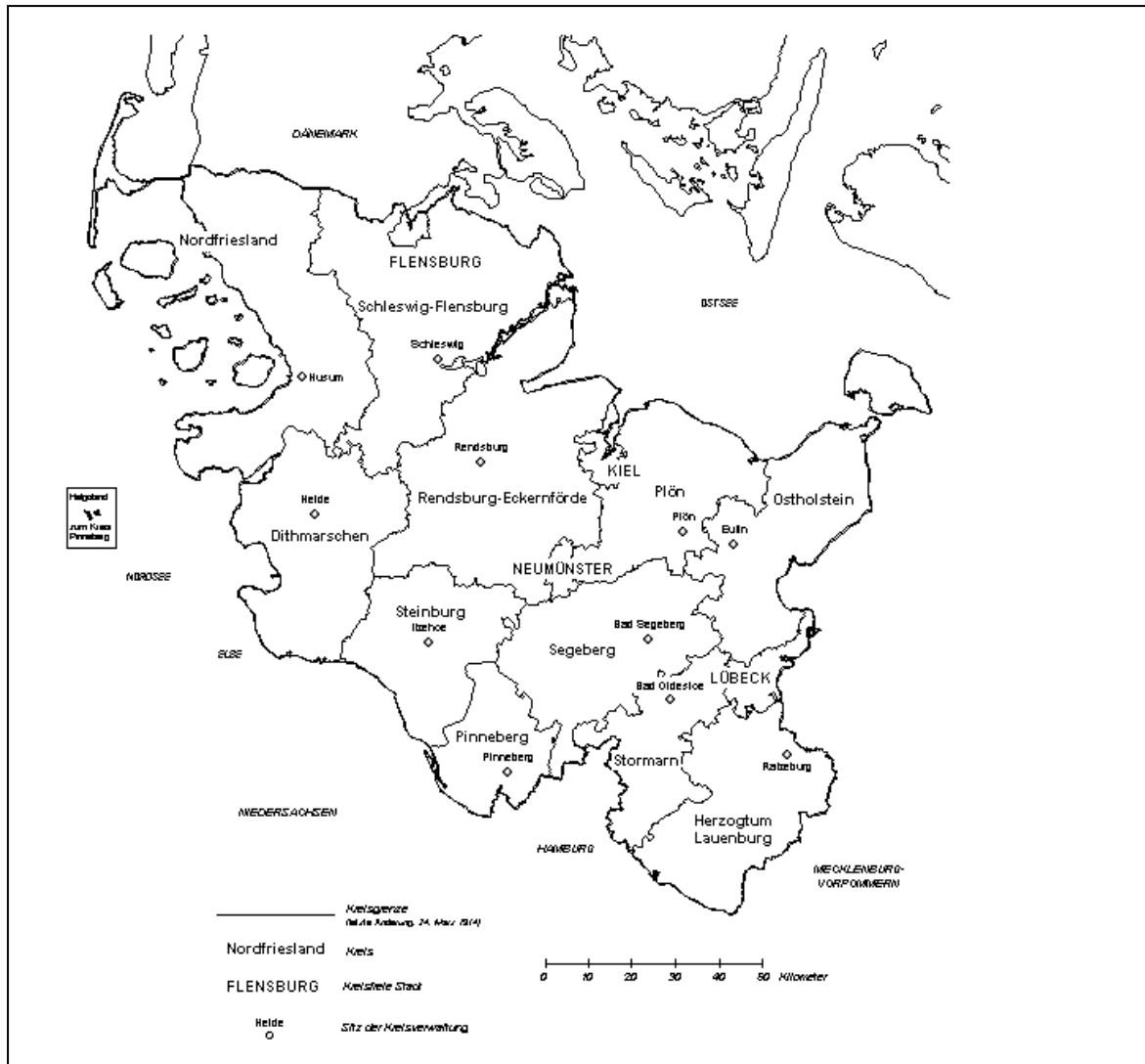


Figure 8: Administrative Districts in Schleswig-Holstein as of 31/12/2005. Source: Statistischer Bericht 2005, Statistisches Amt für Hamburg und Schleswig-Holstein.

3.4.2 Humans and sea on the West coast: A complex relationship

Dithmarschen and North Frisia border the Wadden Sea, which stretches from the Dutch to the Danish coast as a globally unique and continuous natural area. Shallow tidal areas are just as characteristic for this natural environment as the islands and “Hallig islands”, which constantly change shape in response to the North Sea’s dynamic influence. South of the Eiderstedt peninsula no islands exist in the Wadden Sea except for uninhabited Trischen. The North Frisian part is more diverse: land and sea merge into each other, characterized by diverse currents, surf and tides. The inherent dynamism and constant threat of change have characterised the way of life on the entire coast since prehistoric time. The greater part of today’s Dithmarschen and North Frisia is a man-made landscape, which was wrested from the North Sea in a continuous process of dyke building and land reclamation. The history of Dithmarschen and North Frisia and the lives of their inhabitants are therefore inextricably linked with the sea.

Geologically, the landscape consists of hill land shaped by the one but last Ice Age (geest) and alluvial land (marsh) (Figure 9). The varied landscape began to be formed during the last ice age, when the sea level was about 100 m lower than today. Climate warming caused the sea level to rise, allowing the North Sea to enter North Frisian space around 3000 BC. Material was then transported from the geest cores in an easterly direction, causing the formation of 'old' marshland. Dunes forming before Sylt and Amrum created a protected area extending to the geest edge in the east, which became extensive moorland. When the sea level rose again by a few centimetres, this landscape was flooded and 'young marshland' was formed on top of the old (Naudiet, no year).

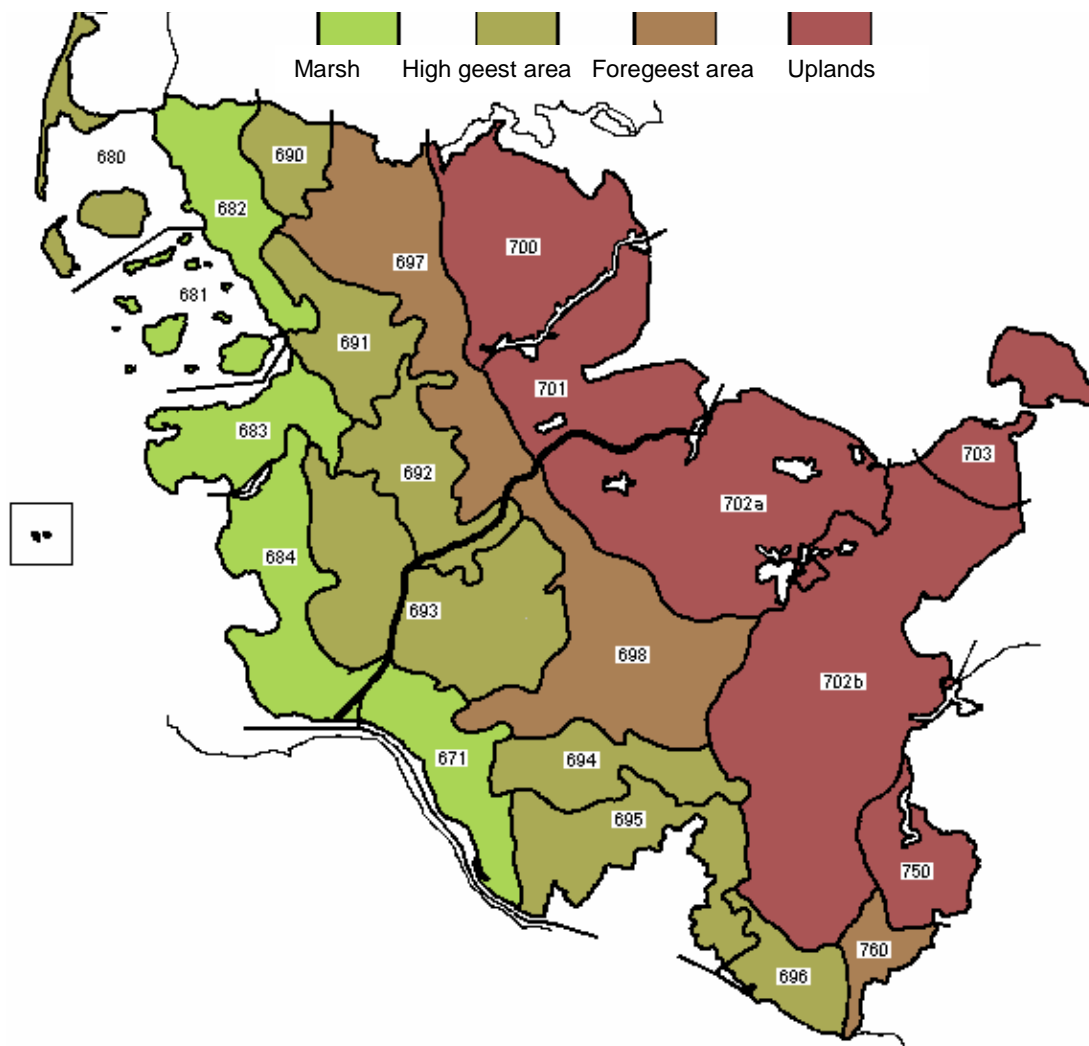


Figure 9: Relevant natural areas in Schleswig-Holstein. 681 North Frisian Marsh Islands and Halligen, 682 North Frisian Marsh, 683 Eidersted Marsh, 684 Dithmarschen Marsh. Lower Elbe Basin: 671 Holstein Elbe Marshes. Schleswig-Holstein Geest: 680 North Frisian Geest Islands, 697 Schleswig Foregeest, 690 Leck Geest, 691 Bredstedt-Husum Geest, 692 Eider-Treene Basin, 693 Heide-Itzehoe Geest. Source: Statistisches Amt für Hamburg und Schleswig-Holstein

Prehistoric settlers in the region were extremely dependent on their environment, as unpredictable changes in sea level and flood surges still reached far inland. Around 0 BC storm surges became less frequent, allowing people to settle in the flat and fertile marshlands. Later, when storms became more frequent again, housing hills were constructed, representing a first step towards conquering the marshes and still visible as key landscape features today (Bähr and Kortum 1987). Pliny the Elder gives an impressive description of early life the marshes: "Twice within a day and night the sea rushes in with incredible force and stretches into infinity; it covers land that is continuously battled over with nature, so that it is impossible to say whether (this land) is part of the mainland or the sea. The humble inhabitants live on high hills that have been constructed by hand above the level of the highest flood surge." (author's translation of a quote in Meier 2003:15).

In 1000 AD Friesian people began to cultivate the moorland in a systematic way (Bähr 1987). After taking off the top layer of peat crops could be grown on the 'old marshland' underneath. Settlers built the first low dykes alongside tidal channels, developing an artificial drainage system and building sluices alongside. Income was generated mainly from intensive livestock farming and salt obtained from peat. Land drainage caused the peat layer below the marshland to dry out, leading to a lowering of the land which was exacerbated by peat extraction. As a result, the sea repeatedly flooded parts of North Frisia, causing the land to be broken up into individual islands and peninsulas (Figure 10). Dithmarschen did not suffer the same fate because of the lack of geest cores that could have caused sand spits to form. The rising sea therefore met the geest edge relatively quickly, keeping the Wadden area narrower than in North Frisia. Land accretion then continued more or less undisturbed, leading to the accumulation of up to 30 metres of sand and clay. This provided Dithmarschen with a more stable and safer coastline than the predominantly peaty marshland found in North Frisia.

Human control over the environment increased with the construction of the first dykes in the 11th century (Stewig 1982, Meier 2003). Through the advent of new drainage technologies, moorlands were cultivated first, followed by older marshland further inland. A range of social, economic and landscape changes ensued, driven by increases in agricultural productivity, population growth and trade. Co-operative farmers associations took on responsibility for dyke construction and land reclamation, whilst parishes became a significant political power in the region. A planned and well-structured landscape began to emerge in the former marshes, containing settlements, a system of drainage ditches and regulated agricultural land holdings. Many of these features are still visible in the landscape today.

Whilst the inner areas of marshland were comparatively secure, the low sea dykes afforded little protection to the inhabitants of the outer marshland which continued to be threatened by storm surges. In 1362 a huge storm surge changed the configuration of the entire coastline. Many lives were lost, and most of the cultivated land was lost and transformed into Wadden Sea. The storm surge of 1634 was a similar turning point for the coastal landscape. Nearly all dykes were broken, the island of Strand was split into two, and more than 9000 people drowned. Most of the flooded land could not be regained, leading to the creation of the more or less contemporary configuration of the Wadden Sea (Bähr & Kortum 1987, Stewig 1982, Naudiet, no year).

Despite repeated losses of land, the conversion of marshland into polders continued unabated. Initially created by local inhabitants in order to claim the land rights, the Danish King, then ruler of the area, introduced a more planned approach to land reclamation in 1559, creating polders with the express aim of increasing the amount of taxable land. Polders continued to be created until the 19th century, each containing large and rectangular fields separated by drainage ditches. The current coastline and current line of sea defence is the result of a national sea defence policy which has been in place since the late 1970s (Meier 2003). Today, the flat landscape, with a low proportion of woodland and low density of settlements and transport infrastructure, is highly distinct, in particular with respect to historic landscape elements such as housing hills and old dyke lines. Together with the Wadden Sea, it is this low-lying former marshland which is responsible for the region's label as Germany's 'big sky country'.

The battle against the ferocious power of the sea contributed to shaping local perceptions of the sea, which is expressed in a wide variety of local art, literature, legends and tradition. Best summarized as a mixture of fear, threat, respect and attachment, it is only partly comparable with notions such as the "romantic sea" or the "pittoresque sea" which began to emerge in the 17th century (e.g. Corbin 1994, Schmidt-Höhne 2006). Romantic notions of the sea have retained a strong presence in the contemporary imagery of the North Sea as a holiday destination. For the purpose of tourism, the sea is only marginally presented as threatening. In contrast, local residents still have a healthy suspicion of the sea and a latent sense of vulnerability, expressed for instance in their fierce concerns over maintaining the current line of sea defence and resisting any attempts at managed retreat.

Building dykes for land reclamation and protection from the sea can be viewed as an attempt to resist the natural dynamism of the system and create a comparatively stable living and not least economic space. Relying on one's own ingenuity, working together successfully to reclaim ever more land, and a peripheral location away from centres of power combined to form a strong sense of independence and self-determination in the region from the medieval period onwards (Bruns & Gee 2010). This strong sense of independence is still characteristic of the region, expressed for instance in dislike of the state Government or protests against top-down decisions, such as the protests against the new National Park management plan in 1999 which was strongly perceived as 'imposed from above'. Local patriotism, however, equally applies to smaller spaces within the region, expressed for example in the competition between North Frisia and Dithmarschen or between municipalities within the respective districts. The drawback of such parochial thinking is that it can be an obstacle to development. Political networks such as the Trilateral Wadden Sea Forum or the Euregio "Die Watten" have recently been created in the desire to be heard within a Europe of regions and to stand up together for joint interests along the Wadden Sea coast.



Figure 11: North Frisia before the 1634 storm surge which led to the loss of the island of Nordstrand. Source: Naudiet, no year

3.4.3 Socio-economic character

Due to their position away from larger conurbations and national and international transport corridors, Dithmarschen and North Frisia represent some of the remotest regions of Schleswig-Holstein. Both North Frisia and Dithmarschen are classified as rural peripheral regions, mostly as peripheral regions with very low density (less than 50 inhabitants per km²) or peripheral regions with some evidence for urbanisation (less than 150 inhabitants per km²) (Bundesamt für Bauwesen und Raumordnung 2005, see Figure 12). In 2005, North Frisia had an average population density of 82 inhabitants per km² compared to Dithmarschen's 94 per km²; both of these are considerably lower than Schleswig-Holstein's average of 170 (District self-portrait 2005 (English version), www.dithmarschen.de, accessed May 2007). This remoteness brings advantages as well as disadvantages.

Traditionally, agriculture forms the major land use in the Wadden Sea areas of Schleswig-Holstein (Nissen 1986). Even though its economic importance has steadily declined over the last 30 years, it has remained a politically significant sector at local and regional level (Kannen et al. 2005). In 2001, the primary sector still accounted for more than 6% of the gross value added in both districts (Bundesamt für Bauwesen und Raumordnung 2005 p. 206); about 78% of the area of both districts is agricultural land (including moorland and heathland, Ziesemer & Zahl 2005). Dithmarschen achieves distinction as Europe's largest continuous cabbage growing area; 80 million cabbages are grown here annually, which is about one third of Germany's entire production⁵.

Nevertheless, it is tourism which is the mainstay of the local economy both in terms of the number of jobs provided and income generated (Ziesemer & Zahl 2005). An estimated 9,000 full time job equivalents are linked to the tourism sector in the region (Gätje 2003), contributing to its huge importance in the minds of local people as a driver of the local economy. The cultural landscape, composed of marshland, geest and the Wadden Sea today plays a significant role in marketing (Hasse 2007), often combined with wellness, health and relaxation in an environment described as traditional and non-urban. Given the competition between German coastal destinations, the carefully crafted image of the region as a 'natural and traditional' Wadden Sea region has grown in significance as a unique selling proposition and much effort is therefore directed towards maintaining and improving it.

The Wadden Sea, protected as a National Park since 1985, is a key element in the image the region has crafted for itself. After long and severe conflicts between nature conservationists and local people throughout the 1990s, the Wadden Sea National Park (Figure 13) is now widely acknowledged as a major asset and tourist attraction in its own right (Kannen et al. 2005). Further status was gained through the recent recognition of the German and Dutch Wadden Sea as UNESCO World Natural Heritage. Many tourism operators now actively rely on the National Park in their marketing; the districts also use it to showcase the particular qualities of the natural environment the West coast has to offer (e.g. www.dithmarschen.de). This leads to suspicion of any developments that may threaten the region's external and internal image.

⁵ http://de.wikipedia.org/wiki/Kreis_Dithmarschen#Entstehung_und_Gliederung, accessed 21 July 2011

Although the tourism industry has contributed to a degree of economic stability in the region, the region is no stranger to economic difficulties. In the late 1980s and early 1990s, the peripheral character of the West coast made it particularly susceptible to comprehensive structural change. The decline of the primary sector was accompanied by job losses in the public administration sector, the closure of several military sites, losses in tourism, and a loss of significance of the manufacturing sector. In 2000, just 8.5% of the workforce was employed in the manufacturing sector in North Frisia (Volmari 2002), which is significant given the ability of this sector to generate added value. North Frisia's below-average economic value generation (gross value added per inhabitant) was partly responsible for unemployment and the increasing out-migration of younger people in search of (better) jobs. Finding new opportunities to increase the significance of the manufacturing industry has therefore been a key concern of regional managers and actors such as the local chamber of commerce and industry ever since.

In the 1990s the tourism sector responded to the downturn by more targeted marketing and local and regional investment in tourism infrastructure, but stability in the region was not re-gained until 1996 when increases in gross value added were observed in tourism, trade, gastronomy and transport together with a budding wind industry. Onshore wind farming became a key economic factor on the West coast from the 1990s onwards due to the confluence of various enabling factors. Wind farming was pioneered and first tested in Dithmarschen in the 1980s through the publicly funded "GROWIAN" wind turbine (the acronym spelling "large wind turbine"), followed by the installation of Germany's first wind farm in 1987. From then on, the number of installed turbines grew quickly, which apart from high wind yields may also be due to the region's willingness to embrace and actively pursue this new technology. Many medium-sized enterprises were present on the West coast during the 1990s and early 2000s active in production, sales, service and maintenance; growth sometimes amounted to around 40 additional jobs created per month (Volmari 2002). Some companies later became global players; some of the best-known are REpower and the German subsidiaries of Vestas (as well as NEG Micon, which was bought up by Vestas in 2004). REpower, a global company, still has a production hall in Husum employing around 300 people and producing 350 turbines per year⁶; Vestas Deutschland GmbH has its head office in Husum⁷ but no longer operates any production sites on the West coast. By the mid-2000s, onshore wind farming had resulted in the creation of 1,400 jobs in this sector in North Frisia (Ziesemer & Zahl 2005), including companies active in servicing and maintenance, planning and engineering, as well as insurance companies, wind farm operators and investment companies (Volmari 2002). Husum, a town of 25.000 inhabitants and the regional capital of North Frisia, has reached global renown as the host of a biannual trade fair "Husumwind", the world's largest trade fair for wind power.

⁶ www.repower.com, accessed 21 July 2011

⁷ www.vestas.com, accessed 21 July 2011

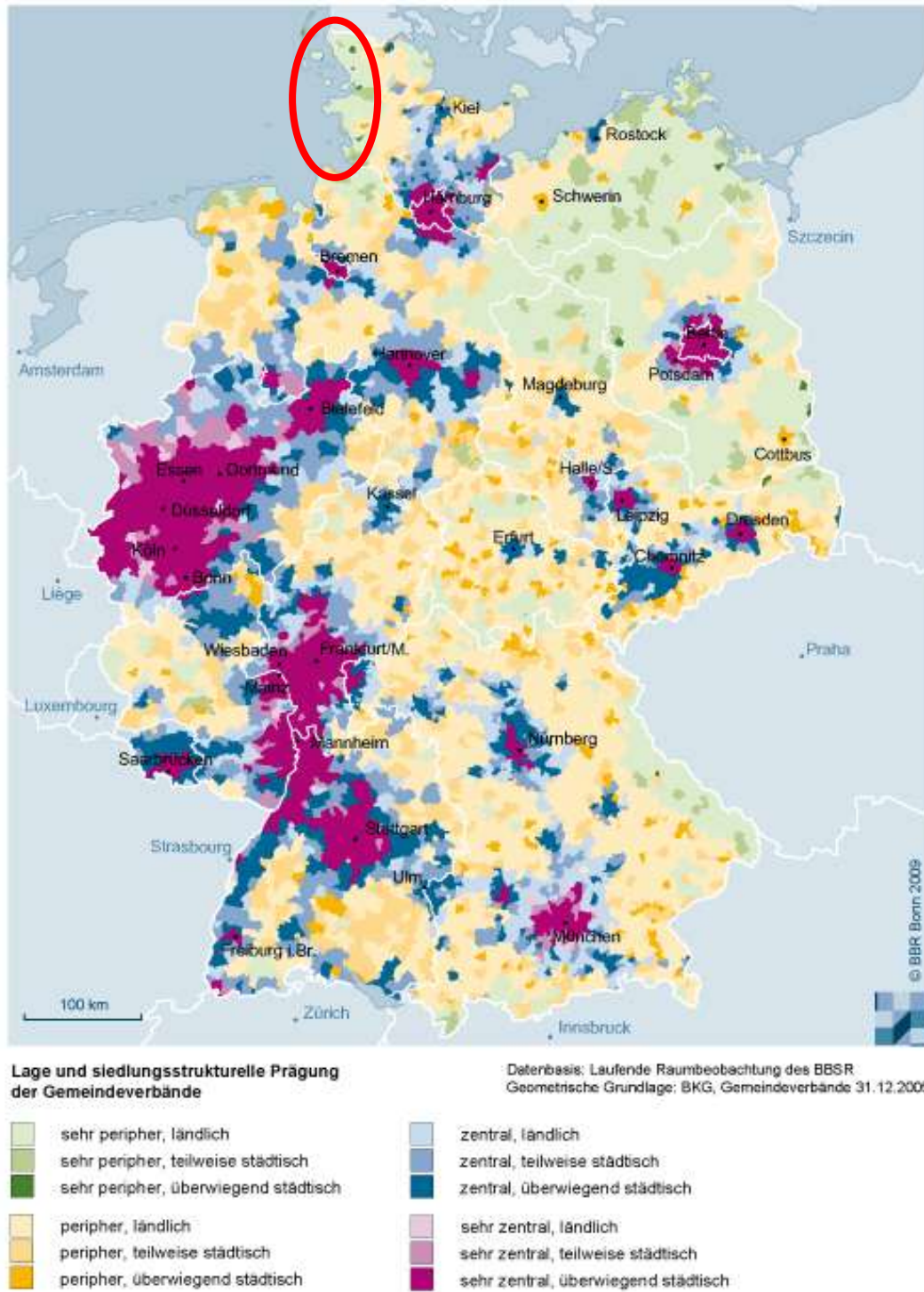


Figure 12: Spatial types in Germany. Red circle: Dithmarschen and North Frisia. Light green: very peripheral, rural; medium green: very peripheral, some evidence of urbanisation. Source: http://www.bbsr.bund.de/nn_103086/BBSR/DE/Raumbewertung/Werkzeuge/Raumabgrenzung/Raumtypen2010/Raumtypen2010.html, accessed 14/06/2008

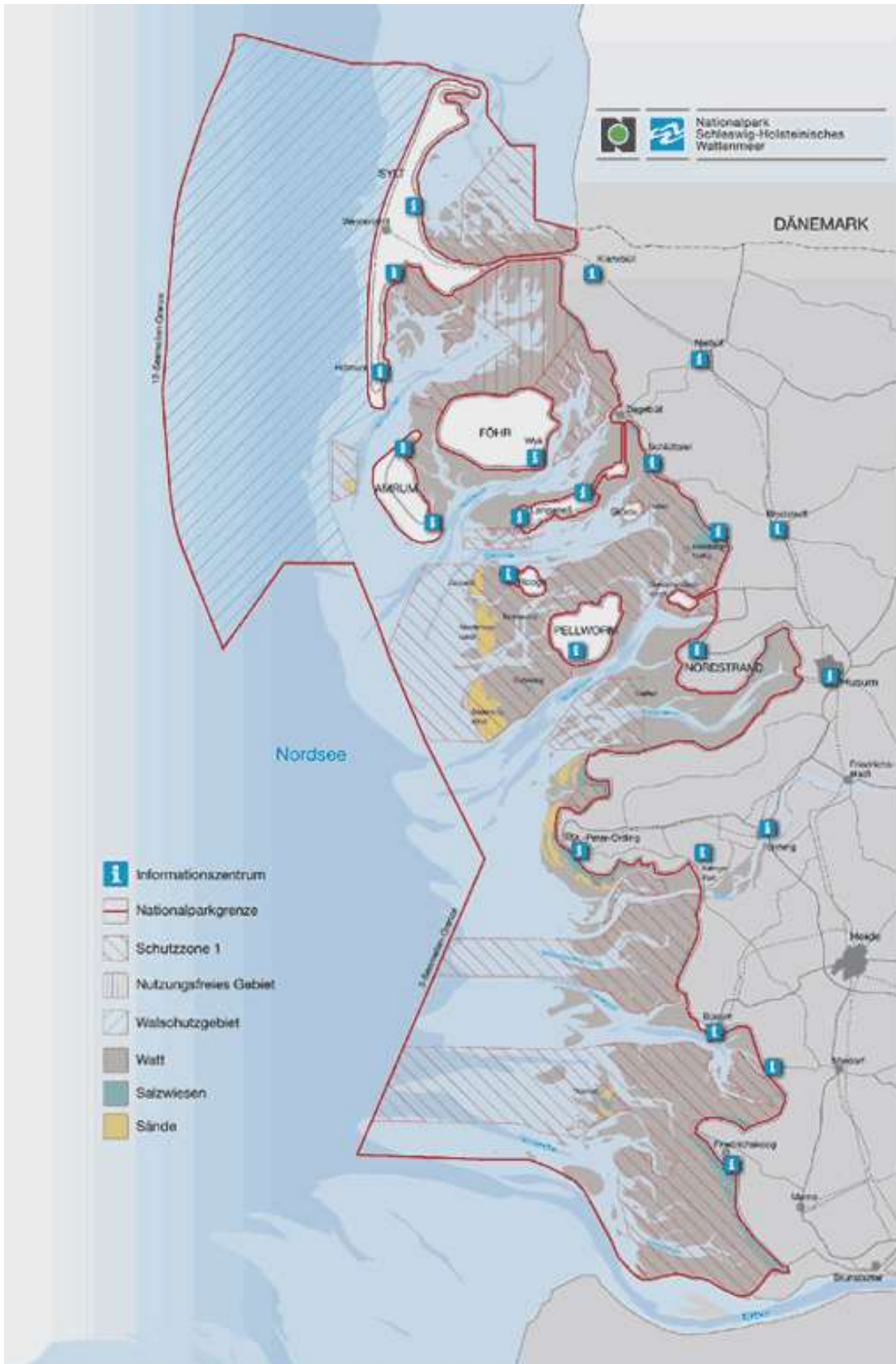


Figure 13: Wadden Sea areas of North Frisia and Dithmarschen covered by the National Park. Source: Nationalpark Schleswig-Holsteinisches Wattenmeer, <http://www.wattenmeer-nationalpark.de/karte/national.htm>, accessed 08/05/2008

Apart from jobs, the region also benefits from wind farming financially: In North Frisia, about 25-30% of the business tax income is derived from the wind industry, rendering it the second most important economic activity in North Frisia behind tourism. The business tax income for local municipalities in Dithmarschen is currently estimated to be around 4 million Euros per year⁸. Farmers also profit from the industry, receiving about 59 million Euros in 2003 in compensation for renting their land in Dithmarschen alone. Importantly, also citizens benefit directly from onshore wind farming on account of a high proportion of citizens' wind farms; the relatively low proportion of large external investors could be a reason why direct opposition to onshore wind farming has so far remained low⁹.

Currently in the state of Schleswig-Holstein, about 38 percent of electricity is generated from wind energy; in Dithmarschen, nearly half of the district's energy need is met by wind farms. North Frisia has more than 600 wind turbines, Dithmarschen about 800; the latter cover 1.39% of the district's total area (compared to 0.49% for Schleswig-Holstein as a whole)¹⁰ Most of the turbines are situated in designated suitable areas, the majority of which are in the low-lying marshland on the coast. A slight increase of designated suitable areas is expected with the next draft of the regional spatial development plan in 2010⁶.

Although the economic impacts of the wind industry on the region are fluctuating due to the fact that much of the industry is demand-led, it appears to have left its mark. An assessment of the 'fitness' of different German regions for the future based on 26 socio-economic indicators for the year 2004 concluded that Dithmarschen and North Frisia were in positions of low to average strength; more importantly perhaps, this was accompanied by low degrees of dynamism (measured e.g. in expected economic growth or changes in job density) (Prognos AG: www.prognos.com/zukunftsatlas, accessed February 2005 and July 2011). For North Frisia, the degree of dynamism has considerably increased in the 2010 assessment, which is now classed as very high. This latest assessment puts North Frisia in 35th place in a ranking of all 412 German districts and in 55th place in terms of competitiveness and innovation¹¹. Although this does not specifically mention the wind industry as a sector, it is fair to assume that it has played a role not least in generating secondary investment and technological innovation.

Despite the positive economic impact of the wind industry on the region, the socio-economic system remains characterized by structural vulnerability. This is due to the region's continued dependence on tourism as a key economic sector, as well as the structure of the population and associated demographic trends. Figure 14 summarizes key structural data for both districts, which shows slight differences between North Frisia and Dithmarschen. As elsewhere in Germany, North Frisia and Dithmarschen suffer from a natural population decline due to low birth rates. The region was able to compensate for this until the mid-2000s due to the immigration of retirees and families, but this is no longer expected to be the case from about 2010 although the

⁸ www.dithmarschen.de, accessed 21 July 2011

⁹ www.wfg-nf.de/seiten/de/aufgaben_angebote/windenergie/windenergie.php, accessed July 2011

¹⁰ <http://www.dithmarschen.de/index.phtml?call=detail&css=&La=1&FID=647.2965.1&sNavID=1599.21&mNavID=164.674&ffmod=pres&ffsm=1>, accessed 21 July 2011).

¹¹ Prognos AG: www.prognos.com/zukunftsatlas, accessed July 2011.

region continues to be attractive as a retirement region. By 2020, the number of over-65-year-olds is expected to grow by 16.7% in Dithmarschen and 21.9% in North Frisia (dsn 2005). For the period to 2020, slight population shrinkage is thus expected in North Frisia but losses in Dithmarschen are expected to range between 1.5% and 5.1% (Klein-Hitpaß & Bruns 2006). The remaining population continues to age, expressed in the increase of the number of older persons of working age accompanied by a decrease in the numbers of young people and younger persons of working age. By 2020, a decrease of 19.2% is expected in North Frisia in the group of 3- to 20-year-olds, with an even greater decrease by 27.3% in Dithmarschen (dsn 2005).

The ability of the region to compensate for these trends strongly depends on the economic and educational prospects it can offer. Migration is clearly influenced by economic opportunity which acts both as a push and pull factor (Berlin Institut für Bevölkerung und Entwicklung 2006). Between 1998 and 2003 jobs were lost in both districts, amounting to -1.1% in North Frisia and -4.8% in Dithmarschen (Klein-Hitpaß & Bruns 2006). Job centrality¹² is around 1 in both districts, indicating the region is not particularly significant as an employment location. This is a particular problem for younger, well-educated persons or those wishing to move back to the region after obtaining higher education elsewhere. The region lacks higher education opportunities (especially university level), which is why educationally motivated emigration in the group of 18- to 24-year-olds is strong, with 6.6 inhabitants out of 1000 leaving North Frisia and 23.9 out of 1000 leaving Dithmarschen (Klein-Hitpaß & Bruns 2006).

Counterbalancing these trends would require fresh economic development, job creation and attendant investment in the social infrastructure. If current trends continue and no action is taken to compensate for the loss in the productive and younger population, supply and demand will shift in the key infrastructural parameters of living conditions, creating an oversupply of schools and day-care centres for example and an undersupply of healthcare facilities (assuming that older persons require more care) (Licht-Eggert et al. 2007). This could be indicative of a downward spiral leading to a gradual loss of key infrastructure, with attendant impacts on quality of life and likely further out-migration.

¹² Job centrality is an indicator of the significance of a municipality as an employment location. It compares the number of employees subject to social security deductions to the number of residents. A figure of >1 indicates more employees than residents, suggesting the municipality is more significant as a provider of employment than place of residence.

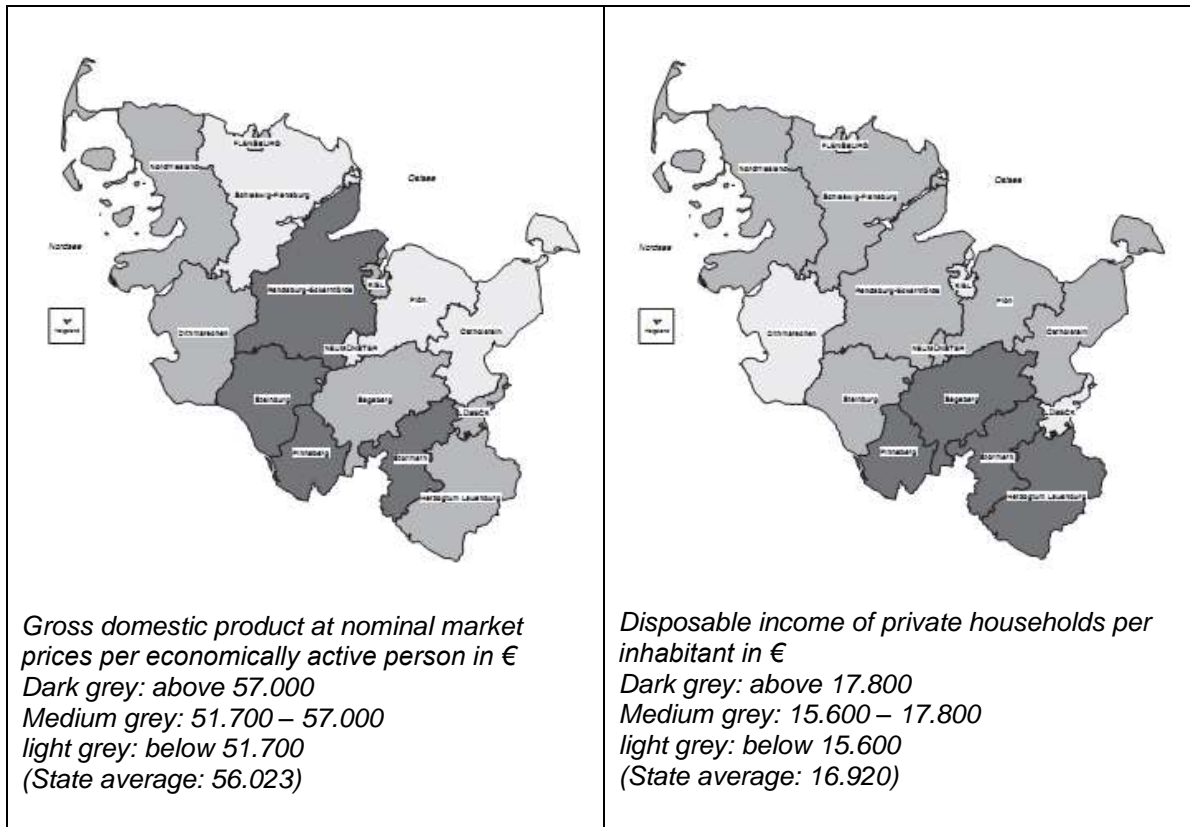


Figure 14: Key structural data for Schleswig-Holstein for 2007. Source: Statistisches Amt für Hamburg und Schleswig-Holstein 2007)

Quality of life is a useful parameter for estimating the attractiveness of a region as a place to live and work. Employment status, disposable income and expectations of future economic development are most closely related to how people rate quality of life, with a negative rating of these effects outweighing other factors that might be rated positively such as quality of housing or quality of the environment (Bundesamt für Bauwesen und Raumordnung 2005). The more negative the assessment of the current economic situation, the greater the willingness of individuals to move to another region. Importantly, however, this does not mean that attachment to a particular region is low. Nationally speaking for example, about 35% of the German population say they feel attached to a landscape, although this has steadily declined since 1991 when the value was still above 40% (Bundesamt für Bauwesen und Raumordnung 2005 p.14).

In Schleswig-Holstein, 75% of citizens consider it possible to live well or very well in their respective regions, placing the state fourth in a ranking of all 16 German states (Perspektive Deutschland 2005/2006¹³). Still, the implication is that 25% of citizens are dissatisfied with their current situation, a proportion that increases dramatically when citizens are asked to rate the expected quality of life in 5 to 10 years. Only 37% said that it would be possible to live well or very well in their respective region in Schleswig-Holstein, meaning that about half of the population expects that they will not be able to maintain their existing standards of life. This is mostly due to

¹³ Age group of 16-69-year-olds

a lack of faith in future economic perspectives, low expectations for families and children, as well as less availability of social security and health care. This scepticism is confirmed when comparing the region of South-Western Schleswig-Holstein (comprising the districts of Dithmarschen and Steinburg) and North-Western Schleswig-Holstein (comprising the districts of North Frisia, Schleswig-Flensburg and the city of Flensburg). This shows that people in North-Western Schleswig-Holstein are generally more satisfied with their current situation and also more optimistic than their South-Western neighbours, which would seem to fit the statistical overview presented in Figure 14. 73% of citizens in North-Western Schleswig-Holstein said they could live well or very well in their region compared to 68% in South-Western Schleswig-Holstein, placing them 6th and 13th respectively out of a total of 23 rural regions in Germany. In 10 years time, however, only 41% expect to live well or very well in the northern region compared to a low 34% further south. When asked to rate a number of factors that could facilitate economic growth, most respondents thought their regions did badly compared to the rest of Germany. The only exception was the availability of a highly qualified workforce in South-Western Schleswig-Holstein which was rated positively. A particular weakness in both regions is the lack of public transport, emergency medical care and cultural facilities. A particular strength of North-Western Schleswig-Holstein is the high quality of the environment and nature, which is rated less highly in South-Western Schleswig-Holstein (www.perspektive-deutschland.de, accessed 18 September 2009).

This confirms an apparent paradox inherent in the peripheral location of Dithmarschen and North Frisia. In terms of quality of life, structural weakness is clearly deplored, yet the peripheral location of the region is also counted as a decided advantage. Residents perceive life by the sea, the distance from urban clusters and the beauty of the land- and seascape as essential contributors to quality of life which is described as less hectic, relaxed and down to earth (Bruns & Gee 2010). Similar aspects were noted by in the survey *Perspektive Deutschland* in terms of the high value ascribed to the natural environment in North Frisia. What also stands out is the region's a strong sense of identity and attachment to 'home' and traditions, expressed for instance in a high number of persons that have lived in the region for several generations (Ratter et al. 2009). This could be linked to the independence of the local population, which is disinclined to submit to top-down decision-making and striving to be as self-sufficient as possible (Bruns & Gee 2010).

If economic opportunity is key to reducing the structural deficits on the West coast, mainly on account of attracting more persons of working age and families to the region, it is unsurprising that any opportunity to create new employment is welcomed. Given the attractiveness of the landscape and also the perceived advantages of living on the West coast, two scenarios are conceivable for future development. One is to continue investment in low-key, landscape-based tourism and the health industry, which seems compatible with the desires of the predominantly older residents and those profiting from tourism already. It is also compatible with the more traditional sectors in the region such as agriculture and fishing, as well as nature conservation which benefits from utilizing the Wadden Sea National Park as a tourist attraction. The other is to strengthen a second or third key sector to make the region less dependent on the fluctuations of the tourism market. Wind farming has already opened up an avenue along the latter lines, with impacts on the landscape but also on employment. The question is whether this can be continued

with offshore wind farming and what the implications of such development would be in the minds of local residents.

3.4.4 Offshore wind farming on the West coast

In the EEZ off the coast of North Frisia and Dithmarschen 5 offshore wind farms are currently preparing for construction, with contracting already secured by the respective investors (in brackets):

- Nordsee Ost (2011-2013, RWE Innogy)
- Dan Tysk (2012-2014, Vattenfall)
- Meerwind Süd/Ost (2012-2013, Blackstone)
- Amrumbank West (2013-2014, E.on)
- Butendiek (2013-2014, wpd)

A key aspect of the local debate is the potential contribution of offshore wind farming to regional development in North Frisia and Dithmarschen. Since its early beginnings offshore wind farming has been promoted as a potential trigger for renewed economic growth in the region. Calculations with regionally adapted input-output models (Hohmeyer 2003, 2006, Hohmeyer et al. 2010) showed that if the West coast could successfully attract a share of turbine production and service, both added value and employment could be shifted to the region. This, however, depends on the region's ability to offer the necessary infrastructure to industry, in particular concerning port development.

Regional debates and political indecision at the level of the Schleswig-Holstein government have led to a delay in infrastructure development, which now places Schleswig-Holstein and the West coast in a position where they will only achieve marginal direct profit from the offshore wind farms mentioned above since most of the necessary work will now be done in other German regions. However, since 2011 a port concept has been in place (www.offshore-haefen-sh.de), providing investors with possibilities to provide service and maintenance of offshore wind farms from the region.

The relationship between wind farming and tourism is likely to be a particularly critical one for the region. Fears expressed by many wind farm opponents in the local press or in personal discussions relate to the aesthetic impact of offshore wind farms on the seascape and resulting from this, negative impacts on tourism. From the very beginning, this has been one of the core arguments used by the anti-wind farm initiative "Gegenwind-Sylt" (www.gegenwind-sylt.de). Even though there is no empirical evidence that offshore wind farming would have a negative impact on tourism, the fear in people's minds is real and tangible, pointing to the seascape as a critical constituent of acceptance. For the West coast this fear may be particularly relevant because tourism in the region is critically dependant on nature and a particular image of the land- and seascape. In the view of some, this has already been marred by too many onshore wind farms, spoiling the landscape; others, in particularly also tourists, do not seem to mind and even appreciate the addition of horizontal landscape elements in an otherwise flat land.

The relationship between humans and the sea has defined life on the coast for centuries and bred not only to particular attachment, but also a strong sense of ownership of the area including the Wadden Sea and North Sea areas beyond it. Offshore wind farming therefore not only represents a threat to the visual aesthetics upon which tourism depends, but also a threat to local control over what is perceived to be a key resource. Negative experiences with one of the first offshore wind farms to receive planning permission off the island of Sylt may have played a role in this. This wind farm was intended as a citizen's wind farm ("Butendiek"), but it proved impossible to raise the necessary capital so it had to be sold on to an international investor. The current licensing system leaves local communities with virtually no influence at all over any planned offshore wind farm developments (Bruns & Gee 2010).

3.5 Survey design

Seascape values and values associated with offshore wind farming were elicited by means of a self-administered questionnaire survey of local residents in the case study area. The questionnaire (see Appendix) was structured in such a way that general value systems, images of nature and perception of the land- and seascape were established first before moving on to the specific issue of offshore wind. Rather than obtaining a representative range of views and opinions, the aim was to identify the diversity of ways in which views of the sea and the seascape and views of offshore wind farming might interplay. There was a particular interest in capturing those associations with the seascape that have built over time and might be related to a specific West Coast sense of place.

The questionnaire contained questions on the following in that order (see chapters 4, 5 and 6 for more details):

- personal values, where respondents were asked to rank values provided in a list,
- images of nature, where respondents were asked to choose one of four options (which described nature as resilient, sensitive, somewhat tolerant or unpredictable) and then give a reason for their view,
- what matters most to the respondent in the context of living on the West coast,
- associations with the terms "sea", "North Sea" and "West coast of Schleswig-Holstein"¹⁴,
- ways in which the coast and sea are used,
- attitude to offshore wind farming, specifically existing knowledge and awareness of offshore proposals, together with reasons for these attitudes.

The questionnaire used a mix of open and closed questions. Responses received to the open questions were analysed by means of content analysis, using emergent coding to categorise the responses (Stemler 2001, Diekmann 2005, Licht-Eggert et al. 2008, see also chapters 6 and 7).

¹⁴ the terms „West coast“ or „West coast of Schleswig-Holstein“ are widely used to describe the spatial unit comprised by the two districts of North Frisia and Dithmarschen, so that their meaning is quite clear to anyone living in that area.

The questionnaire was pre-tested on 16 volunteers (academic and non-academic), some with background knowledge on offshore wind farming and/or the case study area and others without, and adjusted to make sure there were no misleading or unclear questions. Residents were then canvassed in a postal questionnaire survey sent to randomly chosen households in selected local municipalities¹⁵.

3.5.1 Sampling approach and municipalities selected

To be comparable to typical opinion polls carried out on wind farming within the German population, simple randomized sampling would have had to be carried out amongst all persons over 18 years old, of German nationality and living in a private household. Whilst this method is not without inherent problems itself (e.g. underrepresentation and undercoverage, see Schnell 1991) there were several reasons for not applying it in this study. One is clearly a practical one. Another one, however, was that the survey initially chose to draw its sample from communities representing a range of geographical contexts within the case study area. This is based on the premise that location might exert a considerable influence on how residents view offshore wind farming or indeed the local landscape, which simple randomized sampling may not pick up. Island residents, for example, who are much closer to potential offshore wind farms might feel differently than mainland inhabitants; a similar case can be made for tourism hotspots vs. non-tourist areas or urban vs. rural areas.

Sampling was therefore a multi-stage process, which involved non-random selection of municipalities (conceived here as a form of clusters) during the first stage and random selection of residents within each of the selected municipalities. Area sampling as a special form of cluster sampling was the method of choice, with random sampling of residents within the clusters. Rather than a multistage random process, the first stage of sampling involved a conscious selection of municipalities for the explicit purpose of drawing a picture composed of different types of location.

Communities that could be termed affected by offshore wind farming were an obvious focal point of the study. The North Frisian islands were a first choice, both on account of their spatial proximity to the proposed wind farms in the North Sea and also the controversial debate of offshore wind farming in the local media (Sylt, Amrum, Föhr and Pellworm). Another focal point were selected coastal mainland communities that are heavily dependent on tourism, such as Büsum, Friedrichskoog and St Peter Ording (North Frisia and Dithmarschen). Here too, fears had been voiced concerning the potential impact of offshore wind farming on tourism, in particular perceived restrictions of the wide expanse of horizon over the Wadden Sea. A set of communities that could be termed potential winners of offshore wind farming are the potential construction and service centres. Husum (North Frisia) and Brunsbüttel (Dithmarschen) both have port facilities, and both are in need of new economic impulses following the decline of the more traditional port-based industries. Lastly, communities were selected because they would not appear to be directly affected by offshore wind, and comprised both urban and rural communities in the hinterland in Dithmarschen and North Frisia (Meldorf, Leck, Heide and Drage and Dellstedt).

¹⁵ based on their 2005 boundaries; the composition and number of municipalities has since changed

Selection therefore ensured that a range of different types of communities typical for the region were represented, such as rural and urban, coastal and hinterland, small and large and dependent or not dependent of tourism. The resulting clusters comprised a total of 14 boroughs, 8 of which in North Frisia and 6 in Dithmarschen (Figure 15). Using the most recent data available at the time (30 June 2004 for Dithmarschen, 31 March 2004 for North Frisia, cf. Kreis Nordfriesland (2005), the total number of inhabitants per municipality was used as a theoretical sampling population (Table 3).

Table 3: Municipalities selected for the questionnaire survey. NF = North Frisia, HEI = Dithmarschen (Figures: 2004 for Dithmarschen, 1.9.2005 for Nordfriesland) Sources: District Administrations of North Frisia and Dithmarschen).

Municipality	Administrative District	Number of inhabitants at the time of surveying (10/2005)
Husum Stadt	NF	20,879
Leck	NF	7,588
Drage	NF	599
St Peter Ording	NF	4,059
Sylt	NF	12,046
Amrum (Nebel, Wittdün, Norddorf)	NF	2,268
Pellworm	NF	1,378
Föhr (Wyk Stadt and Föhr Land)	NF	8,658
Total North Frisia		57,475
Stadt Brunsbüttel	HEI	13,939
Meldorf	HEI	7,698
Stadt Heide	HEI	20,504
Dellstedt	HEI	784
Büsum	HEI	4,884
Friedrichskoog	HEI	2,522
Total Dithmarschen		50,331

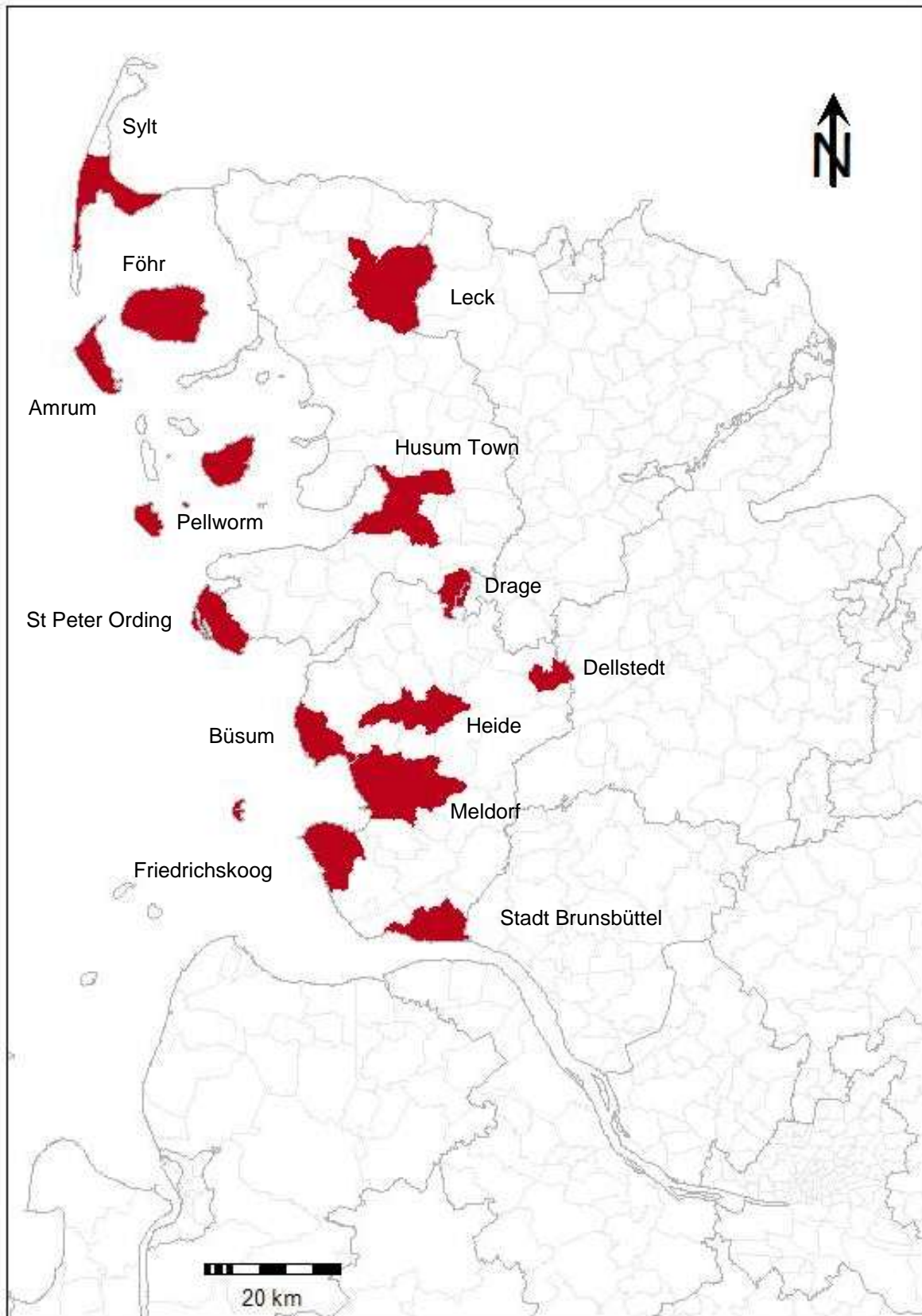


Figure 15: Location of the postcode areas surveyed (Map: own design based on 2011 administrative boundaries)

3.5.2 Sampling within the selected municipalities

As set out above, the first sampling stage was not random, but consisted of a conscious selection of municipalities to be surveyed. Within the selected municipalities, a random sample was then drawn based on the local telephone book (private households) as a sampling frame. This was done for reasons of convenience and as a conscious alternative to the electoral register which is not necessarily up to date and also expensive to obtain. This accepts the fact that not every household is necessarily listed in the telephone book and that strictly speaking, results are only representative of the proportion of local residents listed in the telephone book. From the telephone book of households, names were picked at random until a pre-set quota of 1% of the respective total number of residents was met (Table 4). The sample size of 1% was an arbitrary choice based on practical constraints, although it effectively prevents any statistical analysis being carried out on the small boroughs for reasons of too small a sample size.

Table 4: Municipalities selected, questionnaires sent and questionnaires returned. NF = North Frisia, HEI = Dithmarschen (Figures: 2004 for Dithmarschen, 1.9.2005 for North Frisia) Sources: District Administrations of North Frisia and Dithmarschen).

Municipality	District	Inhabitants at the time of surveying	Questionnaires sent out	Total number returned	Rate of return (%)
Stadt Husum	NF	20,879	209	37	17.70
Leck	NF	7,588	78	18	23.08
Drage	NF	599	6	4	66.67
St Peter Ording	NF	4,059	43	13	30.23
Sylt	NF	12,046	120	23	19.17
Amrum (Nebel, Wittdün, Norddorf)	NF	2,268	24	9	37.50
Pellworm	NF	1,378	14	5	35.71
Föhr (Wyk Stadt and Föhr Land)	NF	8,658	88	18	20.45
Total North Frisia		57,475	582	127	21.82
Stadt Brunsbüttel	HEI	13,939	139	36	25.90
Meldorf	HEI	7,698	76	25	32.89
Stadt Heide	HEI	20,504	209	32	15.31
Dellstedt	HEI	784	9	3	33.33
Büsum	HEI	4,884	49	19	38.78
Friedrichskoog	HEI	2,522	26	3	11.54
Total Dithmarschen		50,331	508	118	23.23
Total			1090	245	22.48

1090 questionnaires were sent out, each marked with a code to be able to trace it back to its municipality of origin (postcode). 245 were received back, which corresponds to an overall rate of return of 22%. The highest rates of return were achieved for Drage (66%), Büsum (39%), Amrum (37%) and Pellworm (35%), the lowest for Friedrichskoog (11%) und Heide (15%). The sample size per municipality was too small to conduct any meaningful comparative statistics; for some of the questions, however, a distinction was drawn according to island and mainland residents. The main comparison throughout analysis was between random and active respondents (see below).

3.5.3 Random and active group

Mention of the study in the Dithmarscher Rundschau and other local newspapers in the region created considerable interest and active requests by local residents to be included in the survey. A decision was therefore taken to allow residents in Dithmarschen and North Frisia to order copies of the questionnaire for themselves. This allowed a second “active” group to be created that was not random, providing an opportunity to create a profile of persons more directly concerned or interested in offshore wind farming. The active group was expected to consist of persons with stronger views on offshore wind farming, resulting in stronger polarisation than in the random group. A total of 250 persons requested a copy of the questionnaire and 142 were returned, which corresponds to a rate of return of 56%. Most of the “active group” live on the islands, with strong representation of the anti-offshore wind farming initiative “Gegenwind”. Another large group was from Büsum, possibly reflecting the degree to which the Büsum-located FTZ (Forschungs- und Technologiezentrum Westküste), which acted as local contact point and distributor of the questionnaire, is known within the region. Unfortunately, not all respondents of the active sample provided their place of residence, so not all of them could be assigned to geographical categories such as island/mainland residents.

On specific questions relating to wind farming, analysis treated both samples separately in order to test the idea that the active group would hold more definitive views on the subject than the random group. On other, more general and open questions (for instance, values, views of landscape and the sea), both samples were analysed together in order to obtain a general West coast basis of views, with results then correlated with offshore wind farm opinions at a later stage.

Throughout, the main focus of analysis was on the internal factors that might conceivably influence attitudes to offshore wind farming. External factors such as demographic factors (age, income, education, job) or political preference and membership in organisations were tested for relevance briefly but not exhaustively. Analysis was more focused on drawing out distinct “types” of offshore supporters and opponents, which meant identifying patterns composed of a certain alignment of values, perceptions and attitudes. Obviously, there are potential correlations between such internal patterns and external factors, and does not imply that offshore wind farming attitudes are not influenced by external factors. Emphasis is simply made of the point that internal value patterns formed the conceptual and analytical core of the study, with other influencing factors left unexplored.

One expectation was that any value-attitude patterns would be more distinct in the active sample, potentially confirming their (weaker) existence in the random group. One external aspect that

clearly does play a role is place of residence; where relevant, comparisons were therefore drawn between island residents and mainland residents (for instance, on cross-comparisons between seascape values and attitudes to offshore wind farming). Sample sizes were 142 (active) and 245 (random) respectively, with 387 representing the total number of respondents.

3.5.4 Basic demographic characteristics of the sample

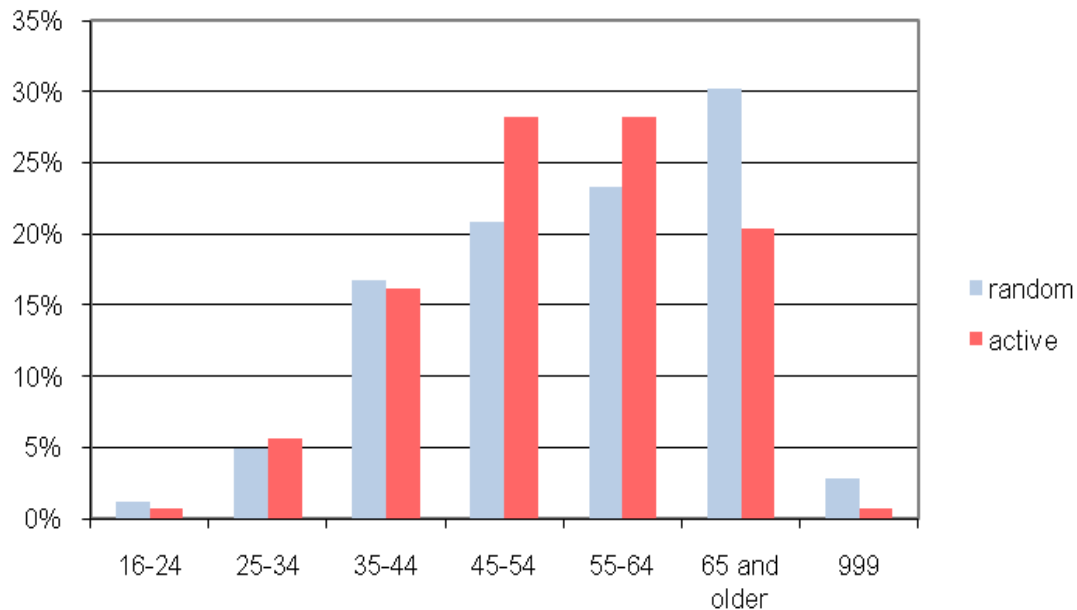


Figure 16: Age distribution in the active and random groups ($n(r) = 245$, $n(a) = 142$)

For both the active and the random group 60% of responses were received from men and 40% from women. In terms of age, there is a clear predominance of those over 45 in both groups (Figure 15). In the random group the over-65-year-olds make up for 30% of the responses received, constituting the largest age group overall. In the active group the largest groups are those aged 46-55 and 56-65, respectively, with those over 65 years of age amounting to 20% of the responses. Less than 6% of respondents in both groups are between 25 and 34 years old; in those under 24 the percentage is not even 1%. This distribution partly reflects the demography of the region; at the same time, older people might feel a stronger obligation or simply have more time to return questionnaires. An important consequence is that results are biased in terms of age. This is a significant point since other surveys have shown that the perception of (onshore) wind farming is age-dependent, with those under 30 years old showing a more positive attitude than older persons (GEO Magazin 2008). Younger persons, which obviously still make up a large share of the population, may also have given rather different answers.

In terms of education, differences between the groups are slight (Figure 17). 38% of respondents in the random group and 38% of those in the active group left school with an O-level equivalent, compared to 13% and 18% of respondents with A-levels. In the random group those with a secondary modern school qualification represent a larger percentage than in the active group (23% compared to 13%); at the other end of the scale 24% of random respondents have a university or equivalent degree compared to 32% of the active group. This too can be seen as typical for the region and the age groups represented in the sample. Many older people in Germany educated before the 1970s had careers without a university degree; also, the region offers a comparatively low number of jobs for academics, which are therefore less represented in the population than in other parts of the country.

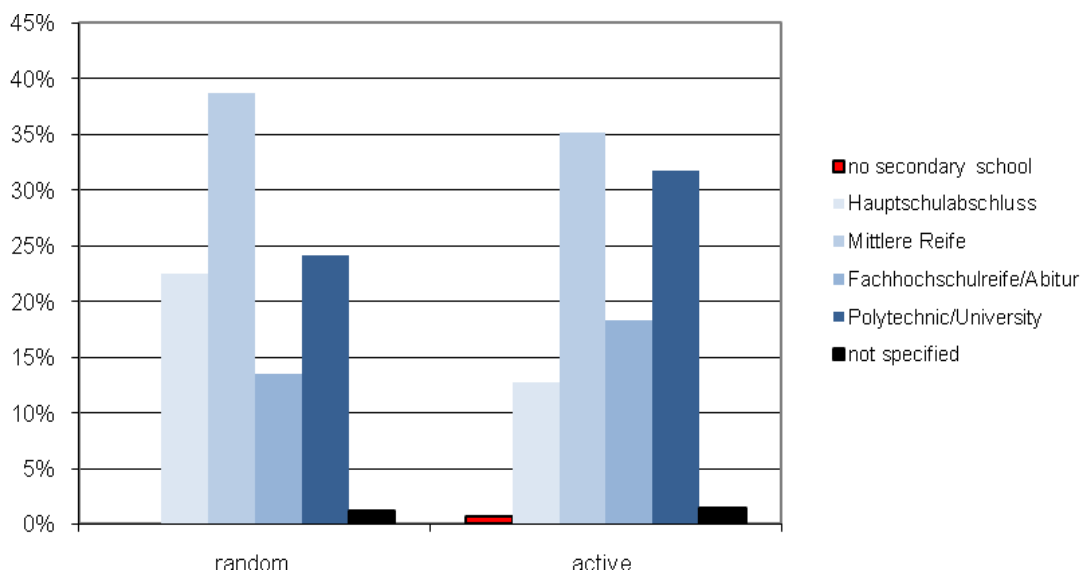


Fig. 17: Educational level of respondents ($n(r) = 245$, $n(a) = 142$). *Hauptschulabschluss* = secondary modern school qualification (most basic level in Germany). *Mittlere Reife* = GCSE equivalent. *Fachhochschulreife/Abitur* = higher education entrance qualification/A-levels. Residents were asked to state their highest qualification.

Occupational groups are also distributed fairly homogenously across both groups (Figure 18). Unsurprisingly given the predominance of older persons, the share of pensioners is greatest in both groups. In the active group, there is double the share of teaching professionals and a slightly larger share of people working in business and commerce, which may include persons working in the wind industry. What is also noteworthy is the small share of those working in the primary sector; in the random group this was only one person out of 245.

The estimated household income (Figure 19) is also similarly distributed in both groups. Household income is a subjective estimate provided by respondents in the three categories below average, average or above average. About 60% in both groups considered their household income to be average, with about 10% considering it below average. The active group has a larger proportion of households with above average income than the random group (26% compared to 14%)

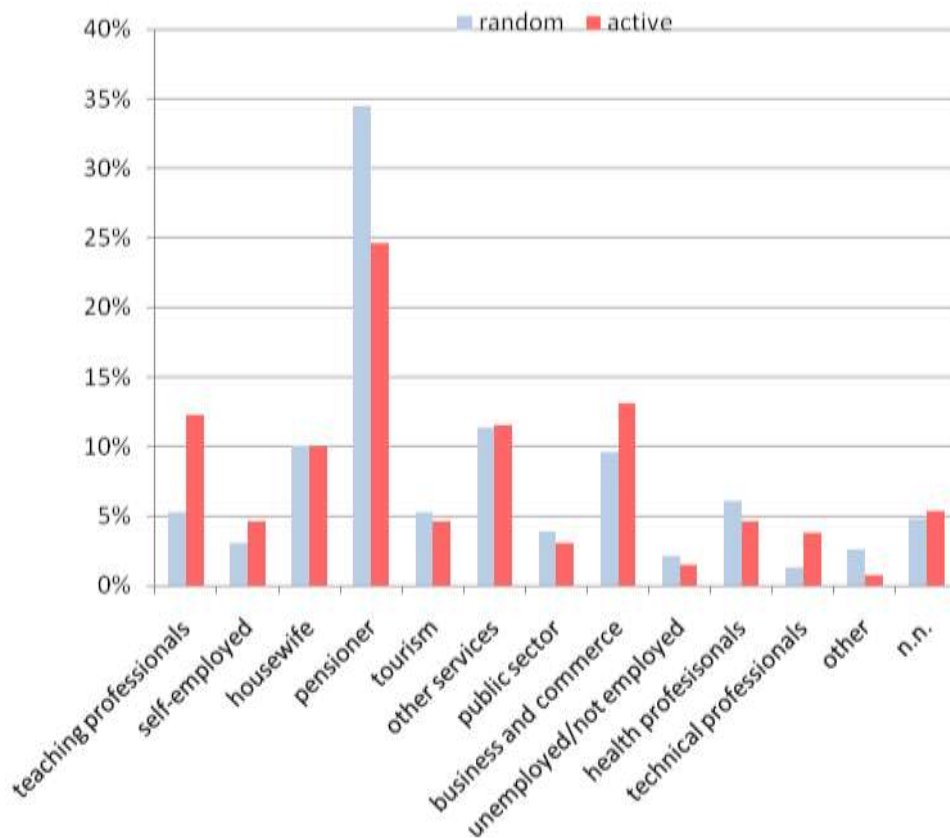


Figure 18: Distribution of occupational groups in the random and active groups ($n(r) = 245$, $n(a) = 142$)

Another relevant variable is place of residence. Because the sample sizes were too small within the individual municipalities for separate analysis, place of residence was combined into the variables 'islands' and 'mainland'. 70% of respondents in the random group are mainland residents, with 30% living on the islands. In the active group, 48% are mainland residents, 32% live on islands, and 20% either live outside the region altogether or their place of residence is unknown.

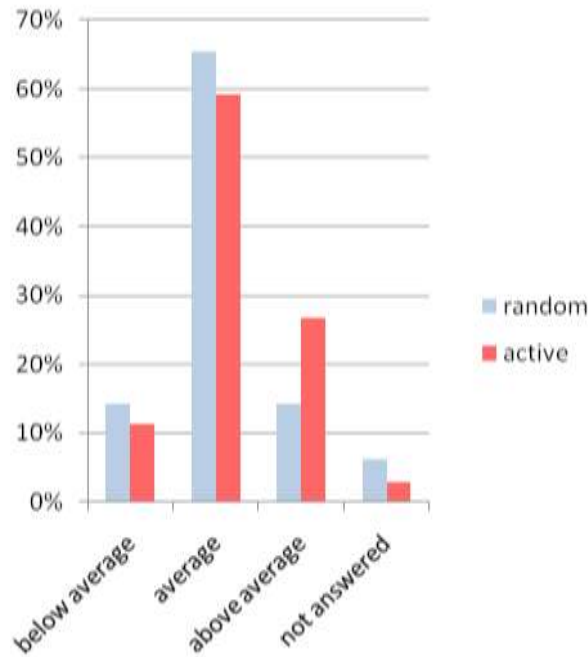


Figure 19: Average household income as estimated by the respondents ($n(r) = 245$, $n(a) = 142$)

Overall, the sample is thus fairly homogenous across both groups with respect to the main demographic variables shown. Age was not selected as a variable to be tested against seascape values or attitudes to offshore wind farming due to the low proportion of younger people in the sample. Level of education, occupation, and household income were also disregarded due to the homogeneity of the sample and the small number of 'outliers'. What was selected for certain survey questions, however, was place of residence since it was assumed that island residents could have a decidedly different view of offshore wind farming (and, for that matter, the seascape) than mainland residents, especially those living a relatively long way away from the coast. The relevance of general demographic variables in determining seascape values and attitudes to offshore wind farming is specified in chapters 4 to 6 if and where relevant.

After presenting the research design and the context of the case study region, it is now time to discuss the results of the survey. The next chapter begins with a theoretical overview of the concept of values and gives selected survey results. Chapter 5 and 6 then present the survey results for seascape values and offshore wind farming values, respectively.

4 Values as a driver of acceptance

Throughout civilization the seas have been valued by people for a myriad of reasons. They have offered food, enabled trade, shaped coastal identities, built nations, represented adventure, and have been an invaluable source of inspiration. It is impossible to identify all the values associated with the sea or the ways in which it matters to people today. What is certain, however, is that offshore wind farming represents a new way in which the sea can have value and that this value may be in conflict with other sea values.

Despite the profusion of literature, there is much confusion as to what is actually meant by the term 'value'. Economic value is the concept most readily implied in everyday conversation, but there are also less intuitive perspectives and theoretical concepts drawing on the social sciences, psychology and philosophy. Although it cannot give a full overview of the entire literature available on values, this chapter gives a brief summary of specific interpretations of 'value', together with the difficulties that arise with certain conceptual approaches. Environmental values represent the general framework for this discussion, although an important distinction will later be drawn between environmental value concepts and individual or societal value orientations as driving forces for human action.

4.1 Some basic concepts

In the classic economists' perspective value is linked to the existence of scarcity. Economic choice is based on cost-benefit analysis, with the outcome dependent on what we are willing to pay for a good. This willingness, or how badly we wish to obtain something, is effectively a description of the value we assign to a good or to certain benefits. This makes assigned value the expression of the "relative importance or worth of an object to an individual or group in a given context" (Brown 1984 p. 233). Assigned value implies a unique and non-static relationship between the valuer and the object of value, meaning that it varies between individuals and changes in response to experiences, knowledge and supposition (Brown 1984). Assigned value can either be unspecific (nature, for example, can have assigned value in very general terms) or specific, where value is associated with specific purposes or benefits (e.g. educational value, recreational value, commercial value, the food value of a resource etc).

Market prices and the purchase of goods have become the key modes of expressing assigned value. This commodity-oriented view has increasingly also been applied to nature and natural resources, itself indicative of a shift in societal values and replacing the more romantic and holistic notions of nature that predominated up until the 19th century. This "economic turn" was linked to advances in science: It was the ability to represent nature as distinct units which made environmental units available to economic valuation (Jepson and Canney 2003). The need for distinct units or objects to assign value to in order to arrive at a commodity and price is an important aspect and will be returned to later in this chapter. Today the two fields of environmental economics and ecological economics are among the most prominent representatives of the economic perspective on environmental values. Broadly speaking, the former applies the tools of economics to address environmental problems, whilst the latter

considers the impacts of humans and their economic activity on ecological systems and services and vice versa. Environmental economics work within the price system, ecological economists attempt to avoid the use of money as a basis for decisions. Both thus have a different perspective on the value problem and on determinants of choice.

Despite its many advantages, there are various problems with the commodity-oriented perspective on environmental goods and services. One is that certain environmental goods resist the classic market economy approach. Habitats, biodiversity or the air for instance represent public goods, which are non-rival (meaning that consumption by one person does not 'use it up' and hence allows others to also consume the good) and non-excludable (meaning that others cannot be prevented from consuming it). As a result it is not profitable for private markets to provide such goods (Graves 2003). Taking climate change as an example, non-excludability means it is impossible to exclude anyone from the benefits of climate protection. A country's incentive to invest in carbon abatement is thus reduced because it can free-ride off the efforts of other countries. The free-rider problem is usually used as an argument for government intervention to ensure efficiency and equity and to show up hidden costs (e.g. government charging a fee for the right to pollute as a way of dealing with externalities). Offshore wind farming can be said to make use of public goods (the sea, wind), but exclusion is created by allocating space and granting planning permission so that others can no longer build a wind farm in the same spot. A private good (electricity) is created through the use of a public good (wind) by creating spatial exclusion. This highlights another aspect relevant in this context, which is that of property rights and market access. "Markets are institutions which organize the exchange of control of commodities, where the nature of the control is defined by the property rights attached to the commodities" (Gravelle & Rees 2004). These aspects, however, are not subject to discussion here.

Two other problems can be identified with the commodity-oriented view of the environment. One is the issue of currency, or the language employed to assess the relative worth of goods. How can incommensurate values, i.e. values that may have been established on different value scales (such as monetary and non-monetary) be weighed against each other? The other is the issue of identifying the commodity, or the object to be valued, in the first place. Which exact entity are we actually valuing in each instance, and are we really attaching mental price tags to the same thing? These two issues are closely related to the problem of classifying environmental values, with different classifications usually mixing different types of value and not specific in their differentiation between assigned value and the object of value.

The following example can help to illustrate these points. It is clear that the environment – framed as ecosystem, nature, landscape or place – is a point of convergence of many different values. Setting out to determine key values for a New Zealand stretch of coast, and using a local community as a case study, McIntyre et al. (2002) for example found that residents linked their coast to natural values, economic values, recreational values, cultural values and social values. The range of values was essentially similar in all individuals, although they were ranked in different order of importance by different members of the community. Within these broader categories, the authors not only found tangible economic values, but also a series of intangible or non-market values such as aesthetic values.

Let us consider the question of currency first. The fact that intangible values were named by community members makes clear that assigned value can be expressed in different modes, on different scales or using different measures. The advantage of cash is that it is universally understood and allows cross-comparison between many different types of goods and services. But as the above example shows, money falls short of expressing all that is valued in the environment, a landscape or a place. Other modes of expression include words, actions, or stating that the value of conserving a species is of immeasurable value to society for example (Brown 1984). Emotion can be said to be another expression of value that is often employed in situations where worth cannot be readily expressed by other means. This is apparent in the sometimes heated debates between disagreeing interest groups over resource use, where conservationists are pitted against farmers, farmers against tourists, or tourists against local interests. Rarely are these clashes about the economic value of a resource or rational choice. More often than not, the currency is emotional attachment to intangible values such as the aesthetic or spiritual qualities of a place or landscape. Although they can be difficult to identify, and even more difficult to understand in terms of their relative merit, these other currencies cannot be neglected.

Given the multitude and severity of environmental conflicts, recognition has grown that intangible environmental values need to be put on a par with 'classic' market goods and services if a true estimate of total ecosystem value is to be achieved (Daily et al. 2009, Plummer 2009). This is thought to require tools other than those developed to assign cash values to tangible and intangible environmental benefits (Daily et al. 2009). Hedonistic pricing or willingness to pay are two examples of such tools (Satterfield 2001). Willingness to pay has been criticised for being too susceptible to the wording of questions to elicit stable responses, with even subtle changes in phrasing able to alter the magnitude of the response (Ritov & Kahnemann 1997). There is also the problem of inarticulacy, meaning that not everybody is good at giving voice to values that are deeply held. Various alternative methods are being explored to attempt to tap values from the spiritual and affective realm, such as the use of stories and narratives (Earle & Cvetkovich 1995).

Now let us turn to the second problem raised above. Irrespective of the currency employed to talk about or measure value, another central question is what exactly is being valued in each instance. When valuing a view for instance, or a concept such as wilderness, is it the thing itself (e.g. the physical landscape), knowledge of the thing or the satisfaction that is derived from the thing, either by visiting it or simply knowing it exists? (More et al. 1996). The commodity-based view of value implies there is a 'thing' to be valued, a defined object that can be assigned value. But what is the 'thing' in an intangible value such as the satisfaction derived from a beautiful landscape? Proxies such as the methods outlined above only inadequately reflect what is often emotion rather than a conscious entity, with many intangible values resisting attempts at capturing and measuring their essence. Naming the 'thing' that is valued – in other words, determining the precise object of value in order to create the same value base – is therefore a key issue that is also at the heart of the present study.

But is all of the above merely an interesting academic debate, or does an investigation of different concepts of values have any bearing on natural resource management? It is clear that the 'economic turn' has exerted profound influence on how society looks at, and therefore values

nature and the environment. Factual, rational economic thinking has promoted a dispassionate and materialistic view of nature and thinking in products and services, the most recent expression of which is the concept of ecosystem goods and services (MA 2005). It has been argued that thinking in products and services can help to make abstract concepts such as biodiversity count, thereby achieving more effective conservation (Jepson and Canney 2003). Equally though, it could be argued that it is to the detriment of views of nature more grounded in emotion, feeling and believing. Arguably, thinking in ecosystem services represents a commodification of nature, leading to a market for trading wildlife and potentially the privatization of nature. "No longer will we be able to argue that an ecosystem or a landscape should be protected because it affords us wonder and delight; we'll be told that its intrinsic value has already been calculated and, doubtless, that it turns out to be worth less than the other uses to which the land could be put. The market has spoken: End of debate" (Monbiot 2012).

Nevertheless, the commodity-based view of nature and the use of market values hold an obvious attraction to decision-makers. Decisions can be grounded in apparently objective fact more easily when products and services are at stake rather than much more intractable intrinsic values (Jepson and Canney 2003). More et al. (1996) make a similar case for scientific fact as a seemingly objective and therefore a less assailable grounding for management decisions. As values are never absolute, but always an indication of preference and judgement at a particular point in time, a case has to be made for realising certain values over others each and every time. Scientific fact or monetary value seem to offer an apparently objective base for doing so.

Despite the attraction of 'objective' fact, natural resource managers, planners and policy-makers need to cope with a growing multiplicity of values. Many natural resources have undergone a transformation from one- to multidimensionality and a shift from mono- to polycultures of use (Gee et al. 2006, Gee 2010), characterized by the concurrent realisation of natural, recreational, spiritual and economic values (McFarlane and Boxall 2000). This is no easy task, and "natural resource managers are struggling to understand what values should be included, whose values to include, how to incorporate these values into decision-making, and how to accommodate conflicting values in forest management" (McFarlane and Boxall 2000).

A similar case can be made for the German North Sea. Current planning processes in the German North Sea still have many shortcomings, amongst them the failure to recognize the multiplicity of sea use values (Bruns & Gee 2009). Importantly, incorporating multiple values in decision-making is not just a pragmatic approach designed to avert conflict. Recognition of the validity of different types of value is closely linked to issues of representativeness, democracy and trust between stakeholders. Vining and Tyler (1999 p.23) make the point that decision-makers need to satisfy the public that they are taking into account their concerns, and with these the underlying values, beliefs and feelings, noting that the political process may well break down if this is not achieved. Recognizing different types of values, and recognizing the different driving forces that lead to different value preferences in individuals or groups, are therefore instrumental steps in dealing with conflicts in forward-looking resource management.

Let us now return to a more detailed consideration of objects of value, types of assigned value and value orientations.

4.2 Objects of preference: The things we value

Objects of preference – also termed objects of value - are anything that can be preferred to something else. This includes physical things and persons, but also emotions, institutions, ideas, acts, ideals, images, deeds, thoughts or symbols. Concepts such as biodiversity, habitats or ecological functions and processes can also be classed as objects of value. Table 5 is a list of common objects of value related to the sea.

Table 5: Objects of value commonly associated with the sea

Type of object	Specific object
Human uses (including cultural and symbolic uses)	commodities recreation scientific use nature reserves flood defence cultural sites, artefacts scenic beauty places landscapes
Ecological processes	nutrient cycle hydrological cycle ...
Ecological components	plants, animals wildlife habitat water climate ...
Ecosystem conditions	biodiversity ecosystem health ecosystem productivity ...

As stated above, the exact nature of the valued object can be difficult to define (More et al. 1996). In the context of ecosystem goods and services research for instance, it has proven difficult to establish a clear relationship between the non-use values that might assigned to certain elements of the ecosystem and ecosystem functions and benefits (Haines-Young and Potschin 2007, Vejre et al. 2010). Confusion can arise because 'benefit' can either be a basis for assigning value, or an object of value in its own right. The satisfaction derived from looking at a beautiful view, for example, can make us value particular landscapes over others, in which case the landscape would be the object of value. But this satisfaction, or the pleasure we experience at that moment, can also be valued as a separate entity, making it an object of value in its own right.

4.3 Types of assigned value: How we value objects

There is some confusion as to what exact types of value can be assigned to objects. Usually, assigned value is instrumental value, which is synonymous with ‘use value’ and usually conceived of in the form of the benefits that can be obtained from an object. This benefit can be tangible (which usually means monetary) or intangible (non-monetary), such as the satisfaction derived from an experience or from acting in a moral way (Table 6). All of these value types can be applied to nature itself, to specific environmental goods (e.g. a particular species), or to specific places, sites and locations (Satterfield 2001).

Table 6: A typology of instrumental and intrinsic values

		market values (tangible values)	non-market values (intangible values)
Instrumental value (the value of something not as an end in itself but as a means of achieving something else)			
	use values:	the benefits a resource produces for those who actually use it.	<i>direct use values</i> extractive or non-extractive uses such as recreation or tourism
	non-use values:	uses not associated with any use or material benefit. Also the benefits a resource produces for those who do not use it.	<i>indirect use values</i> e.g. aesthetic appreciation, spiritual value
		<i>Option value</i> (keeping open the option to make use of a resource in the future although no use is taking place at present. Direct use value is generated when the good is actually consumed).	<i>altruism</i> (the value derived from having other contemporaries use a resource) <i>bequest value</i> (preserving a resource or biodiversity for future generations).
Intrinsic values (the value of something as an end in itself)		value of an entity independent of any valuer	<i>existence value</i> (the value people receive from simply knowing a resource or biodiversity exists)

Ethicists have long debated whether an object can have intrinsic value. This is the value possessed by things or organisms in and of themselves. Moral philosophy holds the view that even though consciousness means only humans can act as moral agents (and thus evaluate things), ecosystems or species can also be morally good (Satterfield 2001, Rolston 1988, Sagoff 1991). The sea, for instance, is usually valued instrumentally, i.e. for the benefit associated with it – recreation, traditional fishing, an aesthetically pleasing view, but it could equally be valued as an entity all in itself, a carrier of value independent of any human observer.

It should be pointed out that none of the above value categories are mutually exclusive; on the contrary they often occur concurrently. Physical and abstract objects can thus be valued for the immaterial benefits we receive from them, such as inspiration drawn from a near-natural landscape, as well as the material benefits obtained from trading tangible goods and services. This becomes apparent in typologies used to classify environmental values (see below).

4.4 Typologies of environmental value

It can be difficult to reconcile concepts such as assigned values and objects of value with the term “environmental values”. In the literature, a common way of talking about values is to simply refer to resource or landscape values. Various typologies have been proposed to put these into some kind of order. They tend to be a mix of conceptual entities (e.g. Rolston and Coufal 1991, Henning 1987, Driver et al. 1987) and can be very detailed. Rolston (1999) for example offers a detailed breakdown of resource values into life support, economic, intrinsic (moral), wildlife, biodiversity, experiential, aesthetic, spiritual, character-building, therapeutic, knowledge, scientific, natural history, cultural, and recreational value. Like many other examples, this list is a composite of assigned values and objects of value, bringing together the things we care about and the ways in which we care. A disadvantage is that such classifications often fail to be specific. What exactly does recreational value imply? In the specific case of recreational value for example, the object of value might be the visual landscape, the landscape experience, or the social experience that comes with particular outdoor pursuits. Each of these can be valued for different reasons, and both in monetary and non-monetary terms. Recreational value thus really represents one specific way we care about a resource or landscape, expressed as the relative worth of recreational value at any particular time and the result of varying expressions of preference.

An important conceptual distinction, and an added and often inherent dimension to classification schemes of values, is that between anthropocentric and biocentric value (Bengston 1994, Xu & Bengston 1997, Steel et al. 1994). Generally speaking, anthropocentric values refer to those values associated with the utilization of a resource in order to derive products and services designed to meet human wants and needs, which makes it an equivalent of instrumental value. Biocentric value refers to the worth of something regardless of its value to humans, putting it on a par with intrinsic value. Nature for example is commonly understood to have inherent worth and a right to exist for its own sake. At the same time, anthropocentric and biocentric value are also used to indicate a certain value orientation of an individual, group or society. From a biocentric perspective for example, human uses and benefits are not necessarily the most important uses of a resource, while the opposite is the case of an anthropocentric value orientation (McFarlane & Boxall 2000 p. 651). Biocentric and anthropocentric value can therefore be understood as types of assigned value, but are also linked to corresponding value orientations. The latter are the focus of section 4.5.

Figure 20 shows the overlap of the different conceptual entities so commonly found in typologies of environmental values (Xu & Bengston 1994). This particular value tree (referring to forest values) begins with a fundamental distinction between instrumental and intrinsic forest values.

Instrumental values, which could also be termed anthropocentric values, are then broken down further into utilitarian values (encompassing both market and non-market use values), and life support values, reasoning that they ensure survival and are therefore essential to human well-being. Intrinsic values, which could also be termed biocentric values, are then differentiated into the aesthetic and moral and spiritual values associated with the forest. This classification thus reflects different ways we can care about forests (assigned values) and not the objects of value as listed in Table 5.

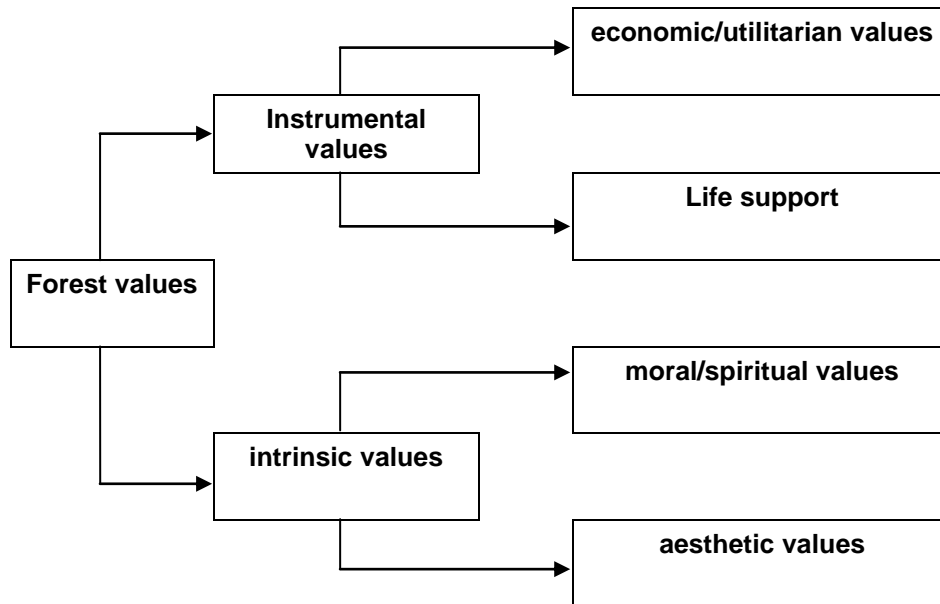


Figure 20: A classification of forest values (adapted from Xu and Bengston 1994)

The difficulty with typologies such as this is that certain categories defy simple classification. Value trees are always dependent on the specific perspective from which they are drawn up. A case in point is aesthetic value, which is difficult to classify because it straddles the intrinsic-instrumental divide. Philosophers have long debated whether beauty exists in its own right or only in relation to a human observer. When framed as scenic beauty, beauty can quite readily be turned into an object of value. The scenic qualities of nature or a landscape are often at the heart of (eco)tourism, where they can provide material benefits in the form of tourism income. They also offer non-material benefits, such as inspiration, aesthetic, moral or spiritual satisfaction and well-being. The instrumental nature of the (visual) aesthetics of landscapes is also confirmed by the fact that landscape beauty has been an important guiding principle in setting aside land for conservation: “One of the main reasons that we have set aside certain natural areas as national, state and country parks is because they are considered beautiful” (Callicott 1992:12). The same applies to beauty that is not constructed visually, but mediated by other senses or derived from knowledge (Sagoff 1991). Whichever way it is constructed, the instrumental view of beauty implies that a discriminating observer is required for beauty to be observed and appreciated as an object of value.

Xu and Bengston (1994) also bring together moral and spiritual value. Moral and spiritual value are particular forms of assigned value that arises from the love, affection, reverence and respect

we bring to an object, and have long since been connected to a sense of responsibility for nature, the environment or the landscape. “It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value. By value, I of course mean something far broader than economic value” (Leopold 1966 p.261). Spiritual value more specifically arises from the experience of “being related to or in touch with an ‘other’ that transcends one’s individual sense of self and gives meaning to one’s life at a deeper than intellectual level” (Schroeder 1992 p.25). Both can be linked to a felt moral obligation which inspires us to care for the qualities we value, which is explored below in the context of held values. Both are also connected to attachment to nature, topophilia or sense of place. Heritage value could also be conceived of as a specific type of moral value in the sense that it values intangible but deeply meaningful qualities of place. Like aesthetics, however, heritage and home transcend the intrinsic category and are also instrumental in that they can give rise to economically valued products and services.

Assessing different value bases and attempting to categorize them makes particular sense in situations of conflict. A good example of working with values is Table 7, where different types of wildland values are placed into the context of conflict over wildlands (adapted from Ewert 1995)

Table 7: Wildland values and the potential conflict level associated with them (adapted from Ewert 1995)

Value	Level of potential conflict	comments
scientific	low	not well advanced, loss of wildlands is outstripping the ability to collect information
therapeutic (in our instance, health)	low	cathartic and rehabilitation qualities of wildland environments are well acknowledged (but others often take precedence!)
ecological/biodiversity	low	the importance of saving gene pools for future generations is widely recognized
recreation	medium	can conflict with other values such as scientific, as a highly personal quality of life issue these values often invoke high levels of emotion
symbolic/cultural identity	medium	symbols from wildland areas such as the bald eagle or bison represent certain societal and national values (e.g. freedom, strength, rugged individualism)
aesthetic	high	the intangible and subjective nature of these values often lead to disagreement as to worth and value
inherent worth (existence value)	high	for many, wildlands have an intrinsic value just being there. Others feel that wildlands should be more productive for the good of society
market	high	usually are extractive and compete with most other values. This exclusivity creates high levels of emotion and conflict.

As alluded to above, however, there is a third question behind these. This is how we actually make choices at all. If value is the result of a preferential relationship (Brown 1984), what is it that makes us prefer one thing over another? Here, the concept of held human values comes into play. Rather than external assigned values, these are internal values that act like a compass, representing the standards we use for guiding action (Brown 1984). This internal compass may lead one person to favour biocentric values that put the environment first, and another to favour more anthropocentric values emphasizing the economic value of a resource. In order to be all-encompassing, a discussion of preferences and environmental values therefore needs to refer to the following four spheres:

- personal values as the basis of preference and standards for guiding action (held values or basic human values),
- the act of preferring,
- the result of preference (assigned values) (Brown 1984)
- the object of value.

Figure 21 shows the relationship between these.

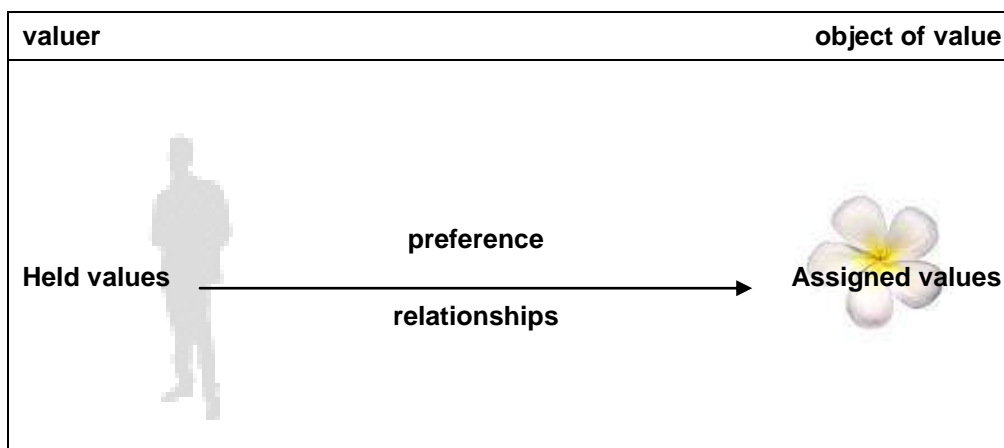


Figure 21: The relationship between valuer and object and held and assigned values (adapted from Brown 1984)

External values are linked to an object of value and represent the relative worth of a thing; they therefore represent *what* people value and *how much* they value the object in question. Internally held values in contrast may thus hold clues to *why* people value certain goods and benefits in a certain way, and why they may respond rather passionately to certain types of (environmental) change. In the case of potential conflict over offshore wind farming, it is thus important to understand not only *what* people value about their environment (i.e. the objects of value they perceive), but also *why* they value certain things more strongly than others (i.e. what internal value base they use for developing preferences). This is explored further in the next section.

4.5 Basic human values and personal value orientations

Basic human values can be understood as deeply held personal beliefs, or an innate ‘something’ that acts as a conception of the preferable and thereby influences choice and action (Brown 1984). Research setting out to describe this innate ‘something’ is essentially concerned with why things are important to people. Intuitively, most would probably be able to name some personal values that guide their action, such as ambition, honesty or achievement. But what of other value orientations, and where do they come from in the first place?

Defining and identifying basic human values has become a prolific field of investigation that draws on the social sciences, psychology and ethics. Two of the leading research questions have been whether the number of basic human values is finite and whether these are shared by all persons in all societies (e.g. Schwartz and Bilsky 1987). Another question is whether all values are equally important and what determines the relative importance of values. In the context of environmental behaviour, the link between value orientations and action has been of particular interest, i.e. the question whether certain value sets always lead to particular decisions or behaviour. Observing real behaviour makes clear that convictions and action often diverge, indicating that the relationship between basic human values and behaviour is non-linear and unpredictable. Basic human values exist both at individual and group level (for instance, the values held by an organisation); also important is the close links between individual and societal values in that they provide each other with meaning. Patterns of behaviour always need to be interpreted from within their respective cultural context in order to be meaningful (Rezsöházy 2001). This also implies that societal and individual value orientations are never at a standstill, but constitute “living systems” that are regularly challenged by an evolving social environment.

4.5.1 Held values as innate driving forces: origins

Schwartz and Bilsky (1987, 1992) have argued that values have evolved as action guides to help humans ensure their own survival and the welfare of the group. A similar view is taken by More et al. (1996) who relate the origin of values to behaviour. They suggest that human behaviour is driven by a hierarchy of biological, social and psychological goals that range from the short-term (the need to meet immediate wants and desires) to the more long-term. Held values, so their rationale, act as standards for decision-making, particularly where higher order goals are concerned. In the social system for example, the highest order goal would be to preserve society, where corresponding values would be moral precepts of right and wrong or the desire for well-socialized individuals to conform to society’s dominant values. In the psychological system, the ultimate goal would be to reach one’s fullest potential as an individual; subsidiary goals might be to take the necessary steps or training to achieve this. In the biological system, the highest order goal would be to maintain one’s long-term health through the maintenance of biological functioning (More 1996 p. 402).

More et al.’s social, psychological and biological needs are similar to Maslow’s hierarchy of needs which grades human needs according to their relative importance. The main argument is that higher order needs can only be achieved if those below are taken care of (Figure 22).

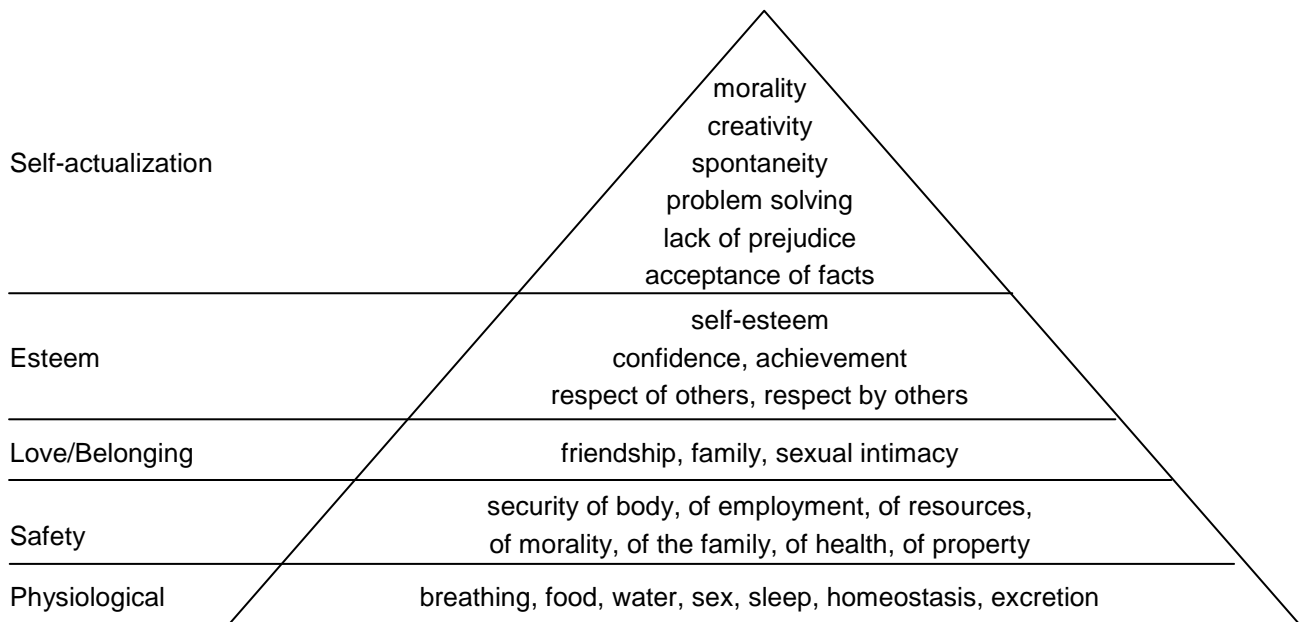


Figure 22: Hierarchy of needs according to Maslow. Re-drawn from http://en.wikipedia.org/wiki/File:Maslow's_hierarchy_of_needs.svg (accessed 06/02/2009)

In the above definitions, values constitute central building blocks of the biological and social self, represented by a set of propositions about who we are, what we seek to achieve and how we relate to the world. At the same time they are an abstract set of principles which act as guiding principles in our lives or the life of a social entity, reflecting cultural ideas about what are desirable goals and what are appropriate standards for making judgements or expressing preferences. This is where moral considerations and the view of values from an ethics perspective come into play. Ethical conduct, itself an expression of preference-based behaviour, is based on deeper concerns about what is important, which may well contradict economic models predicting 'rational actor' outcomes of decision-making. Rather than what is desired, which is the definition of preferences, ethical values are therefore about the desirable (Dietz et al. 2005 p. 341).

4.5.2 Held values as innate driving forces: essential characteristics

The concept of values is closely related to other concepts such as attitudes and norms (Brown 1984). What distinguishes values from short-term preferences or fancies is their durability, the fact that they resist change and apply independent of the specific nature of a given situation. Schwartz and Bilsky (1987) provide a comprehensive definition of basic human or held values, which are "(a) concepts or beliefs, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behaviour and events, and (e) are ordered by relative importance" (p. 551). In line with the contention that basic values form part of our identity, deeply held values can be associated with strong emotions. The more deeply we value something, the more we are likely to care about it, defend it, protect it, and carefully consider decisions affecting it.

'Core values' is a term employed by Sabatier (1998) to describe deeply held personal values; they too are characterized by the fact they are learned during childhood, emotional and slow to change. His main point, however, is that they tend to be non-negotiable in debate, a quality that sets them apart from less significant 'secondary values'. Core values can also apply to groups, so that efforts will be made to restrict change to secondary values and keep core values intact not only in individual, but also group conflicts (Sabatier 1998).

4.5.3 Typologies of basic human (held) values

One of the first typologies developed to classify held values as internal motivational forces is that proposed by Rokeach (1973) (Figure 23). It is useful because it draws a fundamental distinction between values as desired end states and values as action guides, which is important when it comes to moral or ethical behaviour and the issue of intrinsic value. Terminologically, it is important to distinguish instrumental values as ideal modes of conduct from instrumental assigned values as described in chapter 4.3.

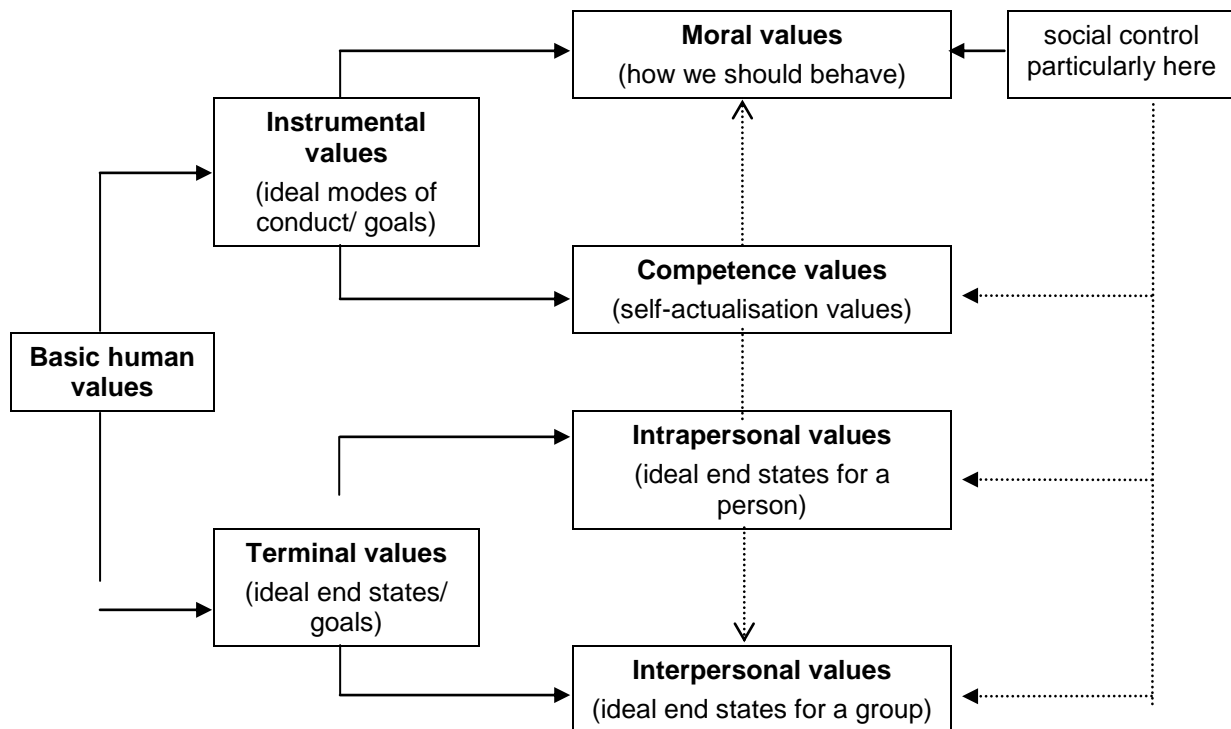


Figure 23: A typology of basic human values according to Rokeach (1973)

Instrumental values are described as idealised modes of conduct or means to an end, in contrast to terminal values as the ideal end state of existence. Examples for instrumental values or goals are generosity, courage, or fairness for instance; examples for terminal values include happiness, equality or beauty. Terminal values consist of intra- or interpersonal values, meaning they refer to either ideal personal end states or ideal end states for a group or society at large. Salvation and peace of mind, for example, would be personal terminal values, whereas world peace and brotherhood would be end states desired for society.

An important distinction is that between instrumental moral and instrumental competence values. Competence values are also termed self-actualisation values and are not linked morality; violation in this case might lead to feelings of personal inadequacy, for example. Moral values refer to prescribed modes of conduct; when violated, they cause pangs of conscience or feelings of guilt for wrongdoing. Rokeach illustrates the difference by contrasting honest and responsible and logical and intelligent behaviour: The former leads one to feel that one is behaving morally, the latter that one is behaving competently.

Rokeach argues that moral values are linked to social control in that there is little point in behaving morally if other people do not. Society tends to place less emphasis on competent modes of behaviour or terminal end states, which is why these are less associated with 'oughtness'. The so-called 'ought' character, the sense that we ought to behave in a certain way because it feels right, is the greater the more widely shared a value is in society and the greater societal insistence that we behave in a certain way or achieve a certain state. The value accorded to nature conservation, for example, is the higher the greater the 'oughtness' associated with nature conservation. Society therefore plays a major role in shaping values as action guides; as a result the 'oughtness' of certain actions or end states can change. The high value placed on the wise use of natural resources, for example, only became prominent in the 1970 when resource shortages and environmental degradation first led to the rise of environmentalism (Jepson & Canney 2003).

Another classification of held values that can usefully be applied to the present case study is that proposed by More et al (1996). Here, moral values (standards for conduct) exist next to rational values (standards for truth), aesthetic values (standards for appreciation) and spiritual values (standards for meaning). Each of these standards can then be applied to modes of conduct (preferred behaviour), end states (preferred outcomes of that behaviour), or qualities¹⁶.

In this context, an interesting observation is that basic human values have cognitive, affective and behavioural components. A person can cognitively or emotionally be aware of a particular standard or the correct end state to strive for (Rokeach 1973). The more deeply a value is rooted and the more central to a person's value system, the more intensively it will be lived and the more likely it is that it will mobilise energy. Tindall (2003) picks up on this aspect in his reference to values as "emotionally charged beliefs about what is desirable, right and appropriate" (p. 693). Creighton (1983) argues that feelings and emotions are indicators of values, a view that is echoed by Vining and Tyler (1999) who states that emotionality in a debate can indicate the presence of value-based conflict. This aspect has gained increasing attention in the context of eliciting values. In the context of the present study, it was one of the reasons for asking open questions since these are much more likely to elicit emotionality in the responses.

4.5.4 Identifying basic human values

Whilst the above typologies are useful conceptual aids, identification of value orientations is based on empirical work. In the social sciences, empirical work on values is based on the

¹⁶ Although values are also grounds for accepting or rejecting particular norms (Reszohazy 2001).

following premises: (1) the total number of values a person possesses is relatively small, (2) all men everywhere possess the same values to different degrees, (3) values are organised into value systems, (4) the antecedents of values can be traced to culture, society and its institutions, and personality, (5) the consequences of human values will be manifested in virtually all phenomena that social scientists might consider investigating (Rokeach 1973).

An important result of such empirical work is that values as central motivational forces are widely shared. Schwartz and co-workers sampled over 70 different groups across the modern world on a broad range of values. Based on a cluster analysis of their data, ten universal motivational or value types were identified, each of which is associated with a particular set of subsidiary values. These ten value types are power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity and security (Schwartz 1992) (Table 8). Self-direction, for example encompasses values associated with freedom, creativity and independence, as well as high value placed on choosing one's own goals, on curiosity and self-respect. Achievement comprises values linked to ambition and seeking influence, as well as capability, success, intelligence and self-respect. Universalism encompasses the idea of equality and social justice, as well as a world of beauty and protecting the environment, reflecting concern with the welfare of all people and nature. Whilst some of the value types identified are 'organismic' in origin, others are clearly socially conditioned depending on the respective cultural context.

Schwartz proposes a way of ordering these motivational types of values in a circle, which shows the conflicting or complementary nature of different values (Figure 24). The closer individual value types in this circle, the more compatible they are, meaning that if a value has a positive relationship to a phenomenon, then the adjacent values will also have a positive relationship to the same phenomenon (Knoppen & Saris 2009, Schwartz 2007). If a person is motivated by the value of tradition, for example the adjacent value of conformity will also be important, in the sense that both values motivate that person to act in a way that is determined by external expectations (Schmidt et al. 2007). At the same time, a person's actions cannot simultaneously be guided by opposing values, such as tradition on the one hand and the desire to experience adventure and excitement on the other. This suggests a fundamental tension between certain value types. One is the tension between self-interest and the concern for the welfare of others (or altruism), the other the tension between readiness for new experiences and self-restriction. Power and achievement, both of which emphasize self-interest, (here termed self-enhancement), oppose universalism and benevolence, which emphasize the well-being of others (termed self-transcendence). Self-direction, stimulation and hedonism, which represent openness to change, oppose security, tradition and conformity which represent conservation (Schwartz 2003).

Table 8: Ten universal motivational types and the value measures associated with each (adapted from Schwartz 1992)

Self-direction	valuing freedom, creativity, independence, choosing one's own goals, being curious and having self-respect
Stimulation	leading an exciting life, variation, daring
Hedonism	pleasure, enjoyment
Achievement	ambitious, seeking influence, capable, successful, intelligence and self-respect.
Power	seeking social power, wealth, authority, preserving the public image, social recognition. The central goal is social status and prestige, seeking to attain or preserve a dominant position within the general social system.
Security	seeking national security, reciprocation of favours, family security, sense of belonging, social order, health and a clean environment.
Conformity	obedience, self-discipline, politeness, honouring of parents and elders.
Tradition	respect for tradition, devoutness, accepting one's portion in life humility and modesty.
Spirituality	seeking a spiritual life, seeking meaning in life, seeking inner harmony, detachment
Benevolence	seek to be helpful, responsible, forgiving, honest, loyal, seek mature love and true friendship. There is strong concern for the welfare of close others in everyday interaction. Based on the organismic need for affiliation, the motivational goal is the preservation and enhancement of the welfare of people with whom one is in frequent personal contact.
Universalism	equality, unity with nature (could also be spirituality), wisdom, a world of beauty, social justice, broad-minded, protecting the environment, a world at peace. Concerned with welfare of all people and nature. Motivational goal: survival need of group. Failure to protect the natural environment will lead to the destruction of the resource on which life depends. Probably socially conditioned though and not 'organismic'.



Figure 24: A cycle of universal human values (from Bilsky & Schwartz 1994 p. 168)

4.5.5 Biocentric and anthropocentric value orientations

A problem with the Schwartz value dimensions is that they do not fully correspond to the theory of values used to explain environmentalism. This emphasizes self-interest and humanistic altruism as anthropocentric value dimensions (defined here as putting instrumental values and human needs first) and biospheric altruism as a biocentric value dimension (defined here as putting non-instrumental values first) (Dietz et al. 2005 p. 349). Various empirical studies have confirmed the relevance of the biocentric and anthropocentric value dimensions, such as McFarlane & Boxall (2000); a study which also found evidence for a cognitive hierarchy framework in the strong correlation between forest values and attitudes.

Altruism has been of particular interest as a potential driving force of environmental value orientations (e.g. Stern and Dietz 1994, Thompson & Barton 1994, McFarlane & Boxall 2000). In environmental ethics, altruism is a prescriptive concept that how we should think about and value the environment, whereas the social sciences use it as an aid to explain how we do think about the environment (Dietz et al. 2005). Biocentric and anthropocentric value orientations illustrate the potential convergence of the two. Biocentric value orientations arise from strong emphasis on universalism and benevolence, coupled with the notion that nature possesses intrinsic value,

lending weight not only to human concerns but also other species and the biosphere. A moral component is added by the 'should' character that leads us to prefer altruistic outcomes over selfish ones. Anthropocentric value orientations are based on self-interest or a narrower form of altruism that extends only to our immediate environment (e.g. family, friends, the local community). Both value orientations can lead to the notion that the environment must be protected, but they do so from fundamentally different value bases. In the case of anthropocentric value orientation, environmental concern would arise from a more utilitarian view of the man-environment relationship and the notion of protecting one's own interests rather than the idea of the environment possessing intrinsic value.

Despite these differences, the two theories of values can be combined. Altruism for example is featured in Schwartz as self-transcendence, where it is composed of universalism and benevolence; these are clearly set apart from self-interest and would therefore point towards a biocentric value dimension. There is also a purpose-built, shorter values scale proposed by Stern et al. (1998), which was specifically designed to differentiate between humanistic and biospheric altruism (quoted in Dietz et al. 2005 p. 351) (Table 9).

Table 9: Brief value scale according to Stern et al. (1998) (cited in Dietz et al. (2005) p. 351)

Value type	Items designed to capture the value type
Biospheric values	protecting the environment, preserving nature, unity with nature, fitting into nature, respecting the earth, harmony with other species
Altruistic values	a world at peace, free of war and conflict, social justice, correcting injustice, care for the weak, equality, equal justice for all
Self-transcendence (or biospheric-altruistic) values	includes both of the above
Conservation or traditional values	honouring parents and elders, showing respect, family security, safety for loved ones, self-discipline, self-restraint, resistance to temptation
Self-enhancement (or egotistic) values	authority, the right to command, influential, having an impact on people or events, wealth, material possessions, money
Openness to change values	a varied life, filled with challenge, novelty and change, an exciting life, stimulating experiences, curious, interested in everything, exploring)

4.5.6 Personal value systems

Although the basic value types appear to be universal, their significance and weight in decision-making or the expression of preferences is clearly not. Persons or groups work to value systems, meaning that each value is ordered hierarchically in terms of its priority or importance relative to other values (Rokeach 1973). This is relevant for the understanding of value-based conflict:

Rezsóhazy (2001) for example points out that differences between actors are often due to different value scales rather than different value systems per se. A compounding factor is that value hierarchies are constructed depending on the specific situation (Brown and Peterson 1993). Actors for example may all subscribe to environmental preservation as a key value, but emphasize different aspects of environmental preservation, ending with differing priorities accorded to climate, biodiversity, wilderness and so on. An example for an internal conflict of this kind is the difficulties that have been experienced by nature conservation organisations over offshore wind farming in the German North Sea. On the one hand, 'environmental protection' is interpreted in the context of climate change, where offshore wind farms are considered a means to reducing CO₂ emissions and therefore worthy of support. But this conflicts with another interpretation of environmental protection where greater importance is accorded to protected species and habitats in the North Sea, leading to a rather more careful assessment of offshore wind farms (Licht-Eggert 2008, Gee & Licht-Eggert 2010). This assessment can shift as other information becomes available, so that preferences expressed or a behavioural outcome is always the result of the relative importance of all the competing values that have been activated in a particular situation at a particular point in time. If competing values are of similar strength and urgency, the resulting internal conflict can produce a feeling of being torn and uncertain.

4.5.7 The role of the social environment in shaping and maintaining values

Despite their universal nature, values do not come as a pre-defined, innate set. In individuals and social groups, values receive their meaning through processes of socialisation, with family, school, media or peer groups acting as primary agents. Like any other cultural equipment, values are learned gradually, helped by social approval or disapproval as a means of reinforcing them. Well-socialized individuals are "likely to have acquired the dominant values of the culture and will tend to judge situations, events, goods and services, aesthetic objects and the like in a way consistent with the values of the culture" (More et al. 1996 p. 403). Societal values themselves are subject to change and dependent on the cultural context.

Socio-demographic characteristics such as age, gender, education and place of residence play a major role in determining value orientations. Borman (1993) compared biocentric and anthropocentric value orientations against a range of socio-demographic data and socio-political value orientations. He found that those born after World War II tended to be more biocentric than older persons, indicative of a shift in society's perception of nature and the growing significance of environmentalism after WWII. Biocentric value orientations were also more prevalent in women, in those with better education and in urban residents. The latter are unsurprising given the fact that the American wilderness idea itself grew from a well-educated, reasonably affluent urban elite rather than the rural poor. Those on the left political spectrum were more likely to be biocentric, as were post-materialists where Maslow's higher order values such as love for the aesthetic qualities of the environment begin to matter. Differences in value orientations were also found between national and regional publics as well as local and non-local residents.

At the same time, values represent a central mobilising force for social change. Significant shifts in society tend to be preceded by transformations in the value system and guided by new values,

illustrated by revolutions or new movements emerging out of social or environmental change. Inglehard (1995) for example identifies materialist and post-materialist value orientations in different societies as an example of such transformation. The nature conservation movement in Western societies is another case in point for a fundamental value shift that arose from changes in environmental perception (Jepson & Canney 2003). For groups, shared values represent the essential bonding agent in that those with similar values tend to come together and act together (Reszohazy 2001, Sabatier 1998).

4.6 Cognitive belief frameworks

So far, this chapter has examined the nature of values and the differences between objects of value, assigned value and basic (held) human values. What is of interest now is the relationship between these different types of value and attitudes to offshore wind farming. The key question is how basic human values might relate to views of the sea and the seascape, and what links might exist between different sea values and acceptance or rejection of offshore wind farming.

It is known that basic human values alone do not explain much variability in specific attitudes to resources or resource management (Fulton et al. 1996). They do, however, exert indirect influence on higher order cognitions such as general beliefs (Stern et al. 1995, McFarlane and Boxall 2000). Basic human values or ideals thus influence the assigned values or worth of a place or object, which in turn influence the beliefs and attitude taken towards a particular use of that place or object. Positive and negative attitudes can then be expressed or action taken (McIntyre et al. 2002).

Cognitive belief frameworks are used as a tool for examining basic human values and their relationships to other forms of cognition (e.g. McFarlane and Boxall 2000). Cognitive belief frameworks recognize several layers of cognition, with basic values providing the foundation for higher order attitudes and behaviour (Rokeach 1973). Values influence general beliefs, which in turn are known to impact on attitudes and with these, behaviour. There is much evidence from literature for correlations between basic human values, beliefs and attitudes. It has been shown, for example, that the value type of universalism has a positive correlation with environmental behaviours (e.g. donations to environmental organisations, environmentally oriented food shopping), and that power, conformity and security correlate negatively with those same behaviours (Schmidt et al. 2007). The value-attitude relationship has also been used to explain the connection between the value orientations people hold towards a resource and their attitudes to resource management or policy directions. Persons with anthropocentric value orientations for example are more likely to adopt a utilitarian approach to resource management, whilst those with biocentric value orientations will be more likely to support a protection-oriented style of management (Bourke & Luloff 1994, Steel et al. 1994). Impacts on management policy are thus a major reason for studying value-attitude relationships and the factors influencing values and attitudes (McFarlane and Boxall 2000). Value-attitude relationships have equally been shown to affect individual consumer behaviour, expressed for instance in the purchase of eco-friendly goods or political action, which confirms the fact that certain basic value orientations emphasize not only attitudes but also concrete behaviour such as actions taken to protect the environment.

In other words, there is a traceable connection between values and attitudes and personality and behaviour as postulated in the concept of cognitive belief frameworks (see also Burgess 1992, Bilsky & Schwartz 1994).

Various cognitive belief frameworks have been proposed consisting of a range of cognitions (e.g. McFarlane & Boxall 2003, Tindall 2003, Thorgesen & Grunert-Beckmann 1997, Fishbein 1967). Table 10 summarizes a range of socio-psychological constructs and forms of cognition that can be relevant in the context of a cognitive belief framework. All such frameworks start with basic held values, which are then linked to general beliefs, specific beliefs, norms, attitudes and lastly behaviour. The flow of causation in a cognitive belief framework is accepted to be unidirectional: "Although there may be reciprocal effects among variables in the model, the major flow of causation in a hierarchical framework is generally accepted as basic values providing the basis for forming general beliefs, which elicit specific attitudes and these in turn elicit specific actions or behaviours" (McFarlane & Boxall 2000 p. 651).

Figure 25 is a general model of a cognitive belief framework showing the general relationship between the various constituting elements. Strong arrows indicate more direct influence, weak arrows more indirect influence. In this example, general beliefs take up a position between basic value orientations and the specific beliefs about defined objects. General beliefs can be defined as relatively enduring conceptions of the good related to the resource and the ecosystem (Bengston 1994); very often, it is these general beliefs that are brought into the debate as "values that must be protected". In the case of the present study general beliefs describe beliefs about nature, the sea, the coast, or energy generation, which may therefore form the core of contradictory and conflicting positions. General beliefs can also be described as an individual's general orientation towards these objects.

The next layer in the framework is specific beliefs, which describe expectations with respect to more specific objects than the above and their attributes. In the context of the present case study, this may be the belief that an offshore wind turbine is inefficient or kills birds. Beliefs are subjective expectations or estimates of likelihoods, which is why they can be traced by signals of agreement or disagreement with a statement about an object.

Next to beliefs about an object and its attributes is the fact that they are also valued by the observer. A person believing that wind turbines are inefficient, for example, will rate this fact as either important or unimportant, in other words, assign value to this belief depending on how important efficiency is to them.

Table 10: Definitions of values and other layers of cognition that may be relevant in the context of cognitive belief frameworks

<p>Basic human values (also termed held values or basic value orientations):</p>	<p>“An enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence” (Rokeach 1968).</p>
<p>General beliefs, world views</p>	<p>General beliefs sit between the rather abstract basic human values and the more specific beliefs. General beliefs refer to such things as nature, the sea, the coast etc, things in other words that are more general than specific objects such as a car, a house, or a wind turbine (McFarlane & Boxall 2003). A typical general belief or world view might be that human actions often harm the environment.</p>
<p>Beliefs</p>	<p>Beliefs are understandings of facts as individuals perceive them (Dietz et al. 2005), such as the belief that a certain object has a certain attribute (e.g. that a wind turbine is noisy). Beliefs can be based on knowledge but also on subjective probability or expectation.</p>
<p>Attitudes</p>	<p>Attitudes represent a “psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour“ (Eagly & Chaiken 1993). Attitudes always refer to an object, in that they are positive or negative evaluations of something quite specific. Opposing the construction of a wind farm in a wilderness area for example represents an attitude, whilst wilderness itself would represent a type of value.</p>
<p>Norms</p>	<p>Values become norms when they command and/or regulate conducts or prescribe a course of action. Values provide the grounds for accepting or rejecting particular norms, and norms are the standards for actual conduct (Rokeach 1973). Norms are ‘ought to’ statements: A person valuing efficiency in resource use may have a norm that everyone ought to recycle paper (Dietz et al. 2005).</p>

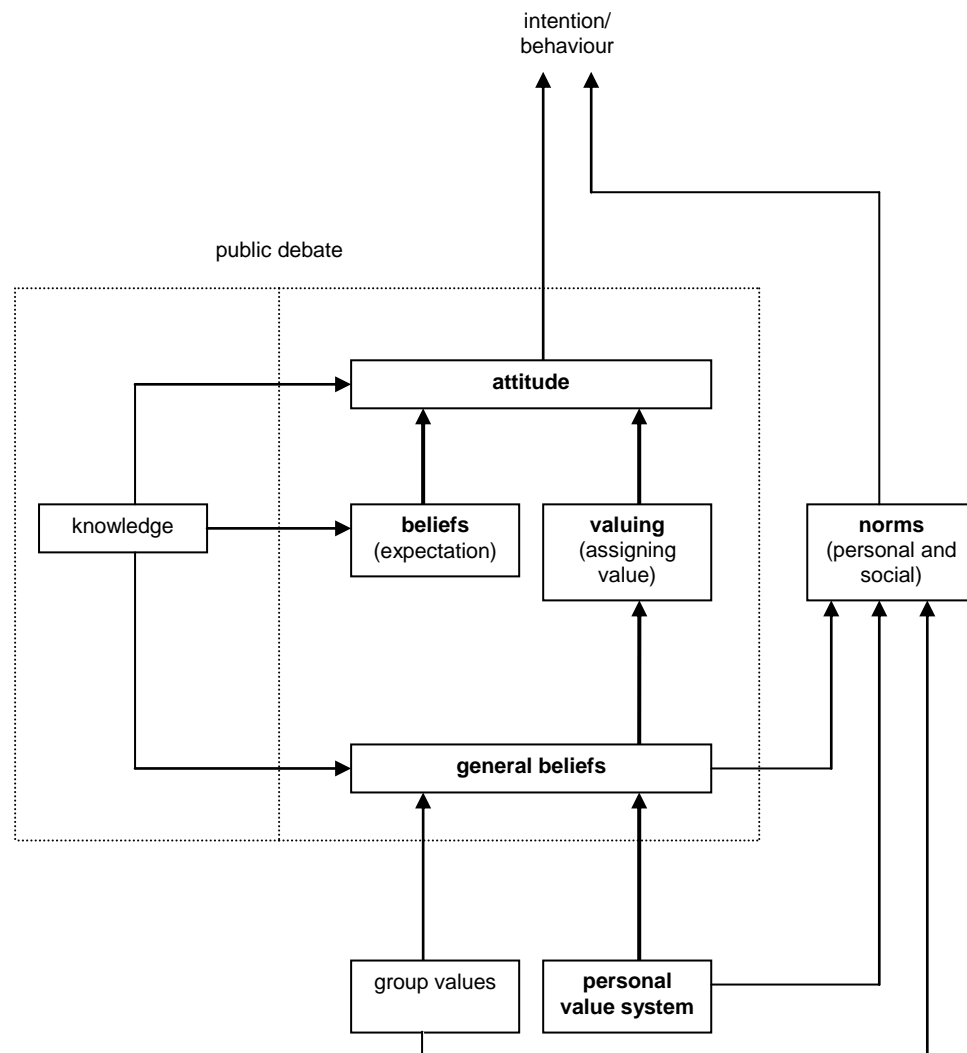


Figure 25: A general model of a cognitive belief framework

These, then, lead to attitudes to the objects in question, which in case of offshore wind turbines would be acceptance or rejection.

General beliefs, beliefs, the process of assigning value and attitudes tend to feature in the public debate, unlike the mostly hidden group values or basic personal values. The same applies to norms, which describe an obligation to act in a particular way. They result from the personal value system in that they guide a person to act in agreement with their own relevant values, but also include social norms, which are derived from knowledge about other people's value systems or the value systems of groups.

Naturally, there are many external variables that impact on values and attitudes, such as personal circumstances (age, level of education, gender) or the social influences in one's life (e.g. organisational philosophies or the social norms a person subscribes to. Members of environmental organisations for example tend to be more biocentric than non-members). What

also matters is the relationship between the resource and the direct economic benefit a person draws from it. This could be the fact that the sea is used for fishing, or the employment promises associated with offshore wind farming. Another factor that could be significant in the present case study context is the level of factual knowledge (Tarrant et al. 1997): Research has shown that persons with more knowledge about the environment or an environmental issue tend to have more polarized environmental attitudes.

It should be pointed out that cognitive belief frameworks represent models of causality only. Despite much evidence for specific correlations from the literature, this does not necessarily imply there is a linear relationship between the various layers of cognition. Knowledge, for example, impacts on general beliefs, beliefs and attitudes, in a way that could reinforce or negate the influence of lower order cognitions. Also, external circumstances can have variable impacts depending on the person in question and their respective circumstances at any point in time. The value of cognitive belief frameworks therefore lies in the fact that they allow logical links to be drawn up that can then be tested qualitatively or quantitatively for a specific situation. Results will always be context-dependent, as will the cognitive belief framework itself, which needs to be adapted to the circumstances in question.

4.7 Bringing together different value concepts: A cognitive belief framework for the case study

In the context of the present case study the sea and offshore wind farming are understood to be composites of objects of value and expressions of different types of assigned value. Both can be expected to be valued as independent entities, but also in relation to each other. Trade-offs occur where offshore wind values enter into conflict with sea values. The result of this trade-off – the attitude of that person to offshore wind farming in the case study area – is expressed as either acceptance or rejection of offshore wind farming in this particular location. Different motivational forces can be expected to influence the outcome of this trade-off, such as different basic beliefs (anthropogenic and biocentric value orientations), the beliefs that are held with respect to specific sea attributes and offshore wind farms, and the attitudes towards the future of the sea and offshore wind farming.

This implies several possibilities. One is that offshore wind farming is considered a threat to existing sea values. If sea values are stronger than offshore wind values, and if offshore wind farming is perceived to place important sea values at risk, then offshore wind farming is likely to be rejected. Sea values in this option count for more than the values associated with offshore wind farming. Another possibility is that these same sea values are acknowledged and even appreciated, but not believed threatened by offshore wind farming, leading to offshore wind farming being accepted. A third possibility is that the values associated with offshore wind farming count for more than the values associated with the sea, and that the trade-off between old and new sea values leads to a preference for offshore wind farming. There is also a fourth possibility, which is that offshore wind is rejected for reasons that have nothing to do with sea values or offshore wind as such. These four options are summarized in Table 11.

Table 11: Options for the compatibility of sea values with offshore wind farming and acceptance/rejection of offshore wind farming

Sea values incompatible with offshore wind / rejection of offshore wind	Sea values compatible with offshore wind / rejection of offshore wind
Sea values incompatible with offshore wind / acceptance of offshore wind	Sea values compatible with offshore wind / acceptance of offshore wind

Based on the theoretical context set out in this chapter, a conceptual framework is now proposed specifically to explore the various value relationships (Figure 26). Essentially, this is a cognitive belief framework, but an unusual one in that it is based on two parallel strands. One of these relates to renewable energy and the other to the marine environment. The framework recognizes five orders of cognition and a central strand of empirical work which is highlighted black. Red boxes with dotted lines indicate antecedent factors and other aspects that form part of the overall framework but which are not considered in this study.

The model accepts some reciprocal effects among variables, but generally it regards basic values as a basis for forming general beliefs. The first order of cognition shown at the bottom of the cognitive belief framework is thus represented by basic human values (Rokeach 1973, Schwartz 1994).

General beliefs about nature represent the second order of cognition. General beliefs can refer to different broad categories such as society or the world at large; within this particular cognitive belief framework, focus is on general beliefs about nature since these are hypothesized to influence views of the sea.

General beliefs about nature lay the foundation for the third order of cognition, which is the more specific sea and energy values. Here, objects of value and assigned value come into play. 'Sea values' thus refer to the various ways in which the sea, or specific elements such as the seascape, can have value; energy values represent the various ways in which offshore wind energy can have value (e.g. instrumental or non-instrumental value). Typical categories are aesthetic value, or economic value, or the inherent value of nature. 'Sea values' and 'energy values' are thus understood to represent an individual's orientation towards the sea and energy (Bengston 1994, Steel et al. 1994, Bourke and Luloff 1994), with 'energy values' encompassing the more specific values that might be associated with offshore wind farming. The relative weight of the various sea and energy values is likely to differ between people: One person might consider aesthetic sea values more important than economic sea values for example and vice versa. These differences in the relative importance of different types of sea (and energy) value are related to beliefs about the sea (and energy), which describe what the sea (or energy) represents to a person and also what they think it should represent (the 'ought' value of the sea and energy).

Sea and energy values are then hypothesized to influence the fourth order of cognition, which is more specific attitudes reflecting preferences for the future of the sea and offshore wind farming. At this point, potential conflicts and trade-offs between these preferences come into play.

The last order of cognition in the cognitive belief framework is behaviour, or action taken based on one's beliefs and attitudes. This could be to join an interest group, or instigate a campaign, or vote for a particular political party. However, behaviour as the last stage of the value-attitude-behaviour continuum, as well as the other influencing factors such as the social environment or knowledge, do not form part of the empirical part of this study.

In the literature, cognitive belief frameworks are not commonly linked to understanding of objects of value. To adequately describe sea values, however, it is believed that better understanding is also required of the precise nature of the 'thing' that is valued. Objects of value are therefore included in the conceptual framework presented here as entities in their own right. They are regarded as representing the underlying foundation upon which sea values and energy values are built (both categories shown in blue).

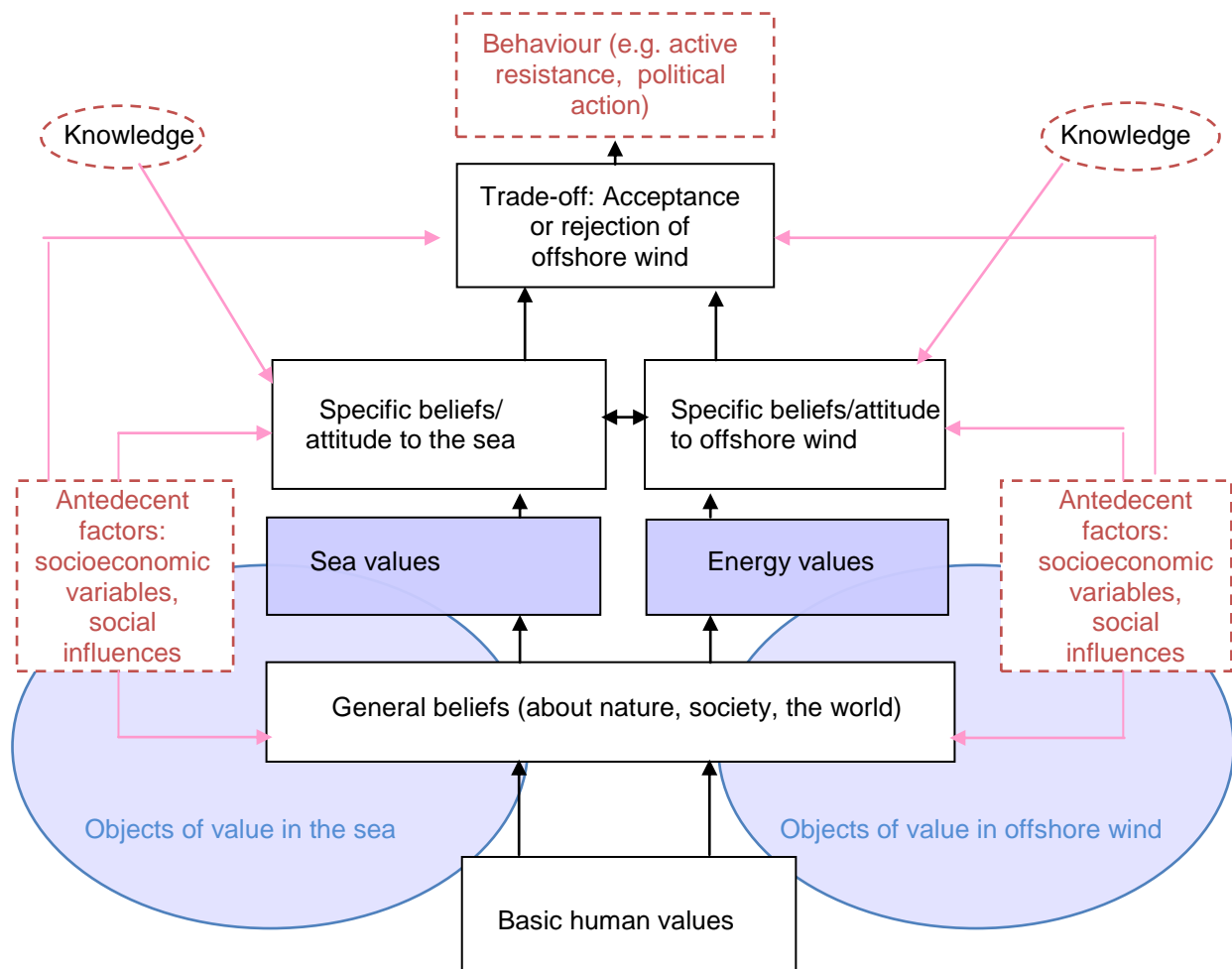


Fig. 26: A conceptual model for investigating the role of basic values and sea and offshore wind values in shaping attitudes to offshore wind farming (adapted from McFarlane and Boxall 2000)

The challenge addressed by empirical work is to arrive at a better qualitative understanding of the following key links within the cognitive belief framework:

- the link between basic human values and general beliefs,
- the link between general beliefs and sea and energy values, respectively
- the link between sea and energy values and attitudes to offshore wind development.

4.8 Eliciting values, beliefs and attitudes by means of a questionnaire survey

Various methods have been employed to elicit value orientations and links between values, attitudes and behaviour, most notably surveys, contingent valuation and content analysis (Satterfield 2001, Burgess et al. 1998a, 1998b, O'Neill 1997). The methods chosen depend on the objectives of the study. For example, if the objective is to establish whether particular value orientations result in actual behaviour, surveys would be unsuitable since they measure intention only. Preferable methods in this case might be participant observation or in-depth interviews. Existing studies have also used qualitative and quantitative content analysis (such as newspaper text or consultation documents) to create a taxonomy of values, emotions and desired outcomes for resource management (Xu & Bengston 1997, Fan 1988, Vining & Ebreo 1991, Tyler et al. 1995, Davies 2001).

The method of choice in this study is a self-administered postal questionnaire survey since the case is about preferences and opinions and no direct observation of action was necessary. Starting from the premise that different attitudes to offshore wind farming do exist in the case study region, the questionnaire survey was designed to mirror the logic of the cognitive belief framework set out above, leading from basic value orientations, concerns and beliefs about nature and the sea (seascape and landscape), to beliefs and attitudes to offshore wind farming. Rather than testing these relationships in a quantitative way, the study sought to establish qualitative relationships, showing how certain basic values and concerns might influence beliefs about the resource (in this case, the sea and the seascape) and ultimately attitudes to offshore wind farming.

This section explains how held values and general beliefs about nature were elicited and sets out the empirical results.

4.8.1 Basic (held) values

Because it has been extensively tested in empirical research, the Schwartz values model was used to elicit basic value orientations (see Figure 24). Both the validity of the 10 basic value orientations and their circular arrangement have been confirmed for German samples (Boehnke & Schwartz 1997).

Operationalisation of Schwartz' values model usually relies on a relatively complex instrument termed the Schwartz Value Survey (SVS). This is based on a comparative assessment of 56 items that participants are asked to rate, indicating how important each stated value is as a guiding principle in their life. A simplified version of the SVS is the Portrait Values Questionnaire

(PVQ), which was developed as part of the European Social Survey (Schwartz 2006). In this questionnaire, short verbal portraits of different people are presented stating that person's goals, aspirations and wishes, which all point to the importance of a single value (Schwartz, in <http://www.europeansocialsurvey.org>¹⁷). The sentence "It is very important to him to help the people around him. He wants to care for their well-being" for instance describes a person to whom the value type "benevolence" is important. Respondents then rate the importance of this value indirectly by comparing themselves to this portrait, using a scale from one (not at all like me) to six (very much like me). The original PVQ contains 40 items, where each of the 10 value types is represented by up to six portraits. A shorter version is the European Social Survey where 21 items (or portraits) are used to represent the 10 value types (Knoppen & Saris 2009).

As a self-administered questionnaire primarily concerned with offshore wind farming, the 21 portraits of the European Social Survey needed to be reduced. This led to a choice of 11 which seemed particularly relevant to the West coast and the issue of offshore wind farming. Achievement and power, for example, were not considered to be a driving force in attitudes to offshore wind farming, and were therefore inferred only indirectly from surveying the opposing values of universalism. Table 12 gives an overview of the portraits used (re-translated from German by the author; re-phrased in the first person singular rather than the third person singular to make identification with the portraits even easier). Question 1 in the survey thus read: "In the following you will find a few brief personal portraits. Please read them carefully. Then indicate whether these descriptions apply to you using the numbers provided (1 = does not apply to me at all, 2 = does not apply, 3 = does not really apply, 4 = somewhat applies, 5 = applies, 6 = totally applies).

Table 12: Items from the ESS instrument used in the survey (adapted from Schmidt et al. 2007, translation by the author; in brackets the item codes of the European Social Survey)

Self-direction	It is important to me to decide on my own actions. I like the freedom of choice to do what I consider to be right. (ESS 11) New ideas and creativity are important to me. I like to tackle things my way. (ESS 1)
Stimulation	I seek out adventure and risk. I want life to be exciting. (ESS 15) I like surprises and always look for new things to try. It is important to me to do many different things in life. (ESS 6)
Hedonism	I look for every opportunity to have fun. It is important to me to enjoy life to the full. (ESS 10)
Achievement	indirectly inferred
Power	indirectly inferred
Security	Security is important to me. I avoid anything that could threaten my safety. (ESS 5)
Conformity	I think people should do what is asked of them. I am convinced that rules should be adhered to, independently of whether this is checked or not. (ESS 7)

¹⁷ http://www.europeansocialsurvey.org/index.php?option=com_docman&task=doc_view&gid=126&Itemid=80 (p. 274 ff.), last accessed 25 July 2011

	It is important to behave correctly. I avoid doing things others could find wrong. (ESS 16)
Tradition	I am convinced that modesty is important. I think we should be happy with what we have. (ESS 9)
Spirituality	indirectly inferred
Benevolence	indirectly inferred
Universalism	I am convinced that humans should protect nature. Environmental protection is an important cause to me. (ESS 19) It is important to me to listen to people who think and feel very differently to me. I want to understand other people, even if I don't share their views. (ESS 8)

4.8.2 General beliefs about nature

The influence of basic values in a cognitive belief framework is mostly an indirect one through their influence on higher order cognitions (McFarlane & Boxall 2000 p. 651). General beliefs take up a position between the more abstract basic human values and the specific beliefs about defined objects such as the sea or (offshore) wind turbines.





General beliefs about nature are of interest at this stage because they can easily be imagined to influence higher order beliefs. Is nature to be protected and preserved (indicative of a biocentric value orientation) or is it there to be utilized for human benefit (indicative of an anthropocentric value orientation)? And how does nature respond to human interference – is nature sensitive or resilient?

General beliefs about nature have been shown to explain differences in the perception of the environment and the acceptance of protection measures, as was shown for the context of climate change (Krömker 2003). Although it is unlikely that images of nature alone can explain attitudes to offshore wind farming, it is interesting to test whether particular images of nature are always linked to particular beliefs about the sea or beliefs about the likely impacts of offshore wind farming on the marine environment. If this is the case, types could be identified. Given the close relationship between man and the sea in the case study region, it is also feasible that particular connections might exist between beliefs about nature (e.g. nature as an unpredictable force) and sea values (e.g. spiritual sea values).

There are many different beliefs about nature, including whether nature exists to serve human needs, whether it should be treated with respect, whether it needs and deserves to be protected, whether it is spiritual or threatening, whether it is tolerant of human interferences, and whether it is a limited resource (Krömke 2003). For the purpose of this study, four basic images of nature were selected and furnished with a brief illustration. Respondents were then asked to pick the one that best reflected their own belief about nature (question 2 in the questionnaire). The four images were selected based on the concept of Cultural Theory proposed by Thompson, Ellis and Wildavsky (1990 p.26) which identifies four so-called myths of nature. Reflecting much broader world views or ways of life, these myths have implications for how people relate to and use natural resources. Table 13 shows the four descriptions of nature and accompanying sketches

provided in the questionnaire. In a brief follow-up question, respondents were also given the option to explain how they interpreted the chosen description.

Table 13: Images of nature elicited in the questionnaire

Description from Cultural Theory	Qualities of nature described	Phrase in questionnaire	Picture in questionnaire
nature benign – “will always recover” (= durable in questionnaire)	Durable, abundant, unlimited, predictable, ordered, able to take care of itself (corresponds to an individualist world view)	Basically, nature will always regain its balance. No matter what man does, the ball will always return to the original position.	
nature ephemeral – “headed for catastrophe” (= sensitive in questionnaire)	fragile and limited, only slightly predictable and ordered, extremely in need of protection (corresponds to an egalitarian world view)	Nature is very sensitive to any type of intervention. Even very small interventions can make the ball get out of control.	
nature tolerant – “within limits”	durable, limited/scarce, slightly predictable/ordered, moderately in need of protection (corresponds to a hierarchical world view)	Nature is tolerant to a certain degree of intervention. Only when a certain threshold is crossed does the ball get out of control.	
nature capricious – “no way to know”	Most unpredictable, chaotic, inaccessible, remote (corresponds to a fatalistic world view)	When intervening in nature, one can never be sure whether this will have positive or negative consequences. There is no way of knowing how the ball will move.	

4.8.3 Rating abstract value bases

Following on from basic held values and general beliefs about nature, the third question asked respondents to rate the importance of a range of items that reflect the ecological, cultural, social and economic spheres of life on the West coast (Table 14). Using Tindall (2003) as a reference, each item was constructed so it could be related back to an abstract value base. Nine value bases were chosen to reflect life on the West coast. The question essentially elicited beliefs about the importance of the various value bases, providing a bridge between basic value orientations and assigned sea and offshore wind farming values (chapter 5 and 6). The question read “Please use the scale to indicate the importance of the following for your life on the West coast“. The scale was a five-point scale ranging from ‘very important’ to ‘not at all important’.

Table 14: The importance of abstract value bases elicited in the questionnaire

Abstract value base	Items in questionnaire
aesthetic value	An attractive landscape The wide, open sea
community sustainability	Striking a balance between the needs of tourists and those of local residents Justice and fairness in the region
cultural values	many social contacts living close by participation in political decision-making
economic values	A secure livelihood Economic growth Attracting profitable companies and industry to the region
work values	Holding an interesting and challenging job
science and education values	Investing in new industries and technology
equity values	The rights of animals and plants to live their natural habitat Respecting the rights of future generations
recreation and outdoor experiences	Leisure time spent on the coast and sea
ecological values	A healthy flora and fauna rich in biodiversity Clean water, air, soil, beaches and Wadden Sea Let nature be nature

Altogether, the first three questions therefore provided the necessary basis for considering higher order cognitions, reflecting the first essential link in a cognitive belief framework between basic held values and general beliefs.

4.9 Empirical results

4.9.1 Basic human values on the West coast of Schleswig-Holstein

Basic value orientations were analysed separately for the random and active samples (Figures 27 and 28). Results are ranked by levels of disagreement, with the value orientation showing the greatest level of disagreement at the bottom. For ease of presentation, the following categories were summarized: “Do not agree at all” and “do not agree” are shown in the figures as “disagree”; and “do not really agree” and “agree to a degree” are brought together as “do not really agree”. The percentage of no answers to these questions was below 1% in both samples and is not shown in the figures. Overall, only slight variations are noted between the different statements and also the samples.

The value portrait “I am convinced that humans should protect nature. Environmental protection is an important cause to me”, stands out in both samples, ranked first in terms of the greatest level of agreement and least level of disagreement. This value statement corresponds to the notion of biospheric values as described by Stern (1995), expressed by ideas such as protecting the

environment, preserving nature, unity with nature and respecting the earth (see Table 9). Adding together the categories “absolutely agree” and “agree” gives 90% of agreement with this value statement in both groups, although the active group seems to subscribe to it even more strongly: 54% stated they absolutely agreed with this statement compared to 40% in the random group. Only one and two persons, respectively, stated they did not agree with this value statement.

The value statement “New ideas and creativity are important to me. I like to tackle things my way” is ranked second in the active group and fourth in the random group. “It is important to me to decide on my own actions. I like the freedom of choice to do what I consider to be right” is ranked second in the random group and third in the active group. 41% of the respondents said they agreed with the first statement concerning new ideas and creativity, with 17% saying they absolutely agreed in the random group and 26% in the active group. New ideas and creativity are thus particularly important to the active group and come a close second to the value statement about nature. Only 26%, however, said they absolutely agreed with this statement compared to the 55% indicating they absolutely agreed with the nature statement. At the same time, 30% of the random group and 26% of the active group saw limits to this value orientation and only agreed with the portrait to a degree. Overall, this value orientation is less pronounced than the biospheric value statement, but just as before, the active group appears to be more decided in their value orientation, indicating a stronger value base with respect to self-direction and fewer doubts.

“It is important to me to listen to people who think and feel very differently to me. I want to understand other people, even if I don't share their views” is also ranked highly, coming in third in the random sample and fourth in the active sample. This value statement corresponds to Stern's concept of altruistic values, described by a world at peace, social justice and equality (Table 9). In the active group, 55% said they agreed with this statement and 23% said they absolutely agreed, compared to 48% and 13%, respectively, in the random group. The random group is therefore less convinced about this portrait, expressed also in the greater share of respondents indicating they only agreed with this to some degree (30% in the random group compared to 19% in the active group).

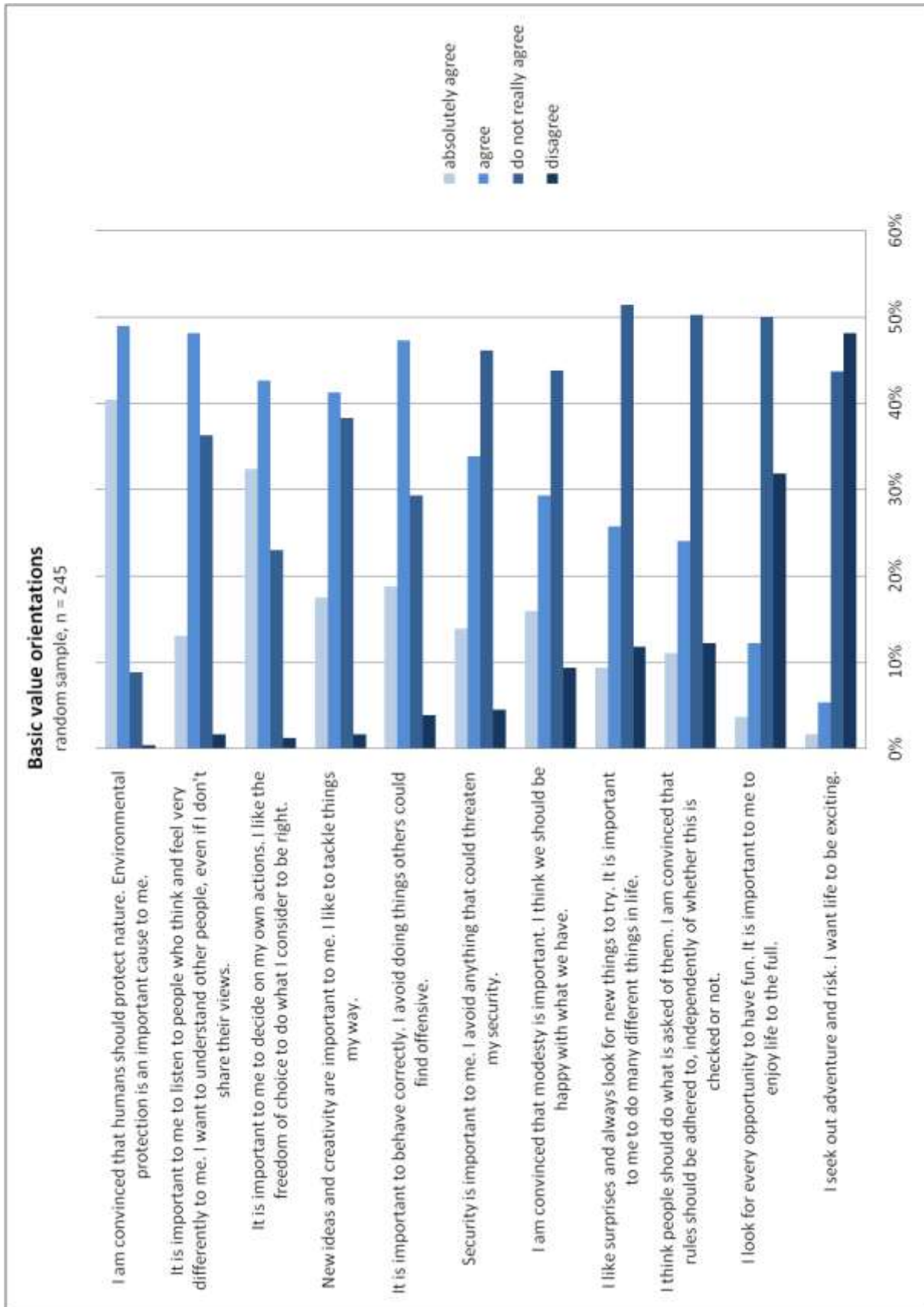


Figure 27: Basic value orientations for the random sample (n = 245, category not shown: no answer (less than 1%); disagree = categories “do not agree” and “do not agree at all”; do not really agree = categories “do not really agree” and “agree to a degree”)

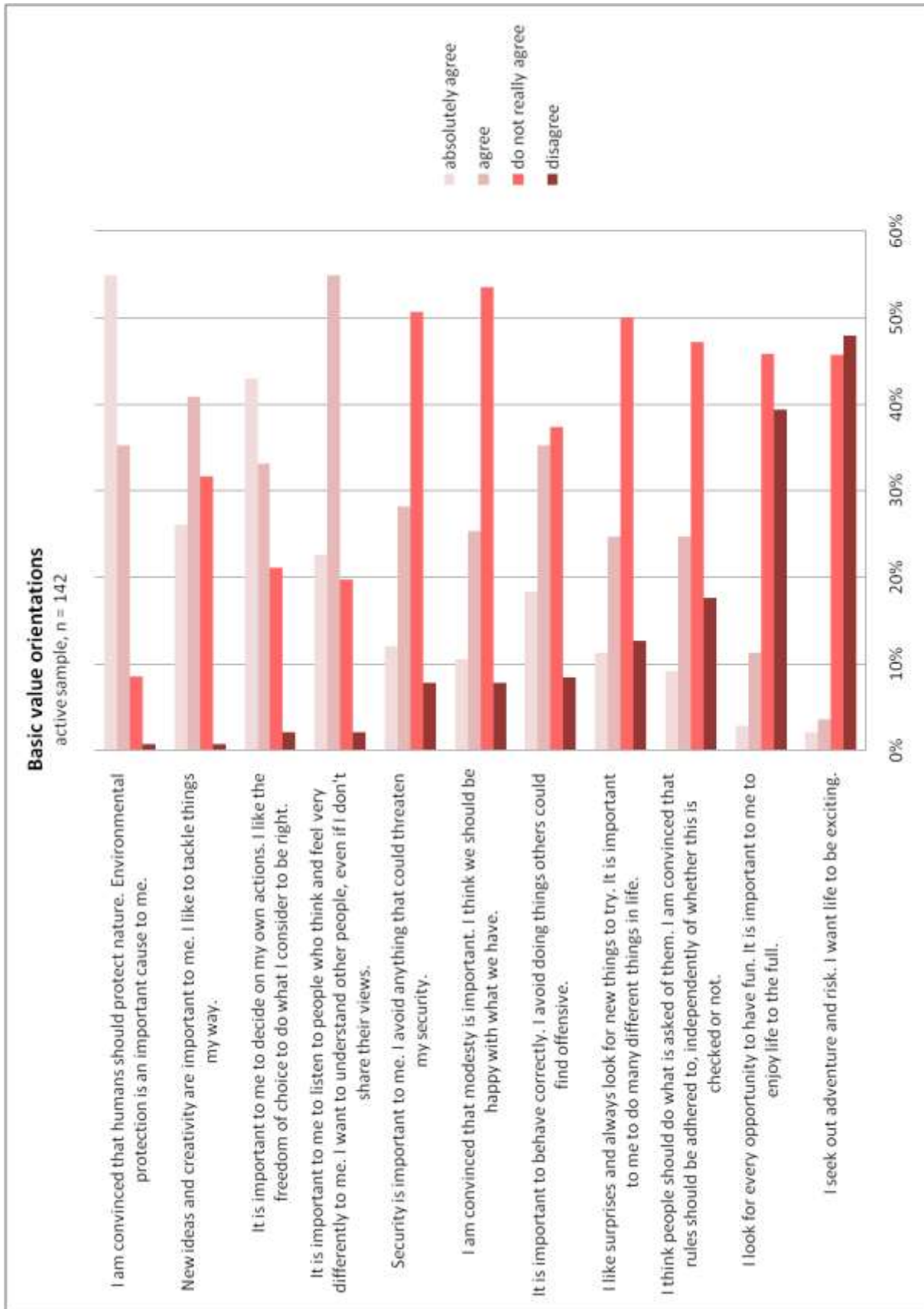


Figure 28: Basic value orientations for the active sample (n = 142, category not shown: no answer (less than 1%); disagree = categories “do not agree” and “do not agree at all”; do not really agree = categories “do not really agree” and “agree to a degree”)

The value statements “I think people should do what is asked of them. I am convinced that rules should be adhered to, independently of whether this is checked or not” and “It is important to behave correctly. I avoid doing things others could find offensive” describe conformity, which is the opposite of self-direction. Agreement is high for the second value statement: 47% of the random group said they agreed with behaving correctly (18% stating they absolutely agreed), compared to 35% and 18% in the active group. Disagreement was low with 4% in the random and 8% in the active sample. Agreement with the statement “adhering to rules” was less pronounced: Although 35% (random) and 34% (active) stated they agreed, 12% in the random and 18% in the active group disagreed. Conformity thus scores highly in terms of behaving correctly, but less so when it comes to adhering to rules. Again, the active group is more decided in its value orientation, although both groups are somewhat sceptical and seem to prefer their own independent thinking.

Tradition and security are the value orientations where the respondents seem undecided. Tradition, expressed in the portrait “I am convinced that modesty is important. I think we should be happy with what we have” drew agreement (strongly agree and agree) in 46% (random) and 36% (active) of respondents. There is a higher percentage in the active group that only agrees with this to a degree (54% compared to 44% in the random group), and about 9% of disagreement in both groups. In the case of modesty, the greater share of respondents have at least some doubts as to whether this statement really describes them. A similar result emerges for security, which is expressed in the portrait “Security is important to me. I avoid anything that could threaten my safety”. The random group appears slightly more security-conscious, with 48% stating they agreed or strongly agreed with this (compared to 40% in the active group). 46% in the random and 51% in the active group only agree with this to a degree, but there is no wholehearted disagreement either.

“I look for every opportunity to have fun. It is important to me to enjoy life to the full” is a value orientation that draws significantly more scepticism than agreement. 39% in the active group and 32% in the random group disagreed with this statement, with another 50% (random) and 46% (active) stating they did not really agree. 11% and 12% agreed, but only 3% and 4% absolutely agreed. The differences between the random and active group are marginal, suggesting that a hedonistic value orientation is not part of people’s value profile on the West coast.

“I seek out adventure and risk. I want life to be exciting” is the portrait drawing the worst fit of all, with 44% in the random group and 48% in the active group stating they disagreed. Only 7% (random) and 5% (active) said they either agreed or strongly agreed with this statement. This is indicative of a widely shared aversion to risk-taking and adventure, which may be related to the fact that the sample contains few young people. The fact that this result cuts right across the sample however suggests it may be independent of any other socio-economic variables. “I like surprises and always look for new things to try. It is important to me to do many different things in life” gives divided results with almost equal shares between those who agree and disagree. Stimulation in the form of surprises and new things to try therefore seems a milder, more widely shared form of risk-taking, which suggests that some excitement in life at least is desired.

Universalism thus clearly emerges as the most pronounced and widely shared basic value orientation in both groups. This particularly applies to the biospheric value orientation and welfare concerns for nature, reflected in the strongly held belief and moral conviction (“oughtness”) that nature should be protected. It also suggests that nature is primarily seen to hold immaterial, non-instrumental value, indicating that it is valued for its own sake rather than the human benefits that can arise from its use. The second part of universalism is altruism, which is expressed as social equality, protection and justice, and a world at peace. There are also traces of benevolence here, expressed in concerns over the welfare of others. Schwartz (1994) suggests that universalism is a socially conditioned value orientation rather than one inherent in the human condition, which could explain the strong results for universalism for a community which has always felt close links to nature and the sea and also always depended on each other (e.g. in land reclamation and maintenance of sea defences). Taken together, universalism can be regarded as a strong motivational orientation for all respondents.

Security, conformity and tradition together describe a more conservative value orientation, which is the opposite of self-direction and stimulation (representing openness to change). Security is composed of a range of elements such as national security, sense of belonging, social order and a clean environment, although in this particular context it may also encompass aspects related to sea defence (e.g. maintenance of sea dykes). It could also have been interpreted in terms of economic security. Whatever the interpretation, the motivational force of the value orientation is the same, which is to feel safe and secure and - by implication – to resist change. Tradition is just as important as security, which is expressed by the notion of accepting one’s portion in life with humility and modesty. Conformity is predominantly expressed as behaving correctly. Given the large proportion of elderly persons in the sample, it could be argued that security, conformity and tradition are expressions of ‘old-fashioned’ value orientations. In terms of overall agreement however, this conservative value orientation is much less prominent than universalism and openness to change, which is interesting given the region’s image as rather conservative. This must bear in mind, however, that these are basic value orientations and not expressions of attitudes or even actions.

Openness to change is the opposite to conservatism, composed of self-direction items (such as freedom, creativity, independence, choosing one’s own goals, curiosity and self-respect) and stimulation items (such as leading an exciting life, variation and daring). Creativity and freedom are the key motivational force behind openness to change and seem to override the more conservative value orientations in this particular sample. Freedom of choice is particularly strong in the active group, where it drew the largest share of respondents absolutely agreeing with a statement. Self-direction emphasizes independent thinking, which fits with a certain scepticism expressed towards adhering to rules. This may be a culturally conditioned value that results from the long-standing sense of independence cultivated in the region, which has been traded down generations and is still a source of local pride (chapter 3.4.).

Key results are therefore the strength of the biospheric value orientation, which coincides with a strong moral conviction that it is necessary to protect nature, in conjunction with a strong sense of independence and freedom of choice. Conservatism is less important than openness to change,

and hedonism is the weakest value orientation overall. The active group is slightly more pronounced in these value orientations than the random group.

4.9.2 General beliefs about nature

Respondents spent considerable effort answering this question, giving thoughtful explanations to their choices. Figures 29 and 30 compare the images of nature held by the random and active group and island and mainland residents. Differences were only slight, suggesting that neither place of residence nor activity act as a determinant of images of nature.

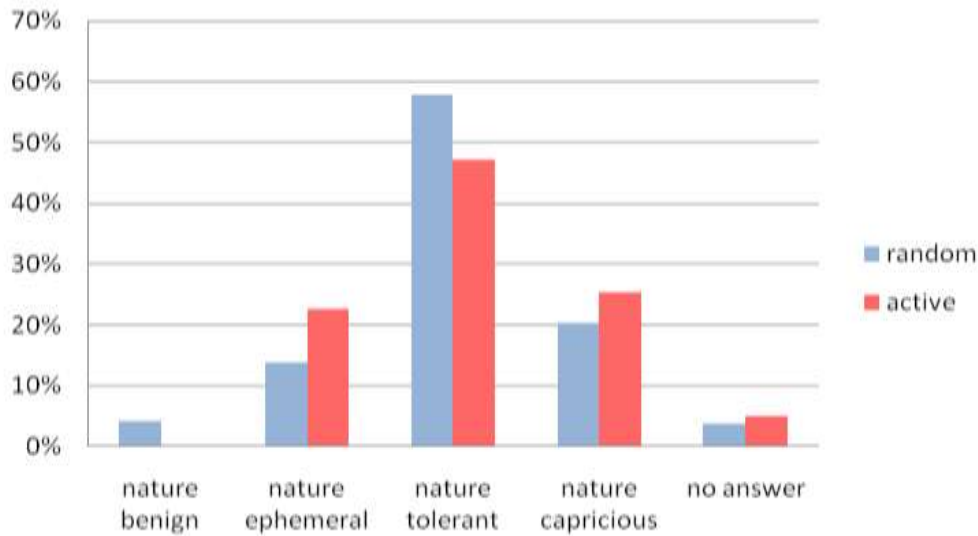


Figure 29: Images of nature: Comparison of the random and active groups (percentage answers, $n = 245$ (r) and 142 (a))

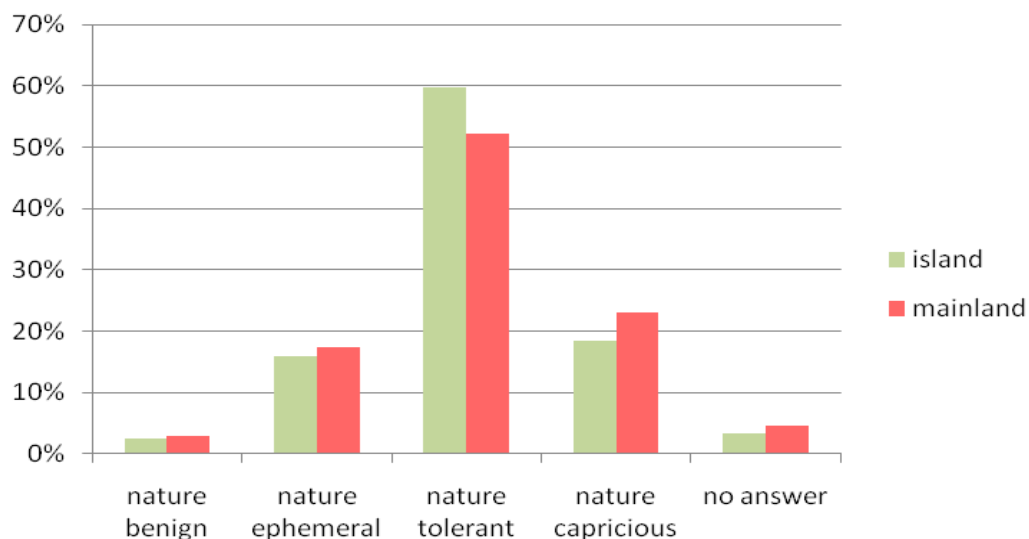


Figure 30: Images of nature: Comparison of island and mainland residents (percentage answers, $n = 119$ (island) and 243 (mainland))

The strongest category overall is that of 'nature tolerant', which regards nature as tolerant of intervention within certain limits (chosen by 58% of respondents in the random group and 47% in the active group, as well as 52% of mainland residents and 60% of island residents). The prevailing view in this category is that nature is strong and able to bounce back, sometimes even from significant intervention. *"Nature can repair itself very quickly and astonishingly well, e.g. in case of forest fires or floods"*, one respondent wrote. By implication, nature can always claim back its due, as in the greater scheme of things mankind only plays a minor role. *"Evolution brought up life on earth over 4-5 bn years. Humans hardly play a role at all! Evolution = 24 h, man = 1 second."* Nevertheless, man has responsibility towards nature, partly motivated by the knowledge that human survival does depend on nature: *"Nature is stronger than our little ego. It will survive man. But I live now, and after me the generations that follow. And we all want to grow old in peace."* "Nature tolerant" regards some degree of intervention necessary and well justified: *"If, as in option 4, we did not want to intervene in nature at all, we'd have to get rid of mankind!"* An interesting distinction was drawn between local and therefore less significant interventions and global and therefore highly significant interventions, with the latter seen to harbour the potential of irreversible change. There was also the view that any intervention needed to be well considered and kept as minor as possible. "Nature tolerant" can therefore be described as a utilitarian view of nature coupled with a moral sense of responsibility, expressed in the motto "use responsibly". "Nature tolerant" was chosen by a larger proportion of mainland residents and random respondents (57% in both cases) than island residents and active respondents (49% and 48%, respectively), although the differences are not sufficient to indicate any fundamental differences between the groups.

"Nature capricious" is the second strongest category overall (20% of respondents in the random group, 25% in the active group, 23% of mainland residents, 18% of island residents). This is the least predictable view of nature, regarding it as chaotic, inaccessible and difficult to control. The prevailing view within this category is that nature is too complex to be fully understood and that nothing can ever be predicted with absolute certainty. *"Nature is far too complex for us to explain changes in natural processes and relationships through cause and effect"*, or *"We think that modern technology allows us to anticipate a lot, but in reality, nature keeps showing us that it works based on its own rules"*, two respondents noted. This is sometimes combined with the view that once impacts begin to manifest themselves, mitigating measures come too late. *"How nature reacts to human interventions can only be seen after the event, but then it could be too late to prevent disaster."* Respondents in this category are convinced that humans always impact on nature, although the extent of this impact may only become apparent long after the event and remain invisible at first. "Nature capricious" is therefore a fatalistic image of nature, which ultimately regards nature as out of human control. Irrespective of advances in science or technology, we can never truly know how nature will respond to human intervention, because nature is not linear and everything has a knock-on effect on something else. Some statements also expressed the idea that nature is a corrective force, a necessary check that teaches man humility. *"Nature is unpredictable, and this is a good thing"*. "Nature capricious" seems the view that is least associated with a feeling of responsibility towards nature, possibly due to the notion that nature will ultimately correct itself irrespective of the actions of man. In both groups, respondents specifically mentioned storms or floods indicating direct experience of nature's

unpredictability; this seems slightly stronger in island residents than in mainland residents. It also confirms a latent sense of vulnerability which is prevalent throughout the region: Calls for maintaining strong sea defences are coupled with the knowledge that this may not be enough to prevent disaster.

“Nature ephemeral” emerges as a close third category (14% respondents in the random group, 23% in the active group, 17% of mainland residents and 16% of island residents). In this view, nature is reasonably ordered, but fragile and limited, meaning it is strongly in need of protection. Nature is sensitive to all types of human intervention, and even very small actions can trigger potential and sometimes latent disaster. One respondent described this as *“When we were still merrily using CFCs, who would have thought that one day this would cause huge holes in the ozone layer.”* Those with a view of nature as ephemeral seem convinced that human impacts on nature had already severely compromised its capacity to regenerate, meaning that further stress invariably leads to degradation. Many also made a direct link to offshore wind farming or the North Sea ecosystem: *“As long as man does not intervene in nature, it can regenerate. Sensitive ecosystems cannot be stressed indefinitely, they can suddenly tip because of environmental impacts or in case of offshore wind farming by tearing open the sea floor. The North Sea must not be industrialized any further.”* Respondents often couple their view of nature as sensitive with a special sense of responsibility and moral duty, although the driving force of this image of nature seems a mix of utilitarian and non-utilitarian principles: *“Man should be more careful with nature, so that our children and grandchildren can live a life worth living”,* or *“Respect for plants and animals is an attitude which is against brutalization; sensitivity equals highest quality of life.”* Those with a view of nature as sensitive appear to be strongly concerned with conservation, making this the classic group of ‘conservationists’. A greater proportion of active respondents chose this view of nature than random respondents, indicating stronger preference of this more conservationist view of nature.

“Nature benign” is the view of nature that features least of all (10 respondents in the random group, none in the active group, 7 mainland residents and 3 island residents). This is the view of nature as durable, abundant and predictable, able to take care of itself in the sense that it will always recover. One respondent explained this as *“The current natural disasters are proof of the fact that nature regulates itself. Only humans interpret weather phenomena as ‘threatening’ and ‘extraordinary’. Nature and the environment ‘only’ react.”* Another asked *“What is nature, really? Prehistoric times, the ice age, or the modern era?”* In principle, this is the view that nature is stronger than man, meaning it always regains some sort of balance irrespective of what man does. This is an individualist world view that does not appear to be linked to a specific conservationist attitude or special sense of responsibility towards nature. In this sample, however, numbers are too small to truly gain an insight into this world view.

Based on the general beliefs about nature expressed above, four theoretical ideologies or value typologies can be drawn up. Two determinants appear particularly important: Firstly, the sense of responsibility towards nature and the moral duty respondents feel towards its protection, and secondly, the strength of the utilitarian perspective in the images of nature. A strong sense of responsibility plus a strong biospheric value orientation can be said to result in a biocentric ideology, which is driven by the idea of unity with nature and placing the needs of nature first. It is

also characterized by predominantly immaterial, non-utilitarian values assigned to nature. The other end of the scale is an anthropocentric ideology, which places stronger emphasis on utilitarian values and human needs and has a weaker sense of responsibility towards nature.

In the sample described here, the most prevalent group is that of “responsible users” of nature, which have a utilitarian view of nature coupled with a reasonably strong sense of responsibility towards it. “Conservationists” have the most biocentric ideology out of the four, which arises from a strong biospheric value orientation coupled with a strong felt moral duty to protect nature. “Fatalists” have a non-utilitarian view of nature in the sense that nature acts as a corrective to man’s actions; there also appears to be a weak sense of responsibility because there is not much point in attempts to control nature. “Happy go lucky” is the view of nature as a force that can look out for itself, which is similar to “fatalists” in that it also combines a utilitarian view with a weak sense of responsibility. Here, however, the motivation to abrogate responsibility is that nature takes care of itself so there is no need to worry. Figure 31 places each value type along the two axes relative to one another.

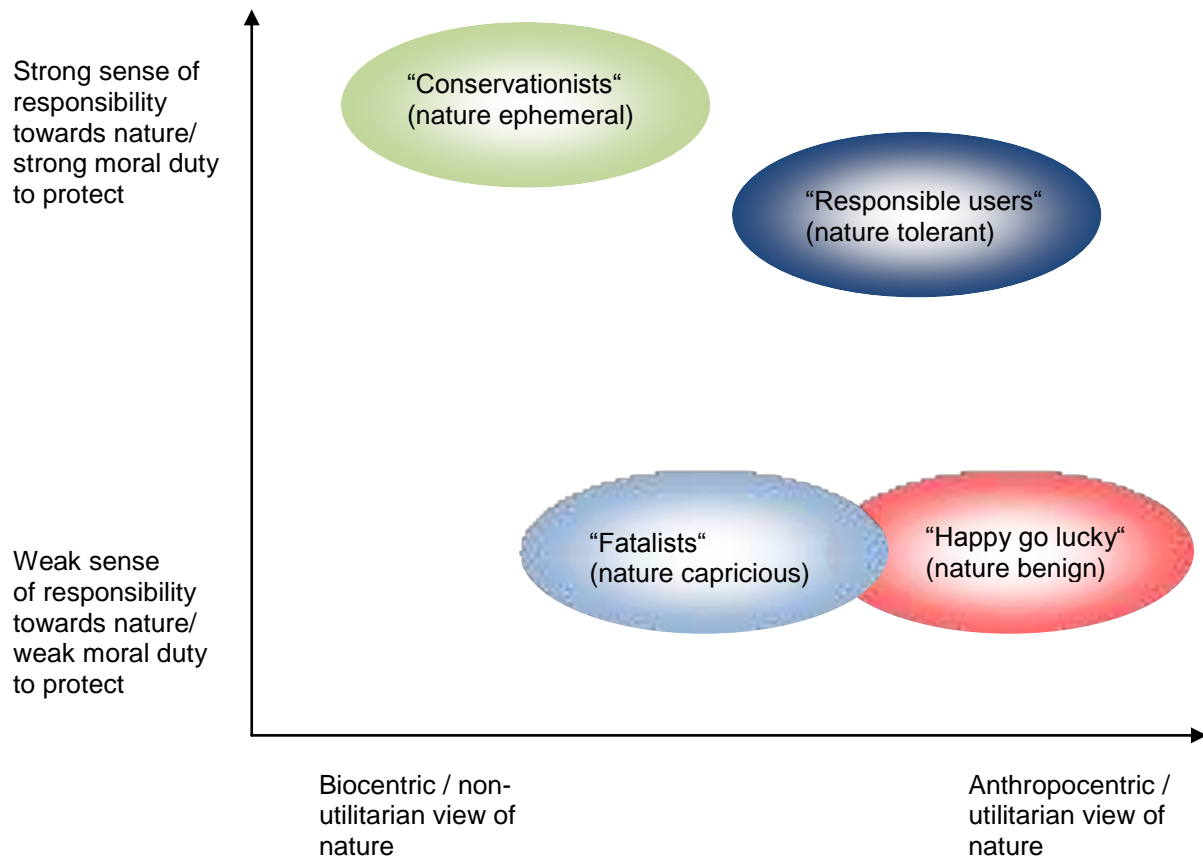


Figure 31: Value types in the case study area: Beliefs about nature in relation to felt responsibility towards nature and biocentric vs. anthropocentric view of nature

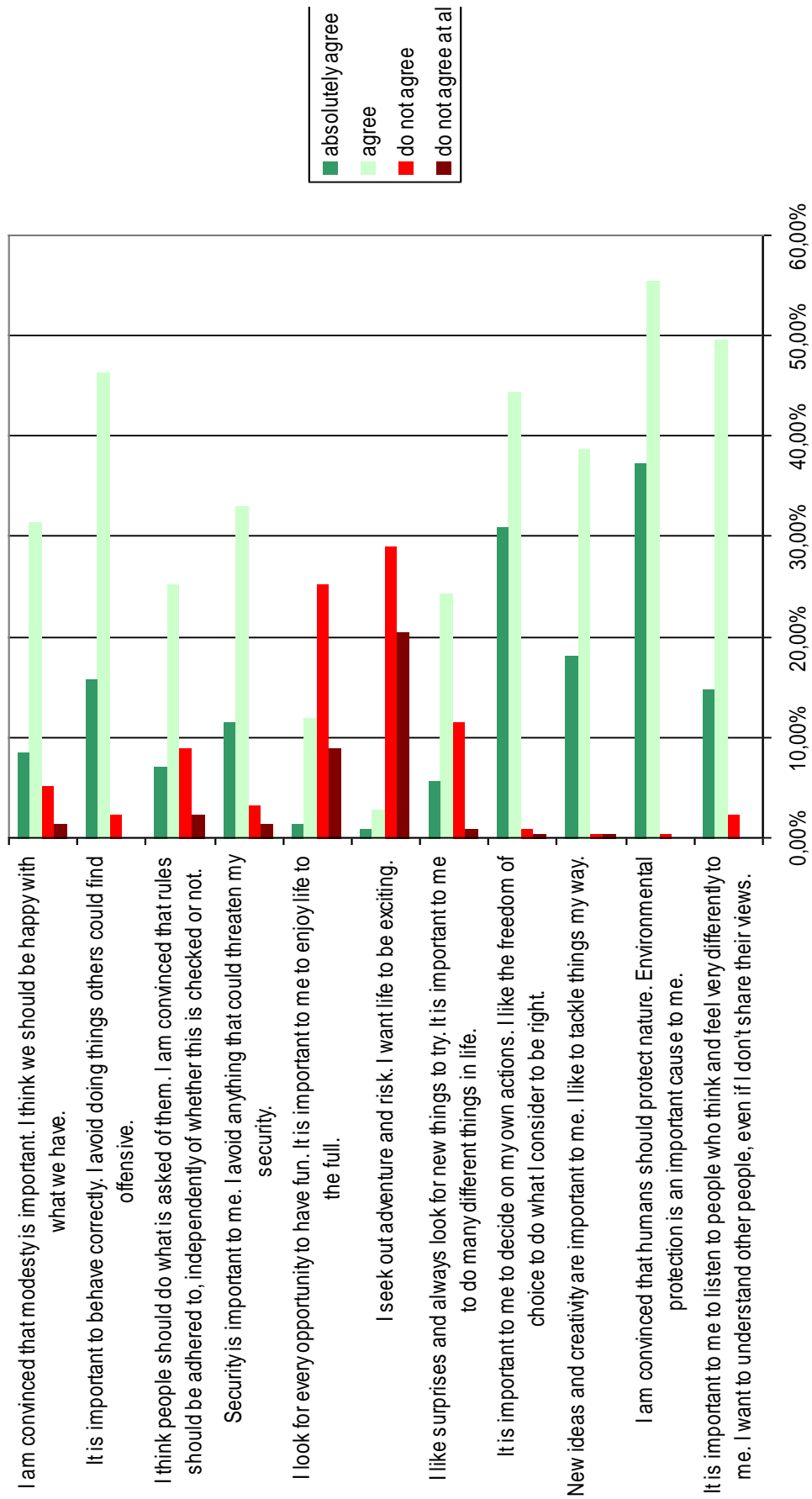


Figure 32: Basic value orientations of those that consider nature to be tolerant (n = 209, random and active respondents shown together; only agreement and disagreement shown)

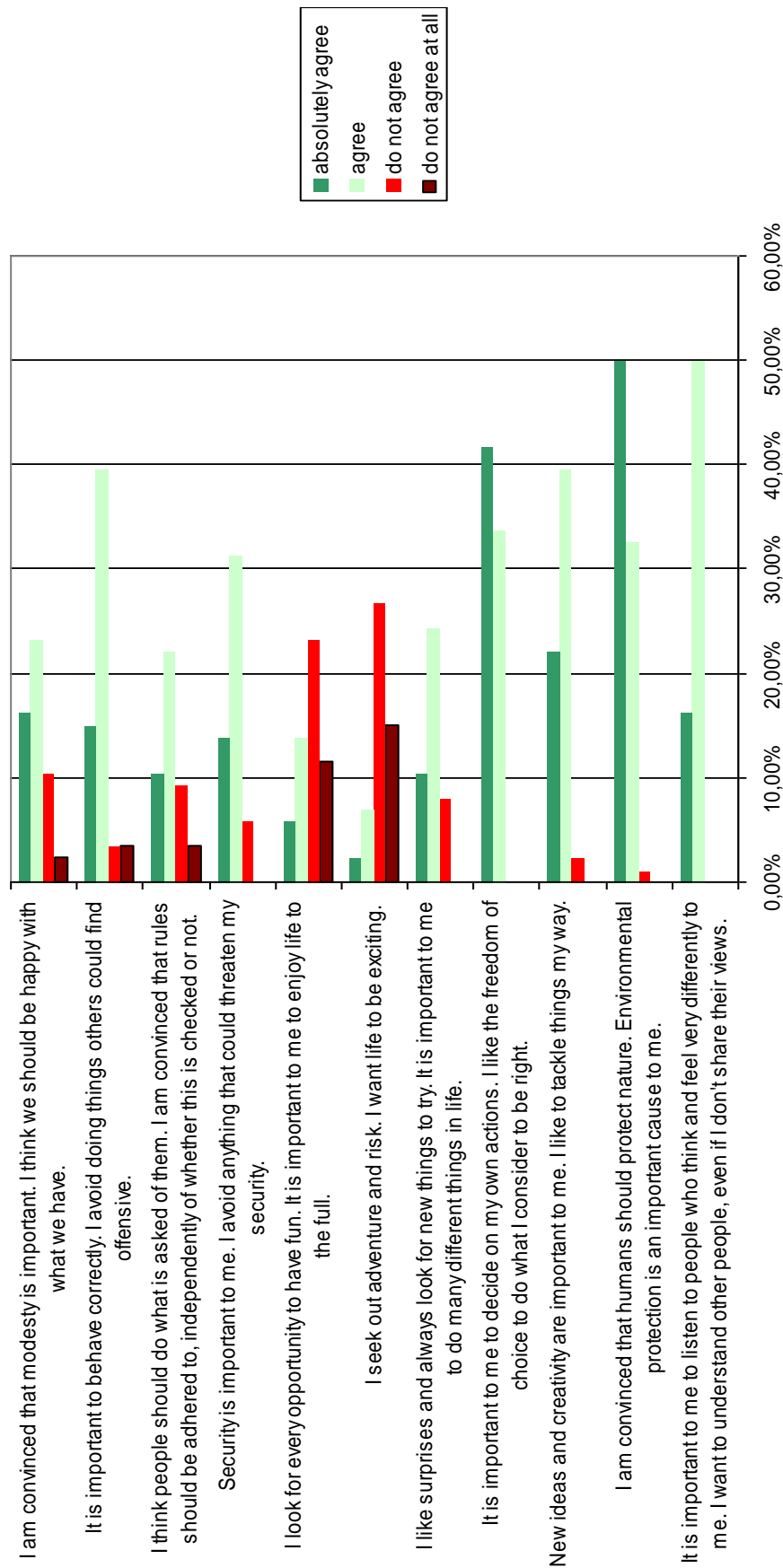


Figure 33: Basic value orientations of those that consider nature to be capricious ($n = 86$, random and active respondents shown together; only agreement and disagreement shown)

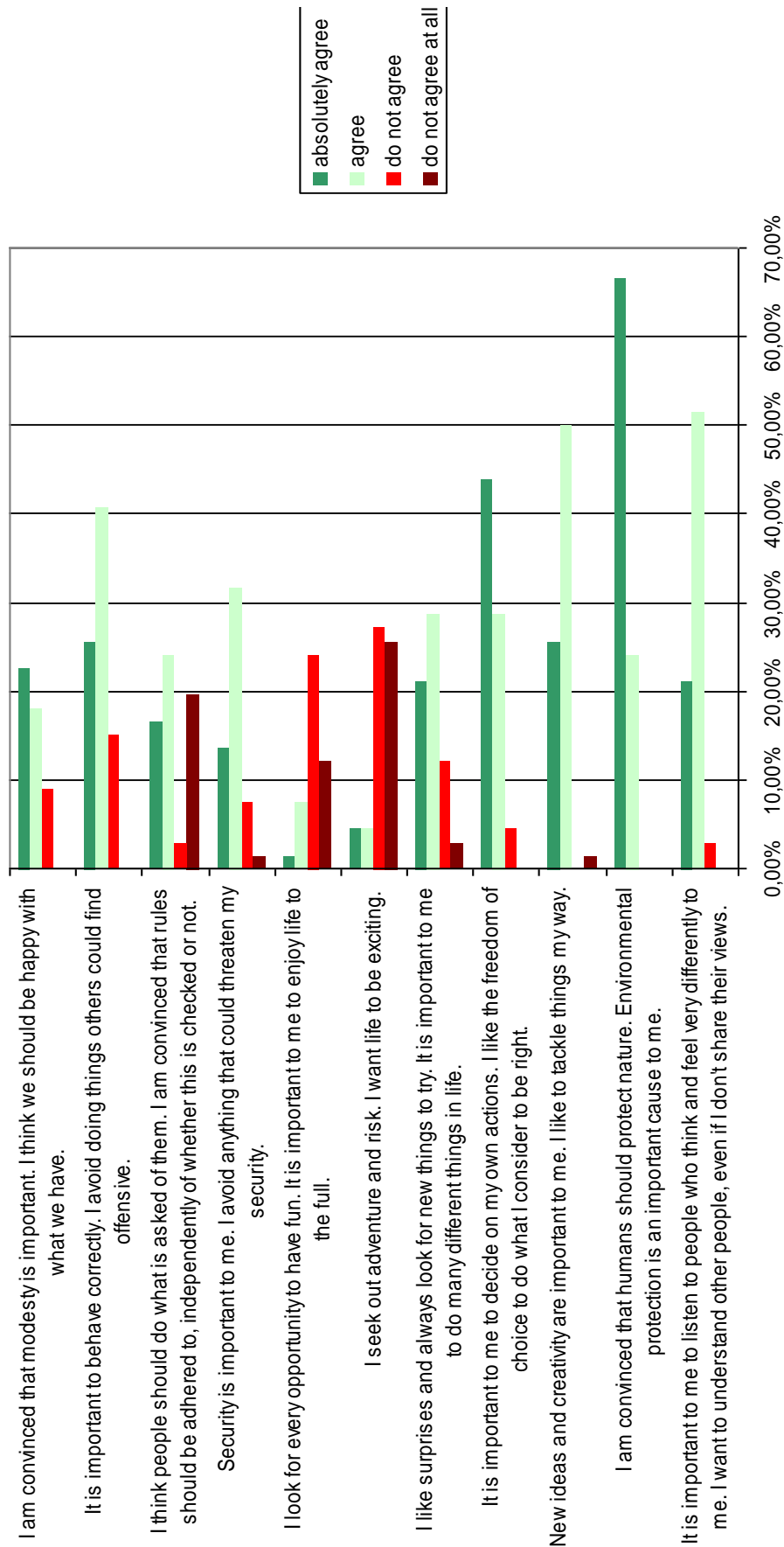


Figure 34: Basic value orientations of those that consider nature to be ephemeral (n = 66, random and active respondents shown together; only agreement and disagreement shown)

Figures 32-34 show the relationship between images of nature and the value portraits described in the first part of the analysis. Since this is purely concerned with general associations, no distinction was drawn here between the active and random group. Only agreement and disagreement with the respective value portraits are shown to represent the two ends of the scale.

Generally, the differences between the basic value profile of those holding different images of nature is minor. This indicates that the different images of nature are not correlated to fundamental differences in the underlying value orientations. There is one exception, which is the biospheric value orientation “I am convinced that humans should protect nature. Environmental protection is an important cause to me”; this is most strongly expressed by those who subscribe to the view of nature as ephemeral. “Nature ephemeral” and a more conservationist ideology thus appear linked: 67% of all those that regard nature as ephemeral absolutely agree with this statement, with another 24% agreeing and none disagreeing. There may be a more general link between universalism and the view of nature as ephemeral: 21% of the respondents also absolutely agreed and 52% agreed with the statement “It is important to me to listen to people who think and feel very differently to me. I want to understand other people, even if I don't share their views,” which is the altruistic value statement which also contributes to universalism. In the other image groups, this link is less strong: Out of those that selected “nature capricious” as their image of nature, 50% absolutely agreed with the statement about the environment (33% agreed), but out of those that selected “nature tolerant”, only 37% absolutely agreed (55% agreed). “Nature tolerant” thus emerges as the image of nature that is least linked to the statement directly concerned with environmental protection.

Despite these outcomes, the small sample sizes in each of the categories for “image of nature” must be borne in mind, which makes direct comparisons between them difficult and prohibits the calculation of statistical significance.

In summary, the above results make it possible for initial portraits to be drawn up of respondents in terms of their basic value orientations and general beliefs about nature. There is a strong biospheric value orientation indicative of a felt unity with nature and the desire to respect, and live in harmony with, other species. This corresponds to a biocentric view of the world, where man exists on a par with nature rather than dominating it. Self-direction and openness to change as a second strong value orientation fits with the sense of independence in the region, indicating a broadly shared ideology that places high value on freedom of choice and disinclination to submit to external pressure.

Qualitative links can be established between the biocentric view of the world and images of nature. A correlation is apparent between the biospheric value orientation and “nature ephemeral”, with “nature ephemeral” in turn linked to a conservationist mindset seeking to protect nature. The felt moral duty to protect nature (“oughtness”) emerges as a separate motivational force, which is also linked to universalism as a basic value orientation and comes across most strongly in the conservationist mindset. Images of nature can also be linked to biocentric and anthropocentric world views, with “nature benign” and “nature tolerant” emerging as the more anthropocentric and “nature ephemeral” and “nature capricious” as the less anthropocentric ones.

Nature is also clearly linked to immaterial values, although use-related values also emerge in the view of nature as tolerant.

4.9.3 The importance of abstract value bases on the West coast of Schleswig-Holstein

The above analyses have provided insights into basic value orientations and general beliefs about nature, which can be considered basic orientors or a foundation for value judgements. From this point onwards, analysis is no longer concerned with fundamental value orientations but with value judgements, moving away from *how* and *why* people value something towards analysis of *what* people value and *how much* they value it.

Before considering the specifics about *what* people value about the sea and offshore wind farming, a baseline was drawn up of different value bases. This sought to obtain an overview of the type of things people value in their lives on the West coast, and which values are considered important by the respondents (question 3 in the questionnaire). Judging from the results obtained on basic value orientations, for example, it would not be surprising if ecological values were valued highly, although the importance of different value bases is likely influenced by multiple factors and not just the basic value orientations or images of nature.

Analysis indicates that many values are comparatively important to the respondents and only few not important. Table 15 lists the comparative importance of the coastal and marine values selected for the questionnaire. As the differences between the random and active group are minor, both are shown here as one group. For ease of viewing, Table 15 only lists “very important” and “not important” as the extreme ends of the scale.

Clean water and a healthy flora and fauna rich in biodiversity come out top of the list, with 87% and 72% respectively considering these very important. The list is therefore topped by two ecological values, which links back to the strength of the biospheric value base and the strong sense of responsibility towards nature expressed in the images of nature. These are followed by the two equity and aesthetic values, which are considered very important by 59% to 56% of the respondents. “A secure livelihood” comes next, which is an economic value that still more than half consider very important. This value category, however, was open to interpretation and could have been understood in the sense of “living securely and/or safely”; which makes it an economic and also an existential category. All of the value bases mentioned so far are also characterized by the fact that very few respondents consider them unimportant, in case of the top three zero percent.

Just under half of the respondents consider participation in decision-making very important, which is the first cultural (or political) value in the list. The second cultural (social) value is clearly less important, ranked only fourth from the bottom. The third ecological value “Let nature be nature” does less well than the other ecological values, which could be an indication of the view that nature’s forces need to be tamed, which makes good sense in a region whose entire existence is bound up with dykes and sea defences. Community and recreational values still draw over 30% of respondents considering them very important. What is interesting, however, is the position of the last two economic and science/technology values. Economic growth is rated as very

important by only 23% of respondents and as not important by 7.5%. For “Investing in new industries and technology” the figures are a mere 16.5% (very important) and a considerable 26% (not important), and for “Attracting profitable companies and industry to the region” an even lower 13% (very important) and higher 33% (not important). Economic and technology values thus emerge as the least important values, which could be linked to the fact that the sample contains many older residents and pensioners to whom these issues may no longer be of concern. The low values for “Attracting profitable companies and industries to the region” could also indicate a deeply held suspicion of industrial change in the region, which would match the comparatively high rank of ecological and aesthetic landscape values. Whether ‘industries’ also include onshore and offshore wind farming is impossible to say, although some of the previous comments made in the question about nature would indicate it does.

Table 15: “How important is... for your life at the west coast of Schleswig-Holstein?” (random and active groups taken together, N = 387) (five-point scale; other values not shown here)

Value base (category)	item in questionnaire	very important	not important
ecological	Clean water, air, soil, beaches and Wadden Sea	87 %	0%
ecological	A healthy flora and fauna rich in biodiversity	72 %	0 %
equity	Respecting the rights of future generations	59%	0%
aesthetic	An attractive landscape	58 %	2.5 %
equity	The rights of animals and plants to live in their natural habitat	57%	1%
aesthetic	The wide, open sea	56 %	4 %
economic	A secure livelihood	52%	0%
cultural	Participation in political decision-making	49%	4%
ecological	Let nature be nature	40 %	3 %
community	Justice and fairness in the region	39%	3%
recreation	Leisure time spent on the coast and sea	38 %	3 %
community	Striking a balance between the needs of tourists and those of local residents	35%	6%
work	Holding an interesting and challenging job	32 %	6 %
cultural	Many social contacts living close by	26%	6%
economic	Economic growth	23 %	7.5 %
science/edu	Investing in new industries and technology	16.5 %	26 %
economic	Attracting profitable companies and industry to the region	13 %	33 %

The fact that the list is topped by ecological and aesthetic value bases fits with the importance of the basic human value orientation of “biospheric universalism”. The value bases also indicate that nature, or more broadly speaking the natural environment, is valued for the benefits it gives to humans. Well over three quarters of the respondents agree that clean water and a clean Wadden

Sea is the most important aspect about this environment, which is appreciated as a resource in this context and enjoyed as such. A link is therefore apparent to the more utilitarian views of the sea, although the notion of careful use is still implied here. High importance ascribed to “The rights of animals and plants to live in their natural habitat” in contrast confirms the high importance of intrinsic values; this is again linked to the desire to see these values protected.

The abstract value bases elicited here already point the way towards the more specific sea and offshore wind farm values which were subjects of later parts of the questionnaire. They will now be considered in turn in chapters 5 (landscape) and 6 (offshore wind farming).

5 Landscape and seascape perception on the West coast of Schleswig-Holstein

The previous chapter has shown that basic value orientations and images of nature constitute a driving force in the establishment of preference relationships. Representing the first and second order of cognition in the cognitive belief framework, they can be considered the foundation for higher order beliefs with conceivable bearing on attitudes to offshore wind farming. A strong basic value base and strong moral precepts may lead to a highly principled attitude to offshore wind farming. But the scales can also be tipped by a more complex set of expected gains and losses associated with offshore wind. Basic value orientations would then manifest themselves largely indirectly through their impacts on higher orders of beliefs such as views of the sea.

This chapter is concerned with the third order of cognition, which is the sea as a setting for offshore wind farming. How important is the experience of the sea to local residents, and is this experience threatened or possibly enhanced by offshore wind? In order to answer this question, a closer look is required at what exactly constitutes the sea experience of local residents. What elements are particularly important in the experience of “sea”? Is it possible to identify specific objects of value in the sea, and what types of value are assigned to these? And how do these values relate back to the subjective sea experience including feelings, thoughts and moods?

Although it is conceivable that the sea gives rise to unlimited sea experiences and values, three perspectives of “sea” seem particularly relevant for the case of offshore wind farming:

- the *visual seascape*, which already represents a tangible good in the marketing of the Wadden Sea to tourists for example. This reading of “seascape” is analogous to the terrestrial concept of landscape and will be explored as such,
- the sea as a *spatial resource and setting* for a wide range of sea uses. Here, the sea is simply a particular kind of space and a setting for spatial conflicts between different sea uses,
- the *personal or collective relationship* of local communities and individuals with the sea (their own individual construction of “sea”).

Each of these conceptions of the sea refers to different ideas of space, ranging from static and physical concepts of space to perceptions of landscape and ideas of place and its components (Relph 1976). They also encompass different modes of environmental experience including the environment as an external place, as emotional territory, as self, and as a social system (Ittelson et al. 1976). Additional perspectives would be that of the environment as a setting for action (Ittelson et al. 1976), or more constructivist perspectives of “sea” which might ask how sea space is constantly (re)made through action and communication and what power relationships and interests drive this production (Wardenga 2002).

In the context of this study, emphasis is placed on the sea as an “encountered landscape” (Hull and Stewart 1995). This is a suitable concept for two reasons: Firstly, because it offers ready links to the previously discussed concepts of value. On the one hand, the encountered landscape

“reflects the focus of one’s attention when it is directed outward toward objects or people in the setting” (p. 407), which is the perspective of objects of value. On the other, it refers to “feelings, thoughts, and other subjective qualities that are experienced concurrently with these views” (p. 408), which can be linked to held values, perception and appreciation. Secondly, the concept of the encountered landscape encompasses different strands of theoretical landscape research, bringing together elements of the material landscape with landscapes of the mind.

The encountered landscape starts from the premise that a landscape may offer an infinite number of objects that may be encountered from infinite perspectives (Hull and Stewart 1995). Access to the landscape is the limiting factor which reduces this to probable views and actual experiences by people. The encountered landscape, and by extension the “encountered sea”, is therefore a subset of all that could possibly encompass landscape or “sea”. Hull and Stewart argue that human reactions to the landscape are shaped by the encountered landscape rather than an abstract idea of landscape. This may also apply to the sea and the experience of sea by local residents.

Although this chapter will reveal some special qualities that set it apart from common landscape conceptions, the sea can be understood as a special type of landscape. One obvious difference between landscape and seascape is the lack of a clear definition of “cultural” and “natural” seascape, calling into question whether humans are really capable of shaping the seascape in the same sense as the landscape. Nevertheless, “seascape” is employed here as an analogous term to landscape, encompassing the same diversity of perspectives, interpretations and also ambiguities as the term landscape.

In order to employ different perspectives of landscape for analyzing equivalent perspectives of “sea”, this chapter begins with a selective overview of theories of landscape. This leads to a better definition of “seascape” and a clearer distinction between “sea” and “seascape”. Based on empirical results, it then sets out objects of value in the North Sea and the types of value assigned to these by local residents. This offers a closer description of the encountered sea and with it, better understanding of how the sea is appreciated.

Given the huge body of literature on landscape, the initial theoretical overview cannot hope to cover every aspect. It therefore focuses on three interlocking facets of landscape which seem particularly relevant in the context of the encountered sea:

1. the material perspective, looking at objects in the landscape and their interrelationships,
2. the immaterial perspective, looking at the aesthetic qualities of the landscape and the specific role of beauty,
3. the internal perspective, looking at different forms of constituting landscape, and linking the emotional aspects that come into play when perceiving a landscape to concepts of place and place attachment.

5.1 Constituting landscape

What is landscape? At first glance, it seems a truly obvious concept. We are quick to link landscape to scenic quality, quick to class something as pretty or ugly, and quick to say which landscape is worthy of preservation and which is not. We also instinctively feel that landscapes may be threatened and lost, and can become deeply attached to certain landscapes, often to those we feel rooted in or with which we associate certain experiences. Probing more closely however, it becomes obvious that most of us would find it difficult to describe exactly what makes up a landscape, why there are differing views of the same landscape, or why we value a certain landscape but not another. Evidently, then, a landscape is composed of many interlinked facets. What is more, a particular landscape can be perceived, interpreted and valued in different ways. Physical entities are overlaid with experiences and expectations, images and ideas, notions and narratives, culture and context, and although they seem so readily grounded in the physical environment, landscapes are ultimately constructs that are made and unmade in a particular socio-cultural context through subjective perception. This gives rise to many contested questions in current landscape research. Widgren (2004) argues there are four dimensions in studying landscape: form, function, processes and context, but Palang and Fry (2003) rightly point out that studying each of these separately – although possible – does not constitute the study of landscape (p. 2). So what is the true essence of landscape, and how has geography attempted to capture and describe this? A scan of current literature quickly reveals that the study of landscape has really become a study of interfaces. Key interfaces in landscape studies include those between preservation and use, between expert and lay persons' views, between the past and future of landscapes, and between different cultural perspectives (Palang and Fry 2003). Questions also arise with respect to the dynamics inherent in landscapes and how to deal with normative aspects inherent in landscape management: What criteria are available for assessing the quality of a landscape, what purposes do such assessments serve, and who does the assessing? (see Kreisel & Reeh 2004 for an overview).

In geography, the study of landscape is characterized by fundamentally different ways of seeing (Muir 1999). One is the practice of regarding landscape as a material, tangible, restricted piece of land, the so-called container perspective. Spaces are seen as entities composed of certain facts of the physical-material world including surface formations, soils, climate, water, vegetation, fauna and human structures. These spaces are simply assumed to exist in reality, understood to result from an interchange of natural and anthropogenic factors (Wardenga 2002). The second is the understanding of landscape as a visual phenomenon, referring to the appearance of land as we see it. This view essentially regards landscape as a tract of land (or its representation in painting) which lies in prospect (Barrell 1972), translating land use, population densities, settlement patterns, traffic flow, local site conditions etc. into the “visual statement of a complicated situation” (Fairbrother 1970 p. 291). This is perhaps the most intuitive perspective that most people imagine when defining landscape: A landscape is ‘out there’, ready to be seen and experienced as an external pre-existing entity. Both the container and the visual aesthetic perspective can thus be classed as external perspective whose existence depends on an external observer. A third perspective is the view that landscape “denotes the external world mediated through subjective human experience” (Cosgrove 1984 p. 13), meaning landscape is not the world we see, but a

way of seeing the world (Cosgrove 1984). Landscape in this perspective is a medium, “a body of symbolic forms capable of being invoked and reshaped to express meaning and values” (Mitchell 1994 p.14). A fourth perspective is that of the landscape as a spatial metaphor and way of structuring the perception of the social (Lutz 2007). Rather than conceiving of relationships and action in space, this perspective focuses on the constitution of space as an element of something else (Wardenga 2002). Regions for instance are understood as spatial structures of society which are produced through collective action (Paasi 1986), implying the contingency of spatial entities and their disappearance when they are no longer reproduced by society (Wardenga 2002). The third and fourth perspective can therefore be understood as an internal perspective where the observer and the object of observation form part of the same constructivist entity.

There is no absolute separation between these perspectives, so that access points to studying landscape have developed in fields as diverse as history, archaeology, art, literature, geography and the social sciences (Muir 1999). This makes ‘landscape’ a conceptual aid that can and has been assembled in many different ways. Out of this variety, landscape studies can be classed into two broad lines of thought. One has a stronger focus on the environment, the physical appearance and spatial characteristics of landscape and is concerned mainly with the tangible, material elements that shape and constitute landscape including the relationships between sites and the relational systems that result. The other is more concerned with the intangible, socio-cultural aspects that make up a landscape. This includes landscape as an aesthetic category, a category of sensory perception and the social constructivist perspective where the making of a landscape is linked to questions of interests and power or everyday action and communication (Wardenga 2002).

Two aspects are important in the study of landscape irrespective of the perspective. Firstly, in order to perceive a landscape at all and to set apart one landscape from another, it must be possible to conceive of units that are distinct from one another. This is actually implied by the word “landscape”, where the suffix “scape” denotes a composition of similar objects (Jackson 1986). Etymologically, ‘-scape’ is thus a principle which makes it possible to consider part of the countryside as an individual unit (Peters 1948, quoted in Cosgrove 1984 p.13). Such units are necessarily geographical, but can also be political, ecological, administrative or cultural (e.g. Olwig 1996, Sunnus 1998). It follows that the principle of delineation, and the association of meaning with specific units, applies to many different ways of viewing a landscape, whether it is a geomorphological, aesthetic, ecological, social or administrative perspective. It has also been noted that creating spatial relationships is a fundamental human desire which springs from the need to create orientation and anchor points within one’s life world (Weichhart 1990).

The second aspect, and a key question in the context of the present study, is how meaning is derived from landscape. Essentially, this is a question of landscape *perception*, understood here as different ways of experiencing and interpreting the idea of landscape. “Thus a human being is in the landscape, and it is the perceptions of that being which matter most” (Bunkše 2010 p.3). Perception in turn is linked to the question of *valuing* landscape, understood here as the basis of differentiating between those landscapes (or elements of landscapes) that are highly valued and those that are less highly valued. A fundamental premise is that landscape encounters, and ultimately the appreciation and valuation of these encounters, are linked to our interpretation of

the landscape experience through conscious or subconscious conceptual filters, of which aesthetics is one of the most important. Our perception and appreciation of landscapes thus depends on the theories we (sometimes unconsciously) subscribe to. Here is an obvious link to the general values a person holds, as well as their general beliefs about the world at large and what is important in this world. This also applies to groups and institutions, and the many different normative approaches to landscape planning and management: Evaluation of landscape quality for tourism for example is largely based on landscape aesthetics, and various criteria have been developed to assess the scenic qualities of a landscape (Kreisel & Reeh 2004).

Without going into detail, it should also be pointed out that German geography has had its fair share of difficulties with the term 'landscape'. From a central object of analysis in the early 20th century and attempts to position landscape within the wider system of geography, the term later came to be discounted as 'unscientific' and too multi-layered to allow its use within geography (Stadelbauer 2004). It was not until the emergence of pragmatic new disciplines such as landscape ecology and the increasing interest in landscape assessment that it became used again. These more pragmatic approaches addressing partial aspects of the 'total character' of landscape eventually led to an opening up of the purely container-oriented perspective towards landscape as an arena for human action. At the same time, geographers gradually began to see themselves as 'builders' of spatial units, leaving behind the 'realistic' perspective and opening up to perception-related and constructivist perspectives from the late 1970s onwards (Wardenga 2002).

So what about the specific case of the sea? Although all of the above can equally apply to seascapes, landscape studies specifically dealing with the sea are still rather rare. Different geographical ways of seeing, and different ways of delineating specific sea units, have so far given rise to concepts such as marine landscapes (an ecological term and commonly refer to sea bed habitats, e.g. Golding 2004), or seascapes, which refer to visual entities as depicted in art or used in planning (e.g. Scott et al. 2005). The predominant perspectives on the sea, however, are currently spatial and ecological. The spatial perspective regards the sea as a planning space to be set aside for different uses, e.g. by means of marine spatial planning (Gee 2010a, Gee 2010b, Gee 2007b). The other takes an ecosystem perspective, currently supported by EU policy such as the 2009 Marine Strategy Framework Directive. There is much debate at present on how to bring together these perspectives (e.g. Katsanevakis et al. 2011, Caldao et al. 2010, Douvere and Ehler 2009, Gilliland and Laffoley 2008) and how new forms of marine governance can be created that are able to include multiple sea perspectives (e.g. Kannen et al. 2010). The seascape perspective seems much neglected in these debates at present. For landscape planning for example, it has become clear that the subjective perception of landscapes needs to be included just as much as the physical reality of current land forms (Kreisel & Reeh 2004). With respect to the sea, such integrative thinking is still very much in its infancy (see e.g. Bruns & Gee 2010, Runge & Nommel 2006, Scott et al. 2005).

5.1.1 The physical/material landscape

In the German-speaking world, the term 'landscape' became a topic of geographical research immediately after the First World War (Stadelbauer 2004). The initial focus was very much the 'material' approach to landscape, defined as an 'identifiable tract of land' and determined by the geomorphological approach which goes back to Sauer (1969). This regards landscape as an area with a distinct association of physical and cultural forms and thus a 'total character' which can be readily defined (Kreisel & Reeh 2004). The mid-20th century was characterized by a debate on whether landscape should be understood from a typological perspective or as a 'spatial individual' (Stadelbauer 2004), but this did not influence the task of the landscape geographer which was essentially to "describe and explain this entity in its distinctive uniqueness" (Wardenga 2002 p.8). Explanations essentially took into account of landforms, but also the biosphere and the various factors acting upon them, such as the weather, temperature, floods, landslides, patterns of settlement, land use, resource exploitation, trade etc. The material view of the landscape is thus largely an object-based one.

The material landscape as a dynamic entity

Although it may appear so in its focus on individual objects, the material view of the landscape is not a static perspective. A dynamic element is brought by the fact that the landscape is less defined by the single physical and human forms it contains but by the associations and interchanges that exist between them. The material view of the landscape is thus one of a "melting pot where all uses – each self intent and often conflicting – meet and mould each other" (Fairbrother 1970 p. 291), and where all forms of matter, namely inorganic, organic and human, come together in a complex and therefore non-linear system (Schmithüsen 1968).

Material landscapes reveal their constant change in the ongoing re-configuration and shifting of discernable patterns in the landscape along different spatial and temporal scales. Some change such as the erosion of mountains may be large-scale and very slow; other change such as construction of new infrastructure or changes in farming practices more localized and fast. Natural disasters such as storm surges have the capacity to alter forms and relationships between objects in the landscape literally overnight. Other shifts may be more subtle, relating more to the social and political context of a landscape rather than the actual physical or visual manifestation it may take.

The task of the geographer as an external observer is to look at 'the real' landscape unfolding before him. A key tenet of the material approach to landscape is that any analysis should be done as objectively as possible, employing observation and measurement as tools of the trade and mostly resorting to natural sciences for assessing the physical elements of the landscape. This perspective long discounted any aspects of landscape that are of a subjective or more personal nature, meaning the material-physical view of landscape was just that, a view of the forms and interrelationships of different material aspects over space and time. This perspective persists today in approaches such as landscape ecology and functional ecological perspectives on landscape.

The apparent objectivity arising from the scientific observation and assessment of landscape patterns and causal relationships can sometimes disguise the inherent subjectivity which characterizes the container-based view of landscape. Physical landscapes are mental constructs in that they need to be actively and repeatedly delineated as a conceptual entity, one that helps to make sense of the “material outcomes of how we think and act towards the material world around us” (Fish et al. 2003). Although it is conceivable thus to define landscapes as physical units and parts of the earth’s surface, their delineation ultimately depends on the selective criteria applied by different viewers (Larkin and Peters 1983). Even from the material perspective, landscape is therefore an inherently subjective construct.

The inevitable progress of change implies that landscape can be understood as a medium whose current manifestations are inscribed with evidence of the past. A careful eye is able to trace past physical events, patterns of land use such as ancient field systems or boundaries, and from those power structures or other interpretations of place. This perspective is taken up by landscape history and landscape archaeology, one of the major focal areas of geographical research (e.g. Muir 1999, Rackham 1986, Hoskins 1955).

The generic approach to landscape and the “dialectic of the Enlightenment”

Another early approach to studying the material landscape is the generic approach which assumed a progression of landscapes from an original ‘natural’ to an increasingly cultural state where the landscape is strongly influenced and shaped by humans (Muir 1999). The idea of natural progression has since been discounted, not least because an original ‘natural’ state cannot be defined. It has also become clear that the development of landscapes is not a progression in the sense of progress, but unpredictable and shaped by many different forces.

The generic approach is nevertheless important because it contributed to the well-known dualism between natural and cultural landscapes, a distinction which has firmly lodged itself in the minds of scientists, managers and also the general public. This dualism, which will be useful later when it comes to different views of the sea, continues to pervade many ongoing debates about landscape perception, landscape value and not least landscape planning and management, where it has come to drive utilitarian perspectives on landscapes as well as normative approaches to landscape assessment such as the 2001 European Landscape Convention. Specifically in the specific German-speaking world, focus on the study of natural and cultural landscape helped to resolve some of the difficulties that had arisen with the concept of landscape and the use of the term within geography, offering a more pragmatic approach to landscape assessment and turning landscape both into a spatial planning term and ecological concept of analysis (Stadelbauer 2004). Natural and cultural landscapes also offer ready bridges to other conceptions of landscape, most notably the aesthetic landscape and the immaterial landscape (see below).

The common understanding is that natural landscapes are those uninfluenced by man, having grown from natural processes and still determined by natural processes, while cultural landscapes in the broadest sense are those that are shaped by man. It could be argued that perceiving and delineating a landscape is itself a cultural act, calling into question whether a

natural landscape can actually ever exist; irrespective of this it is certainly possible to point to a gradient between landscapes that are more or less intensively (and intentionally) shaped by man.

Fischer (2007) describes the so-called 'dialectic of the Enlightenment' whose two opposing trends led to the conception and importantly, valuation of both types of landscape. The first of these trends is the re-evaluation of nature and a re-interpretation of wild and threatening landscapes as something pleasing and beautiful. The coast is a prime example of a place which was no longer seen as dangerous and a location of divine retribution, but came to be regarded as 'wilderness' and a sublime place. Wilderness, often defined as extreme landscape formations, was re-interpreted as something of great value; much later, this was to become the founding idea of National Parks. Today, the 'natural' is still a by-word for that which is inherently good, desirable, and pure; it has become all the more desired the less immediate our connection to nature. "The longing of tourists for 'beautiful' or even 'wild' nature is fed by the unconscious assumption that the 'natural' inherent in landscape is needed as a cure for the over-civilization of the world in which we live" (Fischer 2007 p.3). The second trend that began during the Enlightenment is the transformation and re-interpretation of inhospitable terrain and 'badlands' (e.g. heathland, floodplains) into something that represented progress, therefore also becoming inherently good but for different reasons. Cultural landscapes became appreciated for the fact that they were man-made; as an added benefit they were regarded as aesthetically pleasing. Today they are often romanticized as symbols of times past and imbued with imagined meaning (Fischer 2007). Natural and cultural landscapes are therefore both valued in their own right, but for different reasons and based on different value sets.

The line of separation between natural and cultural landscapes is ultimately arbitrary, depending also on what the viewer knows about the landscape. For example, should coastal land reclaimed in medieval times and now turned into a nature reserve be classed as a natural landscape? Are the Scottish highlands a natural or a cultural landscape? And when and why does this matter? Today the diverging conceptual pathways of natural and cultural landscapes are mirrored in the respective research approaches which predominate: Research into natural landscapes is more closely allied to ecological approaches and landscape ecology, while cultural landscape research is more closely linked to historical geography (Stadelbauer 2004).

Criticism of the material approach to landscape

Although the pragmatic "functionalism of planning renounces any theoretical debates and simply takes the notion of landscape as a given" (Stadelbauer 2004 p. 35), the debate on the true essence of landscape and the various dimensions of landscape perception continues. Critics of a purely objective and rigorously natural science-based approach to landscape put forward two main arguments. Firstly, they argue that reduction of landscape to form will always be a static snapshot of a particular composition of form and therefore does not readily lend itself to describing the inherent dynamics of landscape processes. Secondly, geomorphological analysis, with its concentration on empiricism, can only operate at a surface level of meaning. This, so the argument, would be similar to restricting the meaning of a painting to its formal pictorial representation, ignoring the many deeper cultural and symbolic meanings expressed in the

painting. Whilst it is possible and also necessary for a full understanding of landscape to describe its constituent physical elements – its mountains, lakes, the sea, villages and other human infrastructure - and assess their interrelationships as a driver of the landscape genetic process, objective scientific rigor is unable to capture the essence of landscape, which many consider to be its deeper meaning and symbolism. As Cosgrove (1984) puts it, “formal morphology remains unconvincing as an account of landscape in that it ignores (...) the symbolic and cultural meaning invested in these forms by those who have produced and sustained them, and that communicated to those who come into contact with them: the meaning, for instance, of a church spire riding over fields of hay (...) – a telling symbol even to the most casual observer” (p.18). This is not to say that a natural science-based approach cannot contribute to a fuller appreciation of landscape. Beyond a common-sense understanding, natural science offers an additional account, making visible and offering an explanation for the natural order of things (Carlson 1979). A similar line of argument is often used in the context of heritage interpretation, where it is argued that understanding (e.g. of a place or site) leads to greater appreciation, which in turn leads to greater willingness to protect. The relationship between landscape and natural sciences can thus be understood as a constant interchange, which new information from science informing our understanding and appreciation of landscapes and vice versa.

A related point of criticism is put forward by the view that landscape is a category of sensory perception. This view suggests that apparently ‘real’ spaces are seen through sensory filters and only then assessed and given meaning by individuals, groups or institutions (Wardenga 2002). Landscape is therefore no longer a universal, tangible, physical reality, but multiple realities which can be appreciated for many different reasons. Accordingly, researchers have increasingly focused on qualitative research and the ‘insider perspective’ rather than viewing themselves as objective observers of a supposed external landscape reality. These become particularly important in the context of the immaterial and experiential landscape (see below).

Despite these diverging trends, it should be pointed out there remains a desire within geography to come to a holistic view of landscape under the umbrella of a single subject category. Proponents of this view do not deny the complexity of landscape, nor do they suggest that different aspects should not be dealt with by specialists from different fields. The main argument is that synthesis in some form of ‘landscape science’ is possible and even necessary to capture the wholeness of landscape, much like ecology brings together botany, zoology, soil sciences etc to describe something more than its constituent parts (Kirchhoff & Trepl 1997). This evidently also includes immaterial views of the landscape which are discussed next.

5.1.2 The immaterial landscape

From the understanding of landscape as a (physical) co-product of natural processes and human actions, later approaches moved towards greater interest in subjective and experiential aspects of landscape (e.g. Tuan 1979, Meining 1979, Cosgrove 1988, Jackson 1989). An important understanding is that the construction of landscape is closely related to concepts of place and identity, in that it is possible to feel rooted in a landscape and relate to it on a subconscious, emotional and spiritual level. Landscape becomes “a construct of the mind and of feeling” (Tuan

1979 quoted in Muir p.4), an emotional metaphor. The ecological, administrative, functional, cultural and political delineation of landscape is thus overlaid with different immaterial concepts such as that of identity (Sunnus 1998). Like an iceberg, much of what ultimately makes a landscape lies below the surface, comprising the many non-material elements of a landscape and the processes that shape these. The methodologies for evaluating landscape therefore had to expand beyond the resource perspective and the perceptive stage to include the many emotional metaphors that matter in the valuation of landscapes.

Two concepts come together in the immaterial view of landscape: the external view of landscape, which is mostly a visual-aesthetic perspective, and the internal view of landscape.

a) Landscape as a visual-aesthetic concept

Landscape as an aesthetic category can be differentiated into landscape as a physical object of perception and landscape as an expression of a particular way of seeing (Muir 1999 p. xiv). The development of the visual landscape perspective in the late 16th century is linked to the growing importance of the visual as a method of finding truth. Landscape painting was not a prerequisite, but developed hand in hand with this new ability to perceive the landscape, and was even a consequence of the growing subscription to the notion of “seeing is believing” (Cosgrove 1984). The “landscape eye” can turn any part of the earth’s surface into a landscape, “ennobling” even spaces that are primarily considered ugly or profane (Gailing & Leibenath 2011).

Landscape and view

Landscape initially acquired meaning as a painter’s term when it came to be interpreted as ‘view’. Landscape represented “a picture representing natural inland scenery as distinct from a sea picture, a portrait etc” (Oxford English Dictionary of 1603, quoted in Cosgrove 1984 p. 17). In 1890, the popular conception of ‘a landscape’ was ‘a piece of the earth’s surface that can be seen at once; and it was always understood that this piece would have a certain artistic unity (Hamerton quoted in Mikesell 1968). It was not until later that ‘landscape’ was also applied to scenery in general rather than just representation of scenery.

In Germany, the term ‘Landschaft’ also first acquired meaning through painting, either through paintings composed to represent certain scenery or by denoting an actual area as a landscape because it resembled a painting (Hard 1970). Trepl (1997) points out that the concept of landscape was still an alien one to medieval society, but that it had become one of the most significant forms of artistic expression by the 18th century with the creation of landscape gardens. Landscape, in essence, was a painting, a view to be taken in, an aspect or scenery, quite different from the systems view put forward by geography later. In the visual-aesthetic perspective, the term ‘landscape’ therefore implies the generalized or composite visible and visual scene (...) and an actual scenic view (Coones 1992). The close connection between visual definitions of landscapes and concepts such as location and scenery explains why the scenic qualities of landscapes continue to figure prominently in communications about landscapes.

Because of the long-standing visual artistic connotation, it has been pointed out that landscape cannot help to be subjective (Mikesell 1968). As implied above, landscape needs to be seen,

identified and delineated by a human observer, whether this observer is an artist or scientist. In the visual-aesthetic sense, landscape is clearly selectively composed and made available for consumption by others, whether this is through the medium of painting, photography or text. Such composition implies valuation of the observed by the observer, first of all by selecting a particular perspective (including certain elements of the surroundings but not others) and secondly by interpreting this perspective (e.g. depicting it as wild, lonely, beautiful, sweeping, despoiled etc.). The aesthetic perspective is thus an external perspective, much like that of geographers seeking to delineate and understand landscape from a scientific point of view. It could be argued that an aesthetic perspective always involves an emotional view of the landscape, or at least a degree of involvement, hence the artistic perspective is perhaps not strictly external. In any case, despite its strong links to the concept of beauty, the aesthetic perspective is not necessarily focused on depicting beauty in the landscape.

The visual-aesthetic landscape perspective is context-dependent and needs to be understood from its respective socio-cultural setting. Landscape paintings, but also landscape gardens often communicate visions of beauty or majesty, human transformation of the land, or the sublime. In the 18th century, landscape art was understood as a way of communicating the divine inherent in nature; it was likened by some artists to religious painting in that “the task of the true artist is to give visible shape to a particular experience of the divine in nature” (Philipp Otto Runge quoted in Ross 2005). Roman painters depicted landscapes as ideal landscape ‘models’ (Barrell 1972); for late 19th century English painters landscape was a symbol of continuity, a counterculture to urbanisation and industrialisation of city life (Rose 1995). Sometimes, the work of landscape painters was powerful enough to influence society’s tastes and values, as was the case with depictions of wilderness and their contribution to the birth of wilderness appreciation in North America. In turn, landscape painting embodies socio-political values, influencing people’s sense of geographical identity and destiny, as has been stated for Constable’s *The Hay Wain*, which depicted “languid little England pastoral (...) a central ingredient of wartime patriotism” (Daniels 1991 p. 9). The visual-aesthetic perspective is thus concerned with the individual’s *response* to a scene, a response to the immaterial aspects inherent in landscape through a scene or scenery. The aesthetic perspective can also be highly political: romanticizing supposedly idyllic, farmed landscapes in the 19th century for example implied the conscious or unconscious disregard for the social and political context and the difficulties of rural life (Gailing & Leibenath 2011).

The role of scenic beauty in pragmatic and theoretical approaches to landscape

Contemporary pragmatic interpretations of the visual-aesthetic approach to landscape mostly focus on the scenic beauty of the landscape. The scenic qualities of the landscape, which can be described as the large-scale visual characteristics and structural elements of both natural and cultural landscapes, have become a key concern in tourism and recreation (where they are instrumental in the marketing of destinations especially in rural regions), as well as in regional development and quality of life research. Tourists expect the landscapes they visit to be visually appealing (Kreisel & Reeh 2004), which leads planners to attempt to maintain or even enhance what are perceived to be key scenic elements of the landscape. A range of methods have thus become available allowing experts and planners to assess the scenic quality of a landscape. These range from inventory-based approaches focusing on the various landscape features

(including non-visual features such as smells and sounds) to those focusing on different dimensions of the aesthetic experience (e.g. the biological, social and individual dimension). Processes of assessment include expert-led, behavioural and humanistic approaches and user-independent and user-dependent approaches. The criteria employed to assess scenic quality include diversity (divided into diversity of relief, vegetation, water bodies, use, access, aspect and perspective (Nohl 1993), uniqueness, and beauty (Kreisel & Reeh 2004).

But despite the many efforts to cater to a public expecting “beautiful scenery”, it is not entirely clear what actually determines the experience of beauty in a landscape. A broader aesthetic approach to landscape would need to explain not only what we like about landscapes, but also why (Muir 1999 p. 244), taking account of the moods, images and thoughts a particular view evokes and to which individual elements or overall impression these associations are linked (Hard 1965).

Various approaches have been taken to explain why we find particular landscapes attractive, such as the habitat theory proposed by Appleton (1996) which presupposes biological constituents for aesthetic experience. Others argue that cultural constituents are more instrumental in shaping aesthetic experience (Bourassa 1990). What is clear is that the aesthetic experience involves affective, cognitive and imaginative mental states and calls on background factors such as social and cultural experience, habits and belief systems, traditions of behaviour and judgement, even styles of living (Berleant 1992). The aesthetic experience can therefore be described as a rich relationship between a person and the place that person encounters and perceives through the senses: “the landscape observer finds correspondence between his soul and the landscape, and so finds his self reflected in the landscape and the dynamism of his inner life in the experience of the landscape” (Hard quoted in Kreisel & Reeh 2004 p. 79, translation by the author). Put differently, the capacity to perceive (landscape) beauty goes “beyond the sensory perception of the landscape since previous remembered perceptions also become active in a process which is partially synaesthetic” (Kreisel & Reeh 2004 p. 79, translation by the author).

This definition of the aesthetic experience implies that a purely visual appreciation of the landscape is never a complete encounter of all that is landscape. One reason – quite unrelated to landscape experience - is that a picture (and by implication a view or scenery) never gives a full account of the environment, as “sounds, smells and feel of a place may be alluded to but not reproduced (...)”. Artists, and by implication marketing professionals, “depict not simply what they see, but what they know and understand, features to which they and their public attach significance” (Prince 1984 p. 4). Artistic representations of landscape, as all representations of landscape, are thus necessarily selective, images of the mind rather than ‘reality’. More importantly, however, a purely visual approach fails to take account of the human ability to enter into, travel through and be immersed in a landscape in the sense of a holistic aesthetic experience. “Reason alone, without subjectivity and the emotions, makes the individual (...) an incomplete witness of the experience of landscapes. Consequently truth and beauty is not only visual, but may reside in what is perceived through the other senses” (Bunkše 2010 p.1). Rolston (1998) agrees in that “a forest cannot be understood simply by looking long and hard at it – whether the understanding sought is scientific or aesthetic”. A complete aesthetic experience of landscape therefore also needs to take into account the emotional experience of landscape –

linking the external aesthetic perspective to the internal perspective and the creation of “landscapes of the mind” and place.

Despite its shortcomings, one advantage of the aesthetic landscape experience is that it brings together the concepts of appreciation and valuation, as to aesthetically appreciate a particular place is to value it and to form a bond with it. Aesthetic appreciation is a multi-level and relational experience where we value both the experience itself – the aesthetic moment – and the aesthetic object, repeating the duality set out above between the external “view” and internal experience.

b) The internal perspective: Landscapes “made” and landscapes as an emotional construct

As outlined above, the different uses of the term landscape, denoting ‘view’ on the one hand and ‘area’ on the other, are indicative of a fundamental duality in how landscapes have come to be approached. Apart from these external views, there is a third perspective, defined by Cosgrove (1984) and others as an ‘internal’ perspective. This perspective, which moves away from the external viewing or enjoyment of landscape, focuses on the participants and ‘makers’ of the landscape both as collective entities and individuals. The main difference to the external perspective is the intimate involvement with experiencing and shaping landscape. This has led to two avenues of research: One the constructivist perspective pursued by the idea of collective ‘making’ of the landscape, and the other the subject-centered approach pursued by perception geography (focusing for instance on emotional landscapes and landscapes of the mind, and with these concepts such as place attachment).

The collective making of landscapes

The collective concept of ‘making’ landscapes argues that the personal and social meaning carried by a landscape has little to do with the landscape’s visual form or representation, but everything with its composition and use. Landscape becomes a collectively produced, lived and maintained dimension of existence, “a lived product of relationships, a fluid transitional stage of nature in its regional manifestations and of a special order of cultural artefacts” (Fischer & Hasse 2001). From this perspective, landscapes can be viewed as expressions of societal values and indirectly, power structures, which also allows the tracing of past decisions, priorities, battles over land use, policies and policy changes or which actors were in charge when and how. A village becomes a space for (historically determined) possibilities; it is this sphere of possibility which ultimately determines local identity (Kaschuba 1985). Based on the idea of collective ‘making’ of space, and taking up Luhmann’s theory of social systems, Klüter (1994) for example called for research into how specific spaces are turned into elements of communication created by different sectors of society (such as law, politics, science) (Wardenga 2002). Another approach is pursued by Werlen (2000) looking at the everyday making of geography by subjects through their daily action. Today there is a wide body of literature in geography and the social sciences looking at different concepts of space and landscape (see e.g. Gailing & Leibenath 2011 for an overview).

Landscapes of the mind

The idea of “landscapes of the mind” is based on the fact that any landscape that is seen or described is no longer just an external reality, but an imagined landscape with subtle (or less

subtle) emotional, social and cultural and even political overtones. Landscapes of the mind arise from encountering a particular landscape at a particular time and within a specific personal and collective context. Seeing and being in a landscape evokes memories, emotions, or visions of a particular locality which then contribute to forming an experience and mental image of the landscape. Mental landscapes can also be conditioned culturally, for instance through literature or imagery. Apart from personal production, landscapes of the mind can also be a collective production. An example of such collectively produced mental landscapes is the changing images of the coast in the 18th and 19th century, reflecting changing conditioning and the transformation of the German coast from an inhospitable terrain to a romantic construct. Cultural conditioning can go as far as creating landscapes of the mind that never existed in reality, as was shown for the 'invented' village tradition in New England and created villages in England (Wood 1991). Landscapes of the mind can therefore tempt us to reshape the real world to more closely resemble a perceived ideal or romantic notion of past realities.

The role of perception geography in exploring landscapes of the mind

Landscapes of the mind are explored by perception geography which traces the varied perceptions of landscape by individuals or stakeholders. Rather than accessing the everyday environment directly, it dissolves the traditional object of geography in order to reconstruct in another ontological state (Hard 1985). The origins of perception geography can be traced back to the stimulus-response model as the cornerstone of the psycho-geographical process, but it has come to recognize the key role played by intervening variables, in other words the inner factors that cannot be directly observed but which significantly influence behaviour and action (Sitte & Wohlschlägl 2001 p. 518). Setting itself apart from the behavioural approach, perception geography does not consider spatial perception just a response to objective realities, but dependent on subjective interpretations of parts of the environment and also individual objectives in life. Perceptive and cognitive processes create a subjective world linked to our needs, expectations and experiences, with social and cultural norms and forcing factors the other key elements in the development of mental maps. Spatial perception depends on in-born processes of organization, memory and the senses, and always builds on existing cognitive maps, indicating the capacity to be modified every time a new spatial experience or landscape encounter takes place (Sitte & Wohlschlägl 2001).

Perception geography can shed light on different aspects of perception (such as what types of information produce what mental images and create what attitudes and patterns of behaviour, see e.g. Weixlbaumer 1989, Sell & Zube 1986) and is useful for pointing to the multitude of landscape perspectives that may exist at the same time in the same or different individuals or collective entities. In terms of the tools available for tracing these multiple views, Bunkše (2010) argues that personal and also collective landscapes of the mind can best be captured by resorting to the arts, as "the arts will engage all the senses, not just the visual, as is the assumed practice within much of geography, planning, architectural design, landscape architecture, and theories of tourism, in which the "ideology of sight" (Cosgrove 1984) dominates" (Bunkše 2010 p.2). He goes as far as proposing a poetic approach to landscape to help uncover the many simultaneous guises and emotions inherent in landscape: "Unlike the social and exact sciences, which strive for a single, universal meaning or truth, in the poetics of landscape, many versions of

landscape are possible, many kinds of narratives, evocations, and emotions may emerge” (Bunkše 2010 p. 5).

Meaning in landscape: Sense of place and place attachment

It has been suggested that research into the perception of landscape “brings us as close as we may ever get to that elusive yet wonderful entity, the sense of place, which creates an emotional human relationship with landscape from what would otherwise be reduced to a cataloguing of rock, soil and plant types” (Muir 1999 p. 130). Relph (1976) noted that “every identifiable place has unique content and patterns of relationship that are expressed and endure in the spirit of place” (p. 76). Sense of place, however, goes further than this. It represents a combination of what could be termed the intrinsic personality of the environment and the “emotional attachment to localities developed by individuals and communities in the course of living and growing within the setting of home” (Muir 1999 p. 273, see also Jorgensen & Stedman 2001 and Tuan (1975) who emphasizes the subjective element of care and concern for a place). In order to understand the values assigned to a place, it is therefore important to explore this emotional relationship of people with places. The greater the emotional involvement in a place, and the greater the meaning assigned to it, the greater the likelihood of strong attachment to the place and therefore value.

Although place and landscape are distinct concepts in that the former tends to refer to a more specific locality, sense of place and attachment to place may equally apply to landscape. Lowenthal (1978) argues that attachment to a specific place “is apt to reflect some intimate connection, like growing up in it; attachment to a landscape (or townscape) is more apt to reflect scenic or recreational preferences” (p. 378). Place, however, can be defined at several scales, so that the West coast of Schleswig-Holstein for example can be considered both a landscape and a place. Landscapes are also known to play a role in sense of place experiences on account of their deeper significance and identity and association with cherished attitudes, values and images (Park and Coppack 1994).

Sense of place experiences begin with the perception of particular features of a specific setting, and specific experiences, which could be aesthetic experiences or a feeling of belonging. To this are added personal and collective meanings which lead to an affective bond between the individual and the particular place (Cantrill & Senecah 2001). Put differently, sense of place values manifest themselves in emotionally charged feelings of attachment or satisfaction with particular places. Importantly, there is a mutual relationship between sense of place and landscape in that sense of place experiences can inform how landscapes are perceived and the attachment that is formed to the landscape. Robinson (2008) argues that every instance of a sense of place experience springs in part from an aesthetic awareness of the particular place which would include the landscape. This aesthetic awareness of place is then consciously or subconsciously enriched by cognition and imagination. Although it is difficult to say where aesthetic appreciation ends and sense of place begins (Brady 2003), the result of a sense of place experience is an appreciation for the land that goes beyond its use value (Eisenhauer et al 2000). Expressed through sense of place, a landscape can thus be “home, has a name or is

nameless, consists of places that are collection points of collective consciousness” (Ipsen 2002 p.8).

Attachment to particular places (the emotional bond between people and their environment) and the degree to which someone likes or dislikes a particular place are informed by *meanings* ascribed to place. The meanings that give rise to sense of place are commonly believed to be the result of the cultural overlays and experiences brought to the experience of the physical environment by the perceiver (Eisenhauer et al. 2000, Tuan 1975). Again, the same can be said to apply to a landscape.

It has been shown that the characteristics of the physical environment and the responses generated by that landscape influence the type of meaning that can develop. Stedman (2003) proposes three models for how the physical landscape can produce meaning, reflecting back onto sense of place experiences:

- a) the genius loci–direct effects model, which suggests that the essence of place is communicated by the physical characteristics of the landscape. Sense of place in this model is grounded in those aspects of the environment which we appreciate through the senses and movement, such as colour, texture, the quality of light, the wind or sounds. The physical characteristics of the landscape shape the aesthetic experience we can have of the landscape.
- b) the meaning-mediated model, which postulates that the physical features of a place influence the symbolic meanings the landscape can take on. Only uninhabited places for example can take on the meaning of wilderness; only uninhabited places will lead to that particular sense of place experience.
- c) the experiential model, which suggests that features of a landscape encourage certain types of experiences and behaviours, which in turn influence the meanings that make up a sense of place.

Landscape characteristics therefore matter in that they underpin both the attachment we can form to a place, as well as the satisfaction that is to be derived from experiencing this place. Landscape perception, and attachment to landscape, is characterized by the continuous re-creation of a meaningful relationship to a particular territory, which arises from consciously or subconsciously assigning real, symbolic and imaginary meanings to that territory.

5.1.3 Comprehensive models for the study of landscape

Although each is concerned with spatial relationships and associated phenomena, the above has made clear that landscape is not the same as region, area or countryside. Landscape implies an affective dimension and is the concept most closely connected with visual perception. The following three perspective emerge as instrumental in analyzing landscape:

- the visual perspective (form) of the landscape/sea,
- the cognitive perspective (meanings assigned to the landscape/sea), and

- the experiential perspective (functions, processes and human experience of the landscape/sea).

Each of these comes with a specific mindset for encountering landscapes, giving rise to different modes of appreciating and valuing landscape.

Although the original territorial denotation of 'landscape' implies a distinct unit of the physical environment, it has become clear that this unit is not ready made. Landscape has to be actively delineated as a specific unit of terrain or composition of features and processes. Any such delineation of units is never entirely objective, but dependent on the 'gaze' with which we regard the landscape. This makes the definition of a landscape a constitutional act which takes place both at a societal and individual level. Visual aesthetics are one tool for delineating landscapes, but so are science, poetry, music, or memories, creating overlapping layers of meaning every time we experience a landscape.

Meaning allows affective relationships to arise between the viewer and the object, which is why perception and the subjective interpretation of that experience are instrumental in any reading of landscape. Meaning can include highly personal aspects such as memories, but also collective myths or obsessions (Schama 1995), symbolisms, invented and real histories, or the desire to utilize the landscape for particular purposes. The physical landscape represents "a physical and multisensory medium (earth, stone, vegetation, water, sky, sound and silence, light and darkness, etc.) in which cultural meanings and values are encoded, whether they are put there by the physical transformation of place in landscape gardening and architecture, or found in a place formed, as we say, 'by nature' (...)(Mitchell 1994 p.14). Once meaning comes into play, it is obvious that values – both societal and personal values represent a key element in how we look at landscapes and how we determine their relative worth.

All the above has implications for the study of landscape and seascape in the case study region. Landscape forms, functions, processes and context only acquire meaning when they are put together (Palang & Fry 2003). In the case study region, this may mean combining elements of the landscape with elements of the sea and the seascape in order to understand the full range of meanings assigned to them.

One way to approach the various elements of landscape has been to develop comprehensive models of landscape that reflect all the above dimensions and the inherent dynamics between them. Table 16 summarizes some of the more recent models. All include an element relating to the physical form (structures, spatial entities, landscape qualities), reference to meanings generated by the relationships between humans and their environment (meaning, interpretations, qualities, value systems), and actions and processes (human activities, natural processes and human experiences) (Stephenson 2007).

In the specific context of this study, the central question is whether these models bear any relation to how people value landscape. The Cultural Values Model proposed by Stephenson (2007 and 2008) offers a framework for studying how people value the landscape, which makes it of particular interest to this study. It suggests that meanings assigned to landscape, and with these landscape significance, can be clustered around three fundamental components:

Forms: all physical, tangible and objective aspects of landscape, including natural features (landforms, vegetation), landscape forms created by or resulting from human intervention (buildings, structures), and features that are the result of both human and natural processes (farms, gardens, constructed wetlands etc).

Practices: the activities and processes associated with a landscape, or the actions and interactions of humans and natural processes. In a coastal setting, these could be the maintenance of sea defences; it could also be actions such as conservation management.

Relationships: The meanings generated between people and their surroundings in a particular location, which is their stories, aesthetics, genealogies, spirituality, art, naming or myths.

Table 16: Models of different dimensions of landscape (adapted from Stephenson 2007)

Model components/ Model focus	Physical structures	Human relationships	Actions and processes
Definitive elements of landscape (Crumley & Marquardt 1990)	Physical structures	interpretations	socio-historical structures
Aspects of landscape as context (Darvill 1999)	space		social action
Elements of landscape (Spirn 1998)	nouns: agents and objects	adverbs/adjectives: qualities and meaning	verbs: events
Model of landscape multi-functionality (Soini 2001)	landscape qualities (ecological, aesthetic, historical, symbolic characteristics)	value systems (determines how and why people act in the landscape)	landscape functions (the services the qualities produce)
Aspects of landscape (Terkenli 2001)	visual (form)	cognitive (meaning)	experiential (functions, processes, human experiences), shaped by biological laws and cultural rules
Dimensions of landscape (Tress and Tress 2001)	spatial entity	mental entity	systems (time as a fourth dimension)
Cultural Values Model (Stephenson 2007):	objects/things (what constitutes the landscape) – not strictly forms because it does not encompass the skyline or views)	meanings (what is inferred in the landscape)	benefits (how we use the landscape), close to idea of the experiential

In the Cultural Values model, norms, practices and relationships continuously interact and are really considered inseparable: Practices create forms (e.g. they build houses), forms generate practices (a track follows the line of a hill), forms generate relationships (a mountain peak is considered to be beautiful), and relationships determine practices (a sacred place requires certain behaviour). Reference is also made to the fact that analysis should take account of the dynamism

that occurs over time. Landscapes of the past reflect past interchanges between forms, practices and relationships, and these in turn influence how the landscape is 'dwelled in', perceived and ultimately valued. Landscape significance may thus arise from the current and historic form of the landscape, the practices that occur and have occurred there, and the relationships that exist or have existed there. An interesting distinction is drawn between different types of landscape values: Whilst 'surface values' arise from what is tangibly present in the landscape, so-called deeper values or embedded values arise from knowledge or experience of landscapes past.

Stephenson states that management decisions based on just one discipline's perspective on landscape are unlikely to do justice to the wider range of values inherent in the landscape, and that managers are increasingly confronted with the need to make better decisions in the face of anguish felt by communities and community groups when their local landscapes are under threat of change. This of course also applies to the case of the West coast and the issue of offshore wind farming: Just how much of a change does offshore wind farming imply, and what would people be willing to trade?

5.2 The sea as a space and the seascape

Seascape is the maritime equivalent to landscape. Like its cousin it carries a duality in meaning in that it both describes a picture, view or painting which has the sea as a subject, and a distinct geographical area that exhibits certain characteristics and qualities. In the UK, the term has been propagated in the context of seascape assessment for planning, where it describes a combination of land, coastline and sea within an area that is delineated by a mix of land-sea inter-visibility and coastal landscape character assessment. Seascape assessment, incidentally, was developed to assist spatial planning for (at that time new) offshore wind farm developments, and the resulting "Guide to best practice in seascape assessment" (Marine Institute, Ireland, 2001) has since been widely applied to guide offshore wind farm developers and to carry out spatial planning assessments.

But how do any of the approaches of landscape set out above apply to the seascape? One angle is clearly the visual-aesthetic angle, where the seascape would be a picture or view of a certain stretch of sea. Superficially, the open sea can be likened to the desert in that it stretches over large territories without much apparent variation in form. Artists however, or those living by the sea or working on it, will tell of subtle variations of form, of the different moods that come with the changing light, of different languages the sea will speak depending on the season. Coastal seascapes can also be very distinct on account of particular coastal morphology such as the presence of islands. The sea surface plays a key role in the visual-aesthetic seascape perspective.

Another potential angle would be to consider the seascape from the perspective of natural and cultural landscape. Gazing out to sea can give the impression that the sea is still very much a natural landscape, untouched as it seems by any human influences and nothing but an infinite expanse of water stretching to the horizon. Although it is no 'dwelling place' in the usual sense of the word, the sea does have long-standing links to cultural practices such as fishing or trading. In recent years, cultural practices have become markedly more intense, expressed for example in

the growing numbers of vessels in the sea and the growing number of structures such as bridges, platforms and offshore wind farms. The visual alteration of the sea, the appearance of fixed structures in its infinite expanse, may suggest the sea is indeed becoming a “cultural seascape”, shaped by man just like cultural landscapes on land. At the same time, it is debatable whether the concept of ‘natural seascape’ really fits the sea and whether it would imply visually untouched in the sense of no visible human activity, or untouched by any human influence including any impacts of human activity on the sea. An open question is also whether there is similar romanticism as far as the ‘untouched’ sea is concerned, or whether some form of attachment may have developed to the new cultural seascape, regarding bridges or other structures a symbol of development and progress for example. Could the dialectic of the Enlightenment be in the process of being repeated for the sea?

There is also the spatial perspective that could be taken. The seascape is clearly just one (mostly visual) manifestation of marine space. Sea space, in contrast, is not just what can be visually perceived, but also space that is hidden from view, such as the water column or the sea bed. Sea space is also linked to specific uses, leading to the idea of extended sea space. Wind farm space, for example, can be described by tracing the economics of offshore wind farms, where the spatial expression of economic and social interconnections would comprise both land and sea. Wind farm space would thus be more than the physical manifestation of wind farms in the sea, in that it also includes cables and other associated infrastructure/impacts on land. Offshore wind farming views the sea as an extension of the mainland and a space to which terrestrial paradigms of use can be applied more or less unchanged. Offshore wind farming is an example of the encroachment of structures in the sea that previously only existed on land. For the first time, a spatial planning perspective has emerged, defined as a normative approach to develop, order and secure marine space (Douvere & Ehler 2009, Ministerium für Arbeit, Bau und Landesentwicklung Mecklenburg-Vorpommern 2005).

Thirdly, there is the sea of the mind – the imagined sea, the depicted sea, the idealized sea, the sea of myth and storytelling. Perceptions of the sea have changed over the centuries in response with greater technological control, but the rational aspects related to sea use are still linked to awareness of the unpredictability of the sea. The sea has remained an ambiguous place, appearing cold, inapproachable and dangerous on the one hand yet representing summer, sun and beach life on the other. With its unexplored depths the sea is still mysterious, yet it is also an age-old place of trade and exploitation. Contemplative aesthetic and scientific approaches to the sea and the coast have also emerged in the context of coastal tourism in the 19th century (Fischer et al. 2007).

The relationship between sea and place is not an easy one to resolve. Since the sea is not dwelled in in the usual sense of the word, it is theoretically conceivable that the capacity of the sea to turn into a place is inherently limited. A more likely conclusion is that notions of place arise differently in the context of the sea. Global communication, the ubiquity of images and the media have arguably contributed to the demise of ‘space’ in the sense that everywhere has long since become somewhere. But there is also a different, inherent sense of belonging to a home place, which extends to the sea just as much as it does to the land. A strong sense of belonging to the sea has been found in Irish and Scottish Gaelic fishing communities, described as “not so much a

landscape, not a sense of geography alone, nor of history alone, but a formal order of experience in which all these are merged” (MacKinnon & Brennan 2012 p.7) The sea encapsulates what has been stated for the landscape as “what is to a stranger an expanse of empty countryside – magnificent or drab according to prevailing notions – to the native sensibility can be dynamic, heroic, perhaps even heroic, territory peopled with figures from history and legend” (MacInnes 2006 quoted in MacKinnon & Brennan 2012 p. 8). Those working with the sea carry a deeper way of knowing the sea which is distinct from more formal ways of knowing. MacKinnon & Brennan find this reflected in the place names given to the sea by fishermen, indicative of a unique way of knowing the marine environment. This knowledge, they argue, represents a more complete way of knowing the sea than the objective precision of the natural sciences, a form of knowledge that also encompasses emotional energy as an indicator of “home” and a sense of responsibility for that homeland. The sea is thus just as much a place as the land, with subjectivity of place not only arising from direct use of the marine environment but also imagery and traditional knowledge.

Today various constructs of coast and sea exist in parallel, such as the sea as a transport space, fishing grounds, recreational space, natural habitat, or tourism space. These coincide with the multiple and often diverging interests of the stakeholders involved. The parallel existence of multiple constructs is instrumental in the emergence conflicts of use. The sea as an energy space is a relatively recent paradigm. As a new arrival, it has triggered a debate on the compatibility of different paradigms and the shift in available sea use values that could occur should offshore wind come at the detriment of other paradigms (Gee & Burkhard 2010). There are questions over the compatibility of large-scale offshore wind farming with nature conservation and shipping, for example (Busch et al. 2012); it could also be argued there is a growing divergence between ‘seas of the mind’ such as the image of the sea held by coastal residents and that of offshore wind farm planners. The rather abstract, planning-oriented view of the sea seems to increasingly collide with the interpretation of the sea as scenery, as a natural space and a constituent part of the living space that is the coast. In this interpretation, the sea is no abstract space available for industrialisation, but a place that carries different meaning and a point of identification for those who live by it or come to visit it as tourists.

On the West coast of Schleswig-Holstein, the sea plays an instrumental role in the genesis of the coastal landscape. As such, the sea can be assumed to be essential for the establishment of relationships with the local landscape. This makes the West coast exemplary for the fact that landscape arises from two concurrent processes: the physical act of shaping the land on the one hand and the social construction and perception of that same landscape on the other (Smuda 1986). Landscape forms such as warfts or polders are reminders that the West coast landscape is no natural landscape, but a century-old cultural landscape that was won from the sea in a hard and ongoing battle. Due to the high dynamism of the North Sea’s natural system, constant efforts were necessary to achieve a modicum of stability in the coastal landscape in order to extract higher yields (Fischer 2007). Energy expenditure comprised the construction of dykes, drainage channels, and other forms of coastal defence. The pay-off came in (agricultural) products that gave sufficient financial return, but were also worth the effort in terms of community spirit, local identity and appreciation both from within the community and from the outside (Fischer 2007).

Coastal defence has remained a prerequisite for life on the West coast to this day (Küster 2007), and even in the face of climate change there is strong support on the part of the local population for maintaining the status quo rather than contemplating coastal retreat. A latent sense of vulnerability is omnipresent, which is the reason for a rather ambivalent view of the sea as a force that can be benign and highly threatening. This only partly corresponds to the more romantic or picturesque notions of the sea (Corbin 1994, Schmidt-Höhne 2006) that are expressed in tourist-oriented images of the North Sea as a holiday destination.

5.3 General associations with West coast, North Sea and sea

After much theoretical deliberation, it is now time to turn to the West coast of Schleswig-Holstein and the North Sea as examples of landscape and seascape. There is no question that the West coast of Schleswig-Holstein is a special landscape. Inland is the landscape of the coastal marshes, characterised by elements such as ancient dyke lines or warfts, as well as the higher-lying Geest areas. Its seaward manifestation – in the following, the seascape - is the northern German part of the Wadden Sea, characterised physically by its wide expanse of tidal flats and the unique islands and Hallig islands within it. Beyond the Wadden sea lies the North Sea, extending out to the end of territorial waters into the German EEZ.

How do local people experience this environment? What elements of the landscape are considered particularly meaningful, and are there any specific meanings assigned to the seascape? What are the specific values assigned to the sea, and is there any inherent difference between the general concept of 'sea' and the local manifestation of 'North Sea'?

General beliefs about the coastal landscape, the North Sea and the sea are explored here as a foundation for understanding beliefs about offshore wind farming. Empirical analysis primarily identifies sea values and coastal values, which are understood as composites of objects of value (the things that can have value) and assigned value (the type and 'amount' of value given to these objects). Key to understanding these values is to understand the experiences people have of these objects and the meaning they attach to these experiences, which gives insights into their relative importance. Both use values and non-use values are considered, with non-market use values expected to play a strong role.

In order to investigate these values, a comparative analysis was carried out of the meanings assigned to the sea and those assigned to the coast. The questionnaire sought to pinpoint specific objects of value, such as forms in the landscape, events, textures, colours or sounds, the experiences associated with these objects and the specific sea and coast values arising from them. The first question was an open one, designed to draw out respondents' general associations with the coast, the North Sea and sea. Other questions were more specifically about what is valued about the coast and sea and how people actually experience their local environment. Since this was considered an important general baseline, analysis did not distinguish between the random and active group of respondents. In the following, the term 'environment' is used to mean all aspects of the respondents' surroundings, ranging from the physical landscape to the social, economic and administrative context, whilst 'landscape' and 'seascape' are taken to mean a specific (mostly visual) interpretation of this environment.

5.3.1 Origin of data

In order to differentiate between specific land- and seaward settings, respondents were asked three open questions: “What do you spontaneously think of when you hear ‘sea’?”, “What do you spontaneously think of when you hear ‘North Sea’?”, and “What do you spontaneously associate with ‘West coast of Schleswig-Holstein?’ (questions 4a-4c in the questionnaire). The progression from the generic ‘sea’ to the more specific ‘North Sea’ and ‘West Coast’ was a conscious choice, with sea and North Sea entirely open to interpretation as far as the actual physical space was concerned. Although unwieldy, the term “West Coast of Schleswig-Holstein” was chosen because it readily identifies the two districts of Dithmarschen and North Frisia to local residents; at the same time it is not a term that is used in any contexts other than a geographical one. Essentially, all three terms were open enough to encompass a broad range of perceptions, interpretations and meanings, ranging from the physical terrestrial or marine environment to social and economic features, lifestyle, the natural environment or specific features or symbolic interpretations of the landscape. The terms ‘landscape’ or ‘seascape’ were consciously avoided in the questions to prevent focus on particular preconceptions of landscape.

Predictably, answers varied from terse single words to long and personal statements. A typical answer to the ‘sea’ question is the following:

“my home, danger, local tourism, beach, freedom, shrimp fishing boats”.

5.3.2 Categorisation

Simply scanning the responses to these three questions made clear that residents have multidimensional and multifunctional constructs of the environment. Many different elements, features and characteristics are referred to, and in each setting many aspects emerge that are of value. Rather than employing pre-set categories, analysis was based on inductive categorisation where categories are gradually developed from the responses obtained (Diekmann 2005). Similar perceptions and values expressed by the respondents were used to build conceptual categories to which responses were subsequently assigned. The same categories were used for all three questions with the exception of two additional categories that emerged specifically for “West Coast”. Units of classification consisted of either single key words or concepts expressed in a sentence. “My home” for instance was classed the same as “this is the place where I was born and still feel I belong”. Respondents were found to be very specific in their expression and very little duplication of key words or concepts occurred. Each term or concept was counted as a separate mention including similar descriptions of the same entity. The idea of “wide horizon”, for example, was often described in several ways, which were all counted as separate mentions. This way of counting reflects the emphasis and obvious importance accorded to concepts by the respondents and allows for a ranking of concepts based on frequency of mention.

Out of the broad range of answers received, a total of 16 (sea and North Sea) and 18 categories (West Coast) were formed representing different aspects perceived in the respective environments (Tables 17-19). These are described in more detail below.

The first category, and the one that stands out first in the responses obtained, is that of *physical forms and objects noted in the environment*. These include tangible objects – i.e. physical elements of the environment both natural and man-made such as waves, beaches, islands, lighthouses – but also more intangible, abstract and composite features such as the tide. A distinction was drawn between physical elements and properties of the environment and flora and fauna, with a decision taken that ‘physical properties’ should also include climate, which is all references to the wind in its various forms, the salty air or specific seasonal aspects (e.g. winter storms). Health-related aspects of the climate are not included here as these were classed as benefits rather than objects. Flora and fauna includes reference to distinct species but not reference to the more general concept of nature or habitats. Because of the ready association – often it is these elements that are mentioned first in a longer list of responses – it can be assumed that respondents consider them constitutive elements of the environment, elements in other words that are in some way typical and contribute to making the particular environment what it is. Still, these elements are rarely linked to an explicit expression of value or personal liking. The main feature of the object-based categories is that they are descriptive, so any rating, if it takes place at all, must be assumed to take place at a subconscious level (Table 17).

Table 17: Categories denoting objects perceived in the environment

Category name	Description	classed as
Elements of the physical environment	Material elements of the environment, including natural and man-made elements. Includes aspects relating to specific climatic conditions. No evaluation, but simply recognition of these elements as present. Examples: Dunes, water, waves, sand banks, lighthouses, wind, fresh breeze, sun, rain	objects/things
Flora and fauna	Mention of domestic animals or commercially exploited species. Examples: Shrimps, fish, sheep, cattle. Descriptive only, no evaluation given by the respondent (such as “typical” or particularly liked)	objects/things

The next type of responses that stood out is mention of the various *uses of the environment*. For the purpose of categorisation, a line was drawn between economic activities that have a clear commercial purpose and therefore monetary value (such as fishing industry or tourism) and recreational activities such as bathing or walking which are primarily done for personal enjoyment. Passive, more contemplative ways of experiencing the environment are also included here. Uses of the environment always refer to the actual activity (such as North Sea oil extraction) which sets it apart from objects that denote these activities in the landscape (such as oil platforms). The distinction between the activity per se and objects perceived in the landscape was mostly relevant in the context of wind farming, where “wind turbine” and “wind farm” were classed as objects in the physical environment, and “wind farming” was classed as a form of use.

Linked to the above is the description of specific *benefits* that can be derived from experiencing the environment. ‘*Climate/health*’ is a specific sub-category encompassing both material and immaterial benefits to be derived from the environment, most notably comprising mentions of ‘health tourism’, ‘healthy air’ or just simply ‘conducive to health’. The great majority of mentions, however, refer to *immaterial recreational benefits* such as recuperation, relaxation or happiness.

Many of these are obtained from engaging in specific recreational activities, but just as many result from more passive forms of contemplating or simply being in the landscape. Clear links therefore exist between recreational benefits and aesthetic experience, defined as the pleasure that is linked to occasions where one judges something to be beautiful.

All four categories (Table 18) have in common that they are utilitarian in nature. They therefore add a cultural and normative layer to the first two object-based categories (Table 17). Rather than the actual environment, it is the purposeful exploitation of particular features that define perspectives here, the “what is it for” rather than the purely “what is it”.

Table 18: Categories denoting various uses of the environment and associated benefits

Category name	Description	classified as
Economic activities	All forms of commercial resource use and their visible representation. Also references to jobs or work contexts. Examples: Fishing, ferries, oil platforms, tourism.	use values/ material benefits
Recreational activities	Examples: bathing, walking, sports	use values
Sea climate and health benefits	Aspects relating to the specific health benefits of the sea/North Sea climate. Examples: healthy air, salty air, good for the lungs.	use values/ material and immaterial benefits
Recreational benefits	Benefits obtained from specific recreational activities such as walking or from simply experiencing the environment. Examples: Relaxation, recuperation, happiness.	non-use values/ immaterial benefits

The next set of categories encompasses deeper levels of meaning, bringing together in particular the many symbolic meanings ascribed to the environment. The categories in this group include all aspects of “what does the environment represent”. This is the largest set of categories because meaning can be assigned in many different ways and at many different levels. One level is the interpretation of ‘environment’ as a distinct *place with specific spatial or landscape character*. Another level is the *aesthetic* meaning of the landscape or seascape and the sense of beauty it conveys. A third is the symbolic meanings that are ascribed to the environment in the context of local identity, for example, or the symbolic meanings associated with the sea. Another is notions of nature and naturalness where the environment becomes a natural space in its own right irrespective of human uses or benefits.

The first category in this group was termed ‘*environmental distinctiveness*’. Here is where the constituting physical elements referred to above become an actual place - a distinct space which is made up of items or qualities considered typical or unique. Objects in this space are associated with specific qualities: the sea, for example, is not just waves, beach and wind, but becomes a ‘raw force of nature’, ‘huge’, or ‘unpredictable’. This combination of qualities sets apart this particular sea from other environments that might be composed of similar objects or elements. For the West Coast ‘environmental character’ contains references to ‘unique landscape’, ‘combination of islands and mainland’ or ‘harmony between man and nature’ for example (Table 19). Some degree of overlap exists with out with other categories such as local identity, although

‘environmental character’ is the characterisation of space and stops short of mentioning actual places or assigning deeper symbolic meanings to the environment. It is still a predominantly descriptive category and does not include any conscious normative evaluation of whether that which is perceived is good or bad, although there are some occasional implications of likes and dislikes.

Table 19: Descriptors of “environmental distinctiveness” for the categories of West Coast, North Sea and sea.

West Coast	North Sea	Sea
little industry, rural	wild	a force of nature
unique landscape	murderous sea	nature untamed
unpredictable	cold	volatile
clean	ecologically sensitive	depth
dark autumn and winter days	must be protected	sheer size
beautiful summer days	National Park / nature park	nature so close you can touch it
artificial coast / reclaiming land from the sea /dependence on dykes and coastal defence	unique Wadden Sea	clean
a special kind of nature	the continuous change between wild and calm	
a distinct rhythm of nature	unadulterated	
combination of islands and mainland	clean	
harmony between man and nature	unpredictable and untamed	
intact nature	awe-inspiring	
sparse		
a good place for wind turbines		

‘*Aesthetic experience*’ is a composite category which refers to the environment predominantly as landscape. Landscape is seen here as an object, but there are also immaterial benefits that are derived from experiencing this landscape (“incredible sunsets”). Aesthetic experiences mostly appear to be contemplative experiences and are readily linked to notions of beauty. A distinction was drawn between *visual-contemplative* and *non-visual* ones to be able to test the strength of the visual element in descriptions of the environment, expressed for instance as “wide expanse”, “cloud formations in the sky”, “open horizon” or “wide flat landscape”. Non-visual aesthetic experiences refer to sounds, scents and taste such as “the taste of salt on my lips”. Many of the elements in this category thus contain a positive qualitative assessment such as “stunning winter walk on the beach” or “fantastic sunset”, with “the gurgling of the water” or “a Nolde-like horizon” speaking for themselves.

Another category was termed *nature*, which contains concepts such as biodiversity, habitats, pure nature, and naturalness. It also contains reference to designations such as nature reserves or National Park. 'Nature' in the above sense was set apart from objects in nature; these are summarised in the category Flora and Fauna.

Classed in their own right were the notions of *the environment as subject to threat* where nature is threatened by human activities (e.g. the North Sea as vulnerable or subject to overexploitation, the West Coast as threatened by an excess of onshore wind turbines), and the *environment itself constituting a threat* to human life (e.g. storm surges).

A category in its own right is that of local identity or '*Heimat*'. This is a composite category that includes descriptions of physical objects (e.g. shrimp fishing boats), lifestyle, traditions or history ('my home', 'Frisian lifestyle', 'I belong here'). 'Heimat' clearly does have some overlap with other categories such as physical objects or commercial activities – a shrimp fishing boat could easily be assigned to either one of these -, but for the most part it was possible to discern a subtle difference in meaning on account of the specific context in which the term was raised or telltale words such as "our" or "traditional". 'Heimat' brings together all those objects, features and qualities that are seen to lend the environment a distinct sense of place, including reference to the Frisian language, typical food or long-standing traditions. Most importantly however, this category picks up on a sense of belonging and rootedness which is put over and above any visual impressions or factual descriptions.

Specifically for 'West coast', the two additional categories '*social environment*' and '*economic/structural environment*' were introduced. Social environment extends the category of Heimat to pick up on the specific social environment that characterises life on the West coast (e.g. family context, friends) and the special character of the local people, often described as independent, kind or narrow-minded. Economic/structural environment is mostly composed of factual and emotional descriptions of the region as a place to live and work, most often expressed as structurally weak, with poor infrastructure, a high degree of unemployment, few perspectives for young people and not progressive. *Culture* is a sub-category of Heimat that specifically picks up on local literature, music and art such as the painter Emil Nolde or Theodor Storms "Der Schimmelreiter".

Beyond the above meaning is also assigned at another, deeper level. These were brought together in a category termed "*Symbolic meanings*". Notions included here are far-ranging and varied, comprising aspects as diverse as freedom, creation, eternity, life or death. A specific case is the view of the sea as a symbol of nature untouched, or the sea as a place of mystery, discovery and adventure.

Last not least, there is a category for specific *places* mentioned, mostly towns, villages or islands off the North Frisian coasts).

Table 20: Categories denoting specific meanings assigned to the environment

Category name	Description	classified as
Environmental distinctiveness	The sea/North Sea/West coast as characterized as an environment. This seeks to set out the typical character of the environment. It is set apart from assigned meanings on account of its descriptiveness, although there is a degree of overlap with categories such as symbolic meaning, nature or Heimat. Examples from 'North Sea': Force of nature, nature untouched, ecologically sensitive, expansive.	non-use values
Aesthetic visual qualities	Aesthetic experiences derived from visual experiences of the environment. Examples: wide horizon, starry sky, gazing out to sea, colours.	non-use values
Aesthetic non-visual qualities	Aesthetic experiences derived from non-visual experiences of the environment. Examples: sounds of the water, smells of the sea.	non-use values
Nature	Specific elements or features of the natural environment, such as habitats, biodiversity or natural habitats.	non-use values
Environment threatened	any element of the natural environment (including landscape) as threatened by human activities. Examples: overfishing, (offshore) wind farming, pollution.	non-use values, normative
Threats to human life	Real or imagined threats posed by the environment, such as storm surges, unspecified mention of danger, or sea level rise.	use and non-use values, normative
Heimat (local identity) and belonging, sense of place	Objects and qualities that are typical of the (local) environment and contribute to sense of place. Overall sense of belonging and rootedness. Examples: My home, our Frisian heritage, traditions and customs, our language.	non-use values, some use values
Culture	specific cultural associations with the environment. Examples: Theodor Storm, "Der Schimmelreiter".	use / non-use values
Social environment	Descriptions of the social context and the specific character of local communities. Examples: Family, people are narrow-minded, mainly retired people living here.	normative evaluation
Economic/structural environment	Structural and economic characteristics of the region. Examples: bad infrastructure, unemployment, no future for youngsters, rural.	normative evaluation
Symbolic meanings	Symbolic meanings of the environment. Examples: freedom, adventure, creation.	non-use values
Places	Specific places mentioned, e.g. Büsum.	description

5.3.4 Comparative analysis of the categories

a) Quantitative analysis

Simple counts were done of the number of mentions per category, with the percentage out of all mentions used as an indication of a category's strength (Fig. 35). Within each category, a tally was made for the number of concepts or words employed, which gives an impression of the conceptual spread within each category. A category's weight can thus be composed of many different terms that were all used once or twice, or one or two key terms that were used by many

respondents. Since double-mentions of identical terms did not occur, the number of mentions for each term is equal to the number of respondents mentioning it.

The results presented here are essentially comparative in nature, focusing on the differences in perception between the three settings sea, North Sea and West Coast.

The overall number of mentions (words or concepts employed within the categories) was 1293 for West Coast of Schleswig-Holstein, 1438 for North Sea and 1367 for sea, which are similar enough figures to assume that no marked differences exist between the three settings in terms of the respondents' ability to conceive of them.

Figure 35 is a comparison of the relative weight of the above categories across all settings. The categories that stand out most on account of their sheer strength or telling differences between the settings are the physical environment, recreational activities, recreational benefits, aesthetic values, Heimat and symbolic meanings. Not shown is culture which surprisingly drew very little in terms of associations.

Tables 21-26 illustrate more detailed results for the most relevant categories, which are 'elements of the physical environment', 'recreational benefits', 'aesthetic visual qualities', 'aesthetic non-visual qualities', 'Heimat' and 'symbolic meanings'. The tables show the sub-categories of mentions that make up each category, offering an easy cross-comparison of results for 'sea', 'North Sea' and 'West coast'. Results are ranked in order of the number of mentions per sub-category, with the most frequently mentioned sub-category at the top and the least frequently mentioned at the bottom.

Some sub-categories are very small in that they only drew a single mention, others are clearly very important as a descriptor for a wide range of respondents. Where the sub-categories only drew one mention, the sub-category name is the same as the actual mention. Where the sub-categories are larger, the sub-category name is a collective term for similar descriptions.

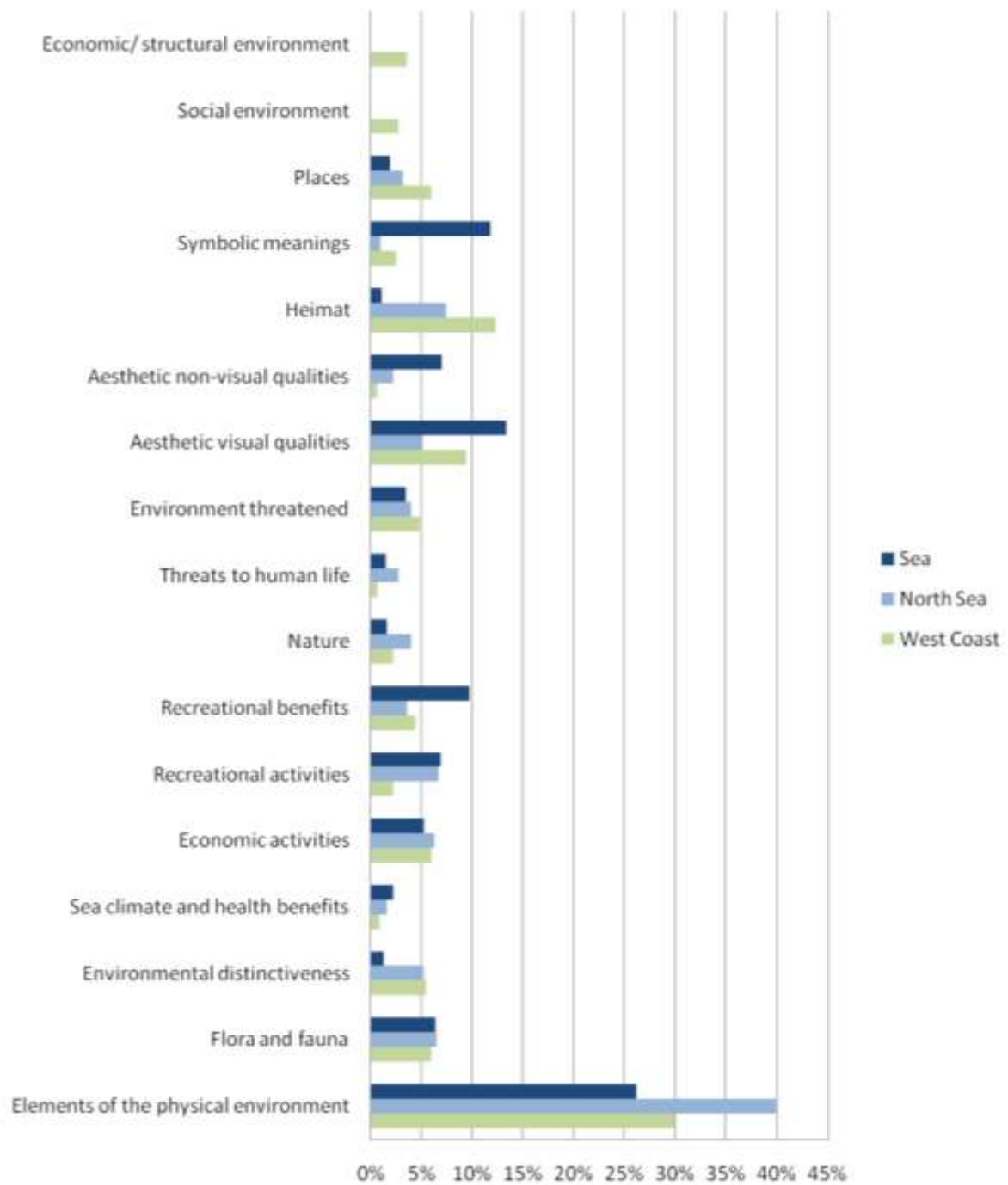


Figure 35: Comparison of the relative weight of all categories (percentage of all mentions). N (mentions) = 1293 (West Coast), 1367 (Sea) and 1438 (North Sea)

The main purpose of Tables 21-26 is to show the relative weight of the respective sub-categories in terms of their relative diversity. 'Sea', 'North Sea' and 'West coast' are thus shown to be associated with specific meanings and interpretations of each category. The category 'aesthetic visual qualities' for example is composed of different sub-categories in all three settings, indicating different interpretations, associations and meanings associated with the visual qualities of 'sea', 'North Sea' and 'West coast'. Similarities and differences in perception therefore become readily apparent.

Table 26 differs from the previous tables in that it does not compare categories, but selected specific terms used by the respondents to describe the respective settings. The table counts the number of absolute mentions and provides a ranking by frequency of mention.

b) Analysis of specific categories

The following closer look at the categories is based on a mix of quantitative and qualitative assessment. This not only considers frequency of mentions, but also how the respective categories were described in each respective setting. Similarities and differences are used as a basis for an overall evaluation of how the three environments are perceived.

Elements of the physical environment

Elements of the physical environment is clearly the predominant category in all three settings, but particularly so for North Sea where this category accounts for 40% of all mentions (Fig. 35). A closer look at this North Sea result reveals that this is due to both the diversity of terms employed and the frequency with which they are used (Tables 20 and 26). For North Sea for example, the category 'elements of the physical environment' contains a total of 574 mentions spread across 21 terms and concepts; this exceeds the figures for 'sea' which are 358 and 17, respectively (Table 20).

Table 21: Comparison of terms and concepts mentioned within the category 'elements of the physical environment'. AM = absolute mentions. Total cat = total categories mentioned. Red = specific landward features.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
waves	71	18,35%	Wadden Sea	83	21,45%	Wadden Sea	76	19,64%
water, saltwater	65	17,31%	ebb and flow of tide	83	21,45%	dykes	61	15,76%
wind, breeze	62	16,80%	storms	64	16,54%	islands	40	10,34%
beach	44	11,37%	wind, breeze	60	15,50%	Hallig islands	31	8,01%
fresh, salty air	26	6,72%	water, saltwater	48	12,40%	wind	30	7,75%
Wadden Sea	18	4,65%	sea	44	11,37%	wind turbines	22	5,68%
storms	14	3,62%	dykes	40	10,34%	marshland	21	5,43%
the surf	13	3,36%	waves	32	8,27%	ebb and flow of tides	16	4,13%
ebb and flow of tides	12	3,10%	islands	27	6,98%	sea	12	3,10%
dykes	11	2,84%	Hallig islands	26	6,72%	fields	10	2,58%
salt	8	2,07%	the surf	14	3,62%	storms	10	2,58%
dunes	6	1,55%	sun	13	3,36%	polders	9	2,33%
islands	3	0,78%	fresh, salty air	13	3,36%	beach	9	2,33%
Hallig islands	2	0,52%	dunes	8	2,07%	fresh, salty air	7	1,81%
wicker beach chair	1	0,26%	tidal inlets	6	1,55%	grassland	5	1,29%
the swell	1	0,26%	mudflats	5	1,29%	dunes	5	1,29%
dampness	1	0,26%	sandbanks	2	0,52%	sun	4	1,03%
total cat.:17	358		saltmarshes	2	0,52%	lighthouses	3	0,78%
			rough climate	2	0,52%	mudflats	3	0,78%
			sluices	1	0,26%	rough climate	3	0,78%
			lighthouses	1	0,26%	Geest	2	0,52%
			total cat.: 21	574		salty air	2	0,52%
						dwelling mound	1	0,26%
						holiday homes	1	0,26%
						Haubarg barn	1	0,26%
						tidal foreland	1	0,26%
						rain	1	0,26%
						fog	1	0,26%
						total cat.: 29		

Table 22: Comparison of terms and concepts mentioned within the category 'recreational benefits'. AM = absolute mentions. Total cat = total categories mentioned.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
recuperation	31	8,01%	recuperation	21	5,43%	recuperation	19	4,91%
enjoying the sun	29	7,49%	peace and quiet	4	1,03%	peace and quiet	13	3,36%
peace and quiet	28	7,24%	inner peace	4	1,03%	live where others holiday	10	2,58%
relaxation	15	3,88%	breathing	3	0,78%	well-being	5	1,29%
switch off	5	1,29%	balance	2	0,52%	relaxation	3	0,78%
well-being	4	1,03%	relaxation	2	0,52%	recharging	4	1,03%
balance	3	0,78%	away from stress	1	0,26%	security	2	0,52%
lazing about	3	0,78%	not hemmed in	1	0,26%	serenity	1	0,26%
happiness	2	0,52%	good for the soul	1	0,26%	no stress	1	0,26%
fun	2	0,52%	well-being	1	0,26%	happiness	1	0,26%
spend nice hours by the sea	1	0,26%	happiness	1	0,26%	to be completely alone	1	0,26%
reflection	1	0,26%	experience of nature	0	0,00%	being able to breathe	1	0,26%
away from stress	1	0,26%	total cat: 12	41		meditation	1	0,26%
not hemmed in	1	0,26%				contentedness	1	0,26%
carried by the power of the sea	1	0,26%				total cat: 14	63	
peace	1	0,26%						
recharge	1	0,26%						
being lazy	1	0,26%						
joy	1	0,26%						
serenity	1	0,26%						
total cat: 21	133							

Table 23: Comparison of terms and concepts mentioned within the category 'aesthetic visual qualities'. AM = absolute mentions. Total cat = total categories mentioned.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
wide open horizon, endless view into distance	138	35,66%	wide open horizon	37	6,46%	landscape	48	12,40%
sunsets	17	4,39%	sunsets	8	2,84%	wide open expanse	30	7,75%
big sky	9	2,33%	white beaches	7	2,07%	wide lands	11	7,75%
blue water	8	2,07%	sky a la Nolde	5	1,81%	flat landscape	9	2,84%
distance	3	0,78%	cloud formations	5	1,29%	green	8	2,33%
light	3	0,78%	landscape	4	1,29%	sunsets	5	2,07%
huge expanse of water	3	0,78%	blue, green, grey	4	1,03%	cloud formations	3	2,07%
glittering water	1	0,26%	luminescence	2	1,03%	endless sky	2	1,29%
total cat.: 8	182		wide open sea	2	0,52%	uninterrupted view	2	0,78%
			stars	1	0,52%	the faces of the tides	1	0,52%
			total cat.: 11	74	0,26%	endless dykes	1	0,52%
						blue sky	1	0,26%
						daily change in landscape	1	0,26%
						total cat.: 13	122	

Table 24: Comparison of terms and concepts mentioned within the category 'aesthetic non-visual qualities'. AM = absolute mentions. Total cat = total categories mentioned.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
murmur of the sea	54	13,95%	murmur of the sea	8	2,07%	smell of mudflats	2	0,52%
other sounds	13	3,36%	smells of the sea	5	1,29%	silence	2	0,52%
smells of the sea	9	2,33%	whooshing of the sea	4	1,03%	appeal to all senses	1	0,26%
silence	4	1,03%	murky	2	0,52%	daily change of sounds	1	0,26%
sounds of nature	4	1,03%	feeling of loneliness	2	0,52%	sound of the water	1	0,26%
gurgling of the Wadden Sea	2	0,52%	gurgling of the water	2	0,52%	total cat: 5	7	
whooshing of the sea	1	0,26%	sound of the waves	2	0,52%			
hair blown in the storm	1	0,26%	silence	1	0,26%			
salt on the lips	1	0,26%	taste of salt	1	0,26%			
raging of the sea	1	0,26%	total cat: 9	27				
total cat: 10	90							

Table 25: Comparison of terms and concepts mentioned within the category 'Heimat'. AM = absolute mentions. Total cat = total categories mentioned.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
home	8	1,81%	home	55	14,21%	home	92	23,77%
shrimp fishing boats	2	0,52%	tourists	9	2,33%	typical villages	9	2,33%
shrimp sandwiches	1	0,26%	fishing boats	8	2,07%	work and no play	7	1,81%
dyke protection	1	0,26%	coastal defence	5	1,29%	Friesian customs and traditions	7	1,81%
total cat: 4	12		shrimp fishing boats	4	1,03%	Friesian language	6	1,55%
			hard life	4	1,03%	farming tradition	5	1,29%
			nice lifestyle	3	0,78%	local ports	5	1,29%
			wonderful dykes	3	0,78%	shrimp sandwiches	5	1,29%
			remote	3	0,78%	thatched houses	4	1,03%
			fish dishes	3	0,78%	fishing boats	4	1,03%
			Friesian culture	2	0,52%	dyke protection	3	0,78%
			security	2	0,52%	land reclamation	2	0,52%
			bustle	2	0,26%	traditional lifestyle	2	0,52%
			taciturn people	1	0,26%	deep attachment	2	0,52%
			„Kurabgabe“	1	0,26%	diversity	2	0,52%
			traditional lifestyle	1	0,26%	paradise	1	0,26%
			total cat: 16	106	0,26%	holiday homes	1	0,26%
						vernacular architecture	1	0,26%
						total cat: 19	158	

Table 26: Terms and concepts mentioned within the category 'symbolic meanings'. AM = absolute mentions. Total cat = total categories mentioned.

Sea	AM	% of respondents mentioning this term (n=387)	North Sea	AM	% of respondents mentioning this term (n=387)	West Coast	AM	% of respondents mentioning this term (n=387)
being on holiday	41	10,59%	sun and holidays	10	2,58%	holiday region/holidays	12	3,10%
freedom	37	9,56%	freedom	6	1,55%	leisure time	4	1,03%
leisure time	16	4,13%	creation	2	0,52%	naturalness	2	0,52%
summer	8	2,07%	naturalness	2	0,52%	freedom	2	0,52%
infinity	6	1,55%	freedom of nature	2	0,52%	space	2	0,52%
life	6	1,55%	adventure	1	0,26%	tranquility	2	0,52%
origin	6	1,55%	links to other countries	1	0,26%	life	2	0,52%
cleanliness	5	1,29%	independence	1	0,26%	harmony	2	0,52%
cradle of life	3	0,78%	total cat: 8	25		independence	1	0,26%
creation	3	0,78%				new beginning	1	0,26%
purity	3	0,78%				safety	1	0,26%
power	3	0,78%				creation	1	0,26%
wanderlust	2	0,52%				adventure	1	0,26%
permanent change	2	0,52%				total cat: 13	33	
vastness	2	0,52%						
feeling secure	2	0,52%						
work	1	0,26%						
independence	1	0,26%						
sensuality	1	0,26%						
romanticism	1	0,26%						
life and death	1	0,26%						
beauty and terror	1	0,26%						
unpredictability	1	0,26%						
elementary nature	1	0,26%						
openness	1	0,26%						
adventure	1	0,26%						
mysticism	1	0,26%						
constance	1	0,26%						
clarity	1	0,26%						
generosity	1	0,26%						
respect	1	0,26%						
dreams	1	0,26%						
eternity	1	0,26%						
total cat: 32	162							

Table 27: Number of total mentions of selected terms compared across the three settings. The 'top setting' is the setting in which the respective term appears most frequently. Terms that strongly define one setting but not the others are marked pink. Similarities between settings are marked light blue. !!! indicates significant differences between settings. The table counts the exact terms as stated, so the number of mentions is equal to the same number of respondents (only birds is cumulative).

Term	West Coast	North Sea	Sea	top setting	sig diff
Heimat, home	92	55	7	WC	!!!
sheep	81	13	3	WC	!!!
dyke	61	40	11	WC	!!!
landscape	48	4	0	WC	!!!
islands and Hallig islands	40	27	2	WC	!!!
nature	41	31	28	WC	
tourism, tourists	40	17	1	WC	
humans	23	9	4	WC	
marshland	21	0	0	WC	
nature conservation	9	3	1	WC	
wide open expanse, horizon	66	53	155	S	!!!
recuperation	19	21	31	S	
tranquility	13	4	27	S	
clean	7	13	24	S	
swimming	3	18	30	S	
relaxation	3	1	15	S	
freedom	2	8	37	S	!!!
force of nature	2	6	13	S	
infinity	0	2	13	S	
Wadden sea	76	83	18	NS	!!!
ebb and flow of tides	16	83	12	NS	!!!
birds	15	34	18	NS	
storms	10	64	24	NS	!!!
shrimps	8	40	5	NS	!!!
fishery	5	15	8	NS	
storm surge	4	28	10	NS	
shrimp fishing boat	4	15	2	NS	
wind	30	60	65	no sig diff	!!!
North Sea	18	0	17	no sig diff	
leisure time	4	5	16	no sig diff	
untouched, whole	3	3	7	no sig diff	
happiness	1	1	2	no sig diff	

Terms that specifically define North Sea are the tidal nature of this environment and the Wadden Sea, each mentioned by 21% of respondents. These are followed by storms, wind, water and waves and then by dykes, islands and Hallig islands still accounting for over 10% of all mentions. “Sea” in contrast is less precisely described as a physical environment. The most frequent mentions in the context of sea are waves and water, followed by beach, fresh salty air and again the Wadden Sea. What is missing in this setting are references to more specific local characteristics, with dykes only drawing 2.8% of all mentions and even islands and Hallig islands, two important mentions in the other two categories, very low on the list. One interpretation of this finding is that North Sea is indeed closer to home in the sense that it is perceived in much more tangible terms and correlated to respondent’s own experiences and knowledge of that environment. The sea, on the other hand, is a more abstract notion that could mean any sea, a notion in other words that leaves more room to the imagination. The relatively important position of ‘beach’ suggests that there is also a latent positive association with holidays and summer sun; this is confirmed by some of the other categories described below.

For the North Sea, a particularly strong connection also emerges to storms and storminess, which correlates with the view that the North Sea can be a threatening environment. Although the category “environment as a threat” is not a strong one in overall terms, North Sea is clearly considered the most threatening environment out of the three.

“Storm surges – will the dykes hold?”

‘West coast’ only draws 387 overall mentions in the category physical environment but these are spread over 21 terms, indicating fewer mentions per term but a greater diversity of views. Given the potential combination of landward and seaward elements this is to be expected. What is surprising, however, is that only ten of the 21 categories explicitly refer to landward features; the remainder are similar to those mentioned in the context of ‘North Sea’. Again, the intertidal and marine environments feature prominently, and again the Wadden Sea emerges as the most important defining feature (19.64% of all respondents mention it). Dykes are the second defining object in the landscape (15.76%), which could underscore the visual prominence of dykes as a linear feature, but also be taken to imply that coastal defence continues to define life on this coast even though the immediate fear of storm surges is less prominent now than it might have been in the past. The prominence of seascape features in descriptions of the West Coast is indicative of the fact the West coast landscape, and more generally life on the West coast, is inextricably linked to the all-pervading presence of the sea. One respondent summarises his view of the West coast as

“Wadden Sea and North Sea, sea dykes, sheep, dune landscape, heathlands, reed-thatched houses, sea breeze“

Nature

Nature is defined and perceived variously across the three settings. Flora and fauna as an object-based category is the second strongest category for North Sea overall, drawing 9% of all mentions (Figure 35). Here, commercial species predominate with fish and shrimps at the top of the list, but mentions also include wild species (seals, seagulls) and even terrestrial creatures (sheep, cattle). West Coast, in contrast, is mostly characterised by agricultural crops (rape, grass, sugarbeet, wheat, corn), but birds, migratory birds, seals and shrimps are also mentioned. Flora

and fauna in the context of sea draws the most diverse range of species, with some specific mentions (e.g. common ringed plover) indicating good knowledge of the marine environment.

“Birds, fish, jellyfish, algae, sea grass, mussels, water, waves, wind, ships” (for ‘sea’)

“North Sea shrimps, harbour porpoises, sea gulls, migratory birds, fish, fishing, seals” (for ‘North Sea’)

The characterisation of West Coast in terms of its flora and fauna suggests that it is primarily perceived as a cultural landscape rather than a natural environment. This is confirmed by the fact that ‘nature’ in the sense of naturalness, as well as the terms habitat or biodiversity, almost exclusively arise in the marine context (both North Sea and sea), where they are often linked to the notion that the marine environment should be protected or is threatened by human activities (shown as a separate category ‘environment threatened’ in Figure 35). The relative strength of the category ‘nature’ in the context of West Coast is explained by the frequent mentions of National Park in combination with ‘nature conservation’ or ‘landscape conservation’.

When it comes to ‘environment threatened’, some interesting differences emerge in what the main threats are perceived to be in the respective settings. Although this is not a weighty category in overall terms, the North Sea is considered the most threatened environment out of the three, which could be explained by the fact that residents are likely to have a more personal relationship to the North Sea than the sea and will tend to be more knowledgeable where they might feel directly affected. The North Sea is seen as heavily polluted and a dumping ground for all manner of industrial waste, as well as a place that is subject to intensive industrial use. There is also the view that fish and shrimp stocks have largely been depleted and that generally, nature is being exploited rather than properly managed.

“Oil spills, emergency tug, overfishing, high pollution load”.

A similar, but more general image emerges for the category ‘sea’, which is also regarded as an endangered ecosystem that is polluted and overexploited, and where overfishing, fish mortality, the dumping of oil and – in one case – offshore wind farms constitute the main threats.

For the West Coast, the threats to the environment seem more difficult to name. Some mention is made of oil pollution on the beaches and the threat of the changing face of the sea, but most speak of general terms such as industrialisation, exploitation, intensive agricultural use and insufficient protected areas. Wind turbines are considered a threat in that they destroy the landscape and traditional image of the West coast, and tourism is also considered a threat in that it represents “an invasion” and is linked to traffic problems.

Different aspects of nature are therefore clearly considered a value in all three settings, and there is a clear link to the idea of protection. Whilst this is partly related to the commercial use of species such as fish and shrimps, where protection is needed to maintain stocks and the potential to generate income, it is also related to a moral sense that nature has to be protected as a value in its own right. Different motivational forces therefore emerge that not only point to values in the environment, but also to particular constellations of beliefs and personal value orientations that lead respondents to assign value to nature or plants and animals.

Immaterial benefits

Respondents value a wide range of immaterial benefits provided by the environments. Clearly, both land and sea are viewed as recreational spaces, with many describing their local environment in terms of walking on the seashore, fishing or walking on a dyke or simply being in the landscape. Although some respondents mention specific sports such as sailing or inline skating, most refer to informal recreation or more specifically, the benefits derived from these. Table 22 gives an overview of the specific benefits respondents obtain from informal recreation. Restfulness, recuperation and restoration are mentioned as intangible qualities of the environment, which are closely linked to experiences of the land- and seascape.

“Wild sea, fun swimming in the surf, beautiful sunsets and water as far as the eye can see, unwinding, recuperation, wind, sunshine, good air, zest for life” (for ‘North Sea’)

“Spare time, rest and recuperation, nature, unwinding from stress, happiness, sea breeze, expanse, infinite, carried by the force of the sea” (for ‘Sea’)

“Husum, Niebüll, Sylt, long walks, great sunsets, making love on the beach of St Peter, life with wind and water, finally, after 25 years of living in Frankfurt, permanently living in a lovely climate conducive to well-being” (for ‘West coast’)

‘Sea’ draws the most varied list immaterial benefits, with some of the 21 sub-categories clearly associated with holidays in the sun. Recuperation is the leading benefit across all three settings, but most frequently mentioned in the context of ‘sea’ (Table 22). The particular value of the sea experience is its contemplative nature, providing a welcome contrast to normal life and enabling respondents to ‘come down’ and experience a general feeling of relaxation, mental well-being and balance. North Sea and West coast are fairly similar in terms of the descriptors used, with “away from stress”, “being able to breathe” and “not hemmed in” particularly descriptive. The factors enabling these experiences are mostly aesthetic in nature (see below).

“Living where others come on holiday” is frequently mentioned in conjunction with the West Coast, indicating an element of pride; other mentions are feelings of safety, happiness and general contentedness and lack of stress. Most of the descriptions of recreational benefits are unrelated to specific activities, indicating that simply being in the environment is sufficient to experience them. One difference is that both marine environments seem to stimulate feelings of freedom (“not hemmed in, good for the soul”), and that ‘sea’ is more readily associated with general holiday-making and seaside experiences. ‘North Sea’ drew the fewest overall associations with recreational benefits apart from a general sense of recuperation.

Aesthetic experiences

The visual characteristics of the landscape play a significant part in enjoying the environment. Visual landscape qualities – used here to denote the scenic aspects of landscape – primarily include openness of the landscape and the fact that

“you can really look out towards the horizon“.

Already distinct in the context of ‘West coast’, openness and expanse emerge particularly strongly in the context of ‘sea’. With 36% of respondents mentioning openness, the wide horizon or similar terms, openness appears to be part of the very essence of the seascape, a key

characteristic that is closely linked to the recreational or spiritual benefits that can be derived from it:

“Salty water, endless horizon, sun glittering on the water’s surface, infinite freedom“

The importance of the category ‘aesthetic visual qualities’ for ‘sea’ (Figure 35) is thus less due to a diverse range of terms used but the extremely strong association of ‘sea’ with the wide open horizon and uninterrupted gaze into the distance. The wide and open horizon also ranks highly in terms of mentions for North Sea (Table 23), but visual aesthetic qualities draw considerably less attention here than in the other two settings. Nevertheless, there are specific descriptions of the particular scenic beauty of the North Sea, such as sunsets, white beaches, the sky, cloud formations, as well as some mention of the colour of the water.

‘Sea’ as a setting is also strongly associated with non-visual aesthetic experiences (Figure 35). 14% of respondents mention the murmur of the water; other mentions include the whooshing sound of the waves, the gurgling of the Wadden Sea, the silence of the sea, other sounds of nature and the distinct fragrance of the sea.

„Infinite expanse, the swooshing of the sea, gurgling water, sound of the waves, the surf on the beach, long tours with a boat, marine luminescence“ (for ‘sea’)

These same associations are less prominent for the North Sea, but this may simply be owed to the fact that the question may have seemed repetitive as answers had already been given for ‘sea’. Whether this is the case or not, land and sea do emerge as distinct in this category as ‘West coast’ is rarely associated with non-visual aesthetic qualities (Table 24).

For the West coast, landscape is the primary term that defines the visual qualities of the setting (mentioned by 12% of the respondents, see Table 23). The term is linked to many specific descriptions of what the landscape is like, not all of them positive. Table 28 is a collection of the adjectives used to describe the landscape. Again, there is the notion of expanse and openness and reference to the endless sky and uninterrupted views into the distance:

“The wide expanse of the landscape, the open horizon and the protected coastline”

“Sparseness, the Wadden Sea, not many trees, the wide open expanse, sunsets, beauty, sheep”

There is no strict dividing line between the landscape and the seascape, indicated by the frequent mention of seascape attributes in the context of the West coast landscape. The ever-changing cloud formations, the big sky, the sometimes vivid colours of the sea, the glittering waves, incredible sunsets and the play of light can serve as examples of descriptive terms.

“Water, wind, wide horizon, clouds, waves visually and acoustically, Wadden sea, tidal inlets, salt marshes, dykes, the mouth of the river Elbe, Eider ducks, Düne St Peter [a local wellness centre], North Frisian islands and Hallig islands”

Some respondents specifically highlight onshore wind farms as structural elements detracting from these qualities:

“Earthy coastal landscape, much space for locals and tourists, but for a number of years, wind turbines as far as the eye can see – restless scenery – it annoys us and the guests”

Out of the three settings considered here, the sea is thus most readily associated with aesthetic qualities of the environment. Some of the descriptions are distinctly poetic, speaking of a love of place and deeply held care for these specific sea qualities.

Table 28: Adjectives or qualitative descriptions used to characterise the West Coast landscape (only those descriptions specifically linked to the term 'landscape'; expansiveness for example can arise again as a separate category)

Characterisation of the landscape	Number of mentions
flat	9
expansive	6
Wadden Sea	6
beautiful	4
wonderful	3
unique	2
despoilt	2
endangered	2
green	1
lovely	1
species-rich	1
changing	1
intact	1
increasingly industrial	1
unattractive	1
untouched	1
a lot of landscape	1
austere	1
built up	1
not very calm looking	1
suits my nature	1
dune landscape	1
river meadow landscape	1
diverse	1
varied	1

Symbolic meanings

Symbolic meanings is another category where the greatest range of associations occurs in the context of 'sea'. 162 absolute mentions give an indication of the importance of this category, which is underscored by an impressive spread of 32 sub-categories compared to only 8 and 13

for North Sea and West Coast, respectively. Mentions often occur in connection with recreational benefits (leisure time), so it is no surprise that the most frequently mentioned association is 'being on holiday'. The sea epitomizes summer and sun, but also freedom (mentioned by 9% of respondents), infinity, along with a whole host of other associations ranging from spiritual terms ("cradle of life", "origin") to power, purity, creation, openness, mysticism and unpredictability. Although many terms were only mentioned once about 40% of all respondents referred to at least one term in this category. Some respondents almost exclusively defined sea in terms of its symbolic qualities, such as in this example:

"Expanse, freedom, dreams, eternity", "creation, openness, silence, peace, relaxation, adventure" (for 'sea')

'Sea' certainly does seem to instill a sense of awe and respect, most often on account of the unpredictability of the sea:

"The sea is life. It is shipping, boats and infinity. It is creation, and unpredictable, but also a calming sense of comfort."

Of interest is the contrast here between sea and North Sea, where the symbolic associations are few and far between. Sun and holidays also rank top of the list, followed by freedom, but all the other categories are very minor compared to 'sea'. One person saw the North Sea as

"a sea directly linked to the world",

another as adventure and one other person as independence.

The symbolic meanings attached to 'West coast' also differ from those attached to the sea. Most prominently, the region symbolizes a holiday region, and there is also some mention of freedom and space. Mostly though, associations are more homely and less adventurous than those for 'sea', reflecting safety and harmony rather than the sense of power and elementary force that is conveyed in the case of 'sea'. The lack of symbolic views of West Coast could be explained by the fact that this is a lived-in environment and thus perhaps more tangible and less open to flights of the imagination than the concept of 'sea'. It could also be that some residents feel the North Sea to be an extension of this home environment, a conception of the sea that is more familiar and in a way less exciting than the general notion of 'sea'.

It is noteworthy that the unpredictability of the sea no longer translates into specific fears for life and limb, most probably on account of a well-defended coastline. Quite on the contrary, awe and unpredictability appear to have become something to be treasured, a positive counterpoint to the well-ordered and mostly predictable everyday life. This is not to say that respondents do not voice any dislikes of the sea or fears, but dislikes are very minor in terms of their overall frequency. Storm surges are most readily mentioned as a threat, but in the majority of cases, dislikes have to do with human impacts on the sea, most notably marine pollution and overfishing. This particularly applies to the North Sea which is considered the most threatened environment of the three settings.

"Filthy cesspit, oil, waste dump, effluent, poisonous, malicious sea – on occasion"

Heimat- a sense of home

The above already begins to indicate that land and sea cannot always be separated into distinct spaces, much less distinct experiences. This is most apparent in the category of "Heimat",

perhaps best translated as a feeling of rootedness and belonging. Respondents use Heimat to describe everything that surrounds them, including the natural environment, the land- and seascape, the social context and their sense of history, with descriptions revealing a profound sense of attachment and belonging. Unsurprisingly, Heimat is most readily associated with West Coast, but it also features quite strongly as an association with North Sea (Tables 25 and 27). In both contexts it is variations of “home” or “at home” that are most frequently referred to; in the case of West Coast 24% of the respondents mention this term. “Heimat” in the context of West Coast is also described as typical architecture, Friesian customs and language, the tradition of land reclamation, old ports or typical fishing boats but individually, all these terms are mentioned much less frequently than “home” in itself. The North Sea is also considered home, followed by a similar range of terms to West Coast. The sea, in contrast, is not considered “home” at all, with only 12 overall mentions in this category. The following is an example of personal views of ‘West Coast’:

„Diversity of languages and dialects, most people with good common sense and a sense for the dangers and threats coming from the North Sea, but also (a sense) for nature and the environment“

“A great diversity of places with unique flair, historic islands and Hallig islands, loveable people even though they don’t always like one another, natural energy sources right outside the front door, e.g. sun, wind, sea, oil”.

Another respondent described West Coast as:

“incredible sunsets, walking along the dykes, peace and quiet, relaxation, the smell of mudflats in your nose, shells, sea gulls, agriculture, unhurried people, wind mills, islands, fresh air, not much industry but high quality of life, prawn sandwiches, dykes“.

The concept of Heimat is also linked to the idea of survival in the face of harsh environmental conditions.

“Men fought hard to reclaim their land from the sea. Costs of sea defence are likely to go up in the face of sea level rise“.

Surprising in this context was the almost total lack of any specific cultural associations with famous artists or books or even terms beyond a very generic mention of local foods.

A small proportion of respondents referred to West Coast in terms of its specific social and socioeconomic environment. Responses here are a mix of likes and dislikes, with value accorded to the particular lifestyle on the West Coast but a degree of frustration resulting from that very character. Everything unhurried, a little behind the times is thus a two-edged sword: On the one hand, it is precisely these qualities that are treasured, not least in terms of quality of life, on the other they lead to a lack of development and a lack of long-term perspectives especially for young people. One respondent describes the West coast as:

“my home, my roots, but really neglected by regional politicians, few jobs, no lobby, and an objectionable collection of wind turbines”.

“North Sea, poverty, unemployment”

5.3.5 Overall assessment

a) Key differences between the three settings

Summarizing the above results, it is clear that 'sea' is primarily defined by recreational benefits, aesthetic components (visual and non-visual) and symbolic meanings. 'Sea' represents summer leisure, sun and beach life, but also a place of quiet contemplation and passive enjoyment. As a space, the most important characteristic of the sea is its vastness and inconceivable depth, with the water representing a raw force of nature which has many moods and can never be entirely controlled. The most notable aspect is the sea's fascination and mystique, which makes it the least tangible of the three settings, a place that can never quite be described and always seems to retain a degree of mystery. Because it is an environment that has limited possibilities for direct experience - it is not a dwelling place, for instance - it offers rich opportunity for imagination, evident in the many symbolic associations with this particular setting. The endless horizon is an important value and key to experiencing the beauty of the sea and seascape: gazing into the distance, accompanied by the sounds of the sea, the wind and the salty air, allows for mental escape and triggers imaginings of freedom and distant shores. Just like other places, the sea is a combination of physical and imagined place, with imagined place taking precedence over any objective notions of sea space (for instance, the sea as a place of work).

In contrast to the sea, the perception of North Sea is characterised by a greater degree of familiarity. As a setting the North Sea is closer to home and therefore less exotic than the general notion of 'sea'. More so than the sea, the North Sea embodies a certain duality in perception: On the one hand, the North Sea is seen as wild, unpredictable and elementary, on the other it is regarded as a unique environment worthy of protection and key to many immaterial benefits to be had in the region. Unlike 'sea', the North Sea also becomes a distinct place in the frequent reference to the Wadden Sea. The combined forces of the water and the wind are perceived to be cleansing, but there is an overall awareness of potential threats that does not come across in the context of 'sea'. The North Sea thus embodies a tangible marine environment which is not always liked, and which is closely linked to the history of the region and traditions of land reclamation and coastal defence. In contrast to the sea, 'North Sea' is also perceived as a setting for distinct human uses, although human activities are also regarded as a threat to the natural marine environment. Although both marine settings therefore represent elementary forces - in part unpredictable, elementary ones -, it is the North Sea which reveals a distinct seascape character.

Descriptions of 'West Coast' reflect human uses through terms such as tourism, sheep farming, walking, relaxation, traditional houses and also wind farms. West Coast is perceived as a cultural landscape, a place of tradition and of comforting familiarity. Adjectives such as "harmonious", "wonderful" or "beautiful" are commonly used to describe the West Coast, none of which are used to describe the North Sea or sea. As a place, the West Coast is also conceived of as an unpredictable environment, but the forces of nature are less visible here than in the marine contexts. "Rhythm of nature" or "sense of the seasons" is the wording of choice here. The artificial coast is a strong defining feature, which is often coupled with notions of a unique landscape and special nature. Obviously, the West Coast is very much considered a lived-in landscape, with

likes and dislikes freely voiced and the tendency to idealise the place offset by clear descriptions of drawbacks of living here.

Results closely mirror those of a survey done of tourists in 2004, where the National Park administration asked “What do you spontaneously think of when you hear “Wadden Sea”? (n = 752). First placed was the term “tides”, followed by untouched, self-regulating nature. The animal species most frequently mentioned was the lugworm which seems to symbolize the Wadden Sea in a particular way. It was also noted that respondents often mention characteristic phenomena or unique characteristics of the natural environment, as well as contemplative terms (“wide horizon, tranquility, relaxation, beauty etc). Nature was mentioned in the context of nature conservation and positive connotations of conservation designations, and recreational activities also featured (Gätje 2007:47). Similar associations were also found by a previous survey of local residents in 2001 (Reusswig & Schwarzkopf 2001).

b) Towards a more comprehensive model of seascape

The empirical study has shown that the ‘encountered landscape’ on the West coast of Schleswig-Holstein encompasses both the coastal landscape as well as distinct qualities of the North Sea environment. Many overlapping facets can be identified between ‘North Sea’ and ‘West Coast’, indicating that the North Sea plays a significant part in the perception of the wider landscape and coastal environment.

Results also demonstrate a multi-faceted and deep understanding of ‘sea’ and ‘North Sea’. This understanding is not only rational, but highly affective. Although the concept of ‘sea’ is found to include many more elements of the imagination than ‘North Sea’, it is argued here that the two cannot be entirely separated as responses do show many overlaps. The specificity of answers indicate that ‘North Sea’ is best described as the specific sea that is encountered on a daily basis, while ‘sea’ is perhaps a little less place-specific, reminiscent of summer holidays although not exclusively defined as a far-flung place of the imagination. While ‘sea’ is clearly a place that holds great fascination, the North Sea is perhaps a more mundane version of the “encountered sea”, with its own orientation towards objects (thus focusing on objects of value) as well as feelings, thoughts and other subjective qualities experienced concurrently with these objects (thus giving links to held values and beliefs). Clearly, both ‘North Sea’ and ‘sea’ bring together their respective material sea with different ‘seas of the mind’, indicating that the ‘North Sea of the mind’ is a more specific, more intimately known manifestation of sea which does not necessarily translate into liking. The North Sea seascape is thus a combination of the physical, aesthetic-visual and symbolic manifestation of the sea.

These results can also be put into the context of sense of place. It is evident that the character of the North Sea as a physical environment and the responses generated by that environment influence the type of meaning that can develop. Following Stedman (2003), all three models for how the physical landscape produces meaning can be applied to the context of the North Sea and West coast landscape:

- a) the genius loci–direct effects model: Essence of place is communicated by the physical characteristics of the North Sea and West coast. Sense of place is grounded in the colours of the water, the texture of the coastline, the lay of the land, the open horizon, the wind and the sounds of the sea. Clearly, the West coast landscape and the North Sea environment shape the aesthetic experience that residents have of the seascape.
- b) the meaning-mediated model: It is evident that physical features of the North Sea influence the symbolic meanings this seascape takes on. As an uninhabited place, the North Sea takes on meanings of wilderness, some element of threat and natural habitat, which is different from the sense of place experience for 'sea'.
- c) the experiential model: Features of the North Sea encourage certain types of experiences (such as protection from storm surges or the sense that the Wadden Sea should be protected); this in turn influences the meanings that make up the particular North Sea/West Coast sense of place.

The seascape characteristics underpin the attachment that is formed to the West coast and the pleasure that is derived from experiencing this place.

At this point, it is worth returning to the comprehensive models of landscape outlined earlier in the chapter. In the Cultural Values model proposed by Stephenson (2008) to capture the essence of landscape (see Table 16), a relationship is outlined between objects and things, benefits and meanings in the landscape. Norms, practices and relationships are considered inseparable as practices create forms (e.g. people build structures), forms generate practices (a track follows the line of a hill), forms generate relationships (a mountain peak is considered beautiful), and relationships determine practices (a sacred place requires certain behaviour). Significance may thus arise from the form of the landscape, the practices that occur and have occurred there, and the relationships that exist or have existed there. The model also draws a distinction between surface values (those tangibly present in the landscape) and deeper values or embedded values arise from knowledge or experience of landscapes past.

A similar analysis can be made for the three categories sea, North Sea and West Coast, demonstrating that the cultural values model equally applies to the marine context. Clearly, physical landscape elements, subjective impressions, past and present experiences all contribute to the perception of sea, North Sea and West Coast, creating multi-faceted images and sometimes contradictory and emotional constructs of each setting. It also shows that individual categories only tell parts of the story, and that it is their interconnectedness that is essential in describing the nature of the respective setting. Like in the cultural values model, connections between the categories are readily apparent: Recreational benefits, for example, could not be imagined without some of the aesthetic experiences of the seascape or the symbolic meanings of the environment, and material benefits such as income from shrimp fisheries clearly depend on the existence of shrimps and the necessary ecosystem. Aesthetic experiences in turn are closely related to the specific scenic character of the environment. In the context of the specific West coast case study area, relationships can thus be traced that mirror the cultural values model: Form generates practices (a cycle path follows the line of the dyke, the dyke follows the line of

the sea), form generates relationships (the sea is considered beautiful, the wide open horizon is a source of mental well-being), relationships determine practices (the intangible qualities of the sea are linked to calls for protection), and practices in the sea evidently also generate forms (e.g. the construction of oil platforms or offshore wind farms). There are also surface values, such as the tangible objects associated with the sea, and deeper embedded values associated with symbolic meanings assigned to the sea or experiences of the sea.

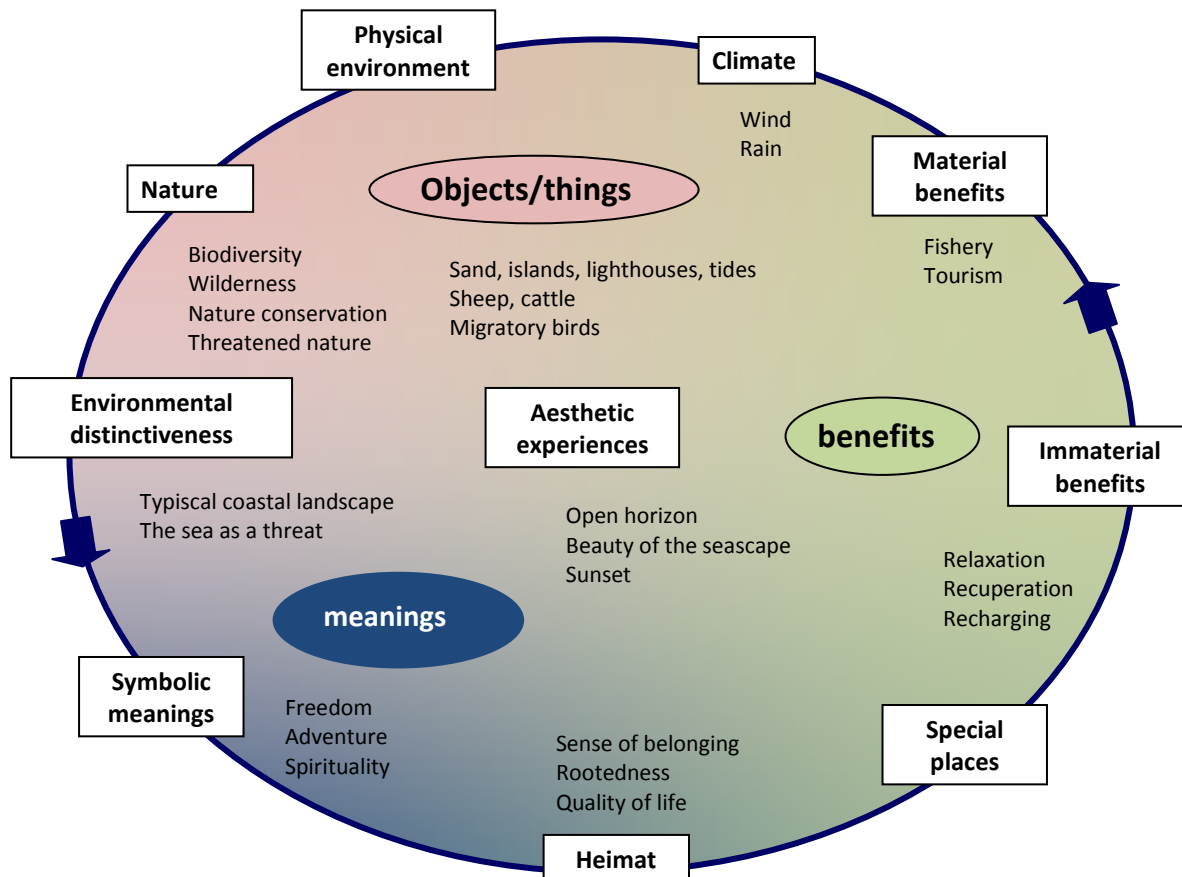


Figure 36: A model of the relationships between objects, benefits and meanings in the landscape and seascape.

Figure 36 illustrates these various relationships by placing all of the categories identified in the empirical part along a continuum. Boundaries between categories are fluid and no absolute positions exist. The interconnectedness of the categories is emphasized by an almost circular sequence into which they can be organised. Beginning with the primary category of objects and things at the top, the clockwise direction moves from physical environment and climate into the utilitarian sphere that is clustered around benefits and denoted by material and immaterial benefits that can be derived from the environment. Both types of benefits are place-dependent, as evident in the different benefits that were associated with the sea, the North Sea and the West Coast. Specific places have many layers of meaning, described here for the notion of Heimat as local identity and sense of place. The anti-clockwise direction moves from the physical environment into the sphere of meaning, starting with concepts of nature and the construction of

local environmental character before moving on to the deeper symbolic meanings associated with the environment. The anti-clockwise motion again ends in local identity, which partly also draw on the symbolism inherent in nature. Aesthetic experiences have been placed at the centre because they cannot be assigned to either one of the primary categories, but are fed by all of them, which renders this a truly integrative category with links to many secondary and categories.

Although West coast, North Sea and sea can each be described through the same basic framework outlined in Figure 36, the weight of the respective categories is distributed differently. Figure 37 is an overview of the percentage responses that were received for each setting for the three superordinate groups of objects/things (comprising elements of the physical environment and flora and fauna), benefits (comprising economic activities, recreational activities, recreational benefits and sea climate and health benefits) and meanings (comprising nature, nature threatened, aesthetic visual qualities, aesthetic non-visual qualities, environmental character, symbolic meanings, Heimat and culture). Although the differences are not altogether huge, it does show that the sea is perceived most strongly in terms of meanings (a 40% share compared to 37% for 'West Coast' and 30% for 'North Sea'). The North Sea is most readily perceived in terms of objects (a 46% share compared to 41% for 'West coast' and 34% for 'sea'). The West Coast is least strongly perceived in terms of uses and benefits (a 9% share compared to 20% for 'North Sea' and 24% for 'sea', respectively). For the West Coast 'other' includes the two categories of SE and SPE, which explains the relatively large share.

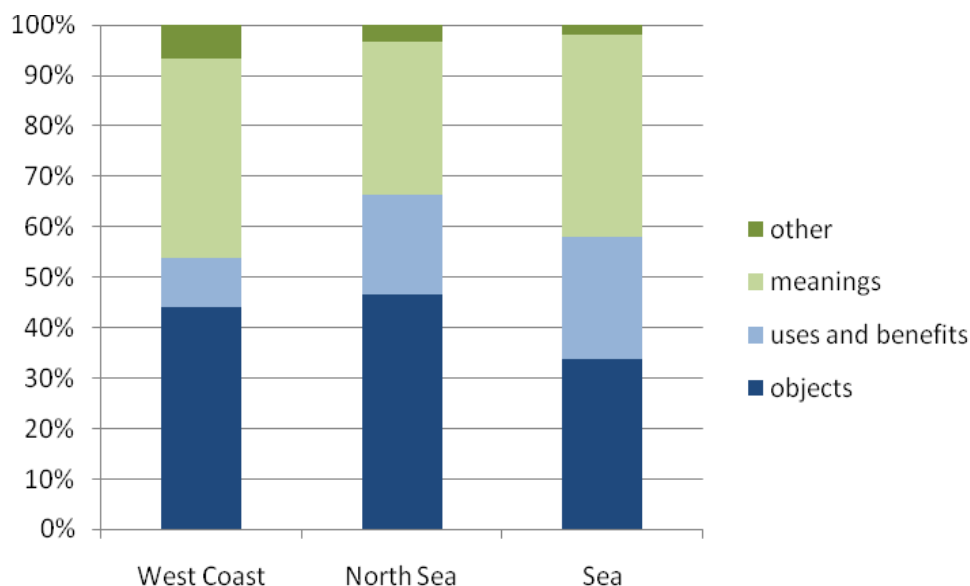


Figure 37: Comparative overview of the percentage responses received in the three superordinate categories of objects/things, benefits and meanings.

5.3.6 Values in the settings

It is clear that the visual perspective (form) of the landscape/sea, the cognitive perspective (meanings assigned to the landscape/sea), and the experiential perspective (functions, processes and human experience of the landscape/sea) all play a role in how the landscape on the West coast, including the North Sea, is appreciated and valued. There is an affective relationship between the viewer and the object, with both societal and personal values representing key elements in how the relative worth of this seascape is determined. This section takes a closer look at the nature of the values assigned.

The range of objects and features mentioned by the respondents demonstrates that the nature of the expressed values differs between and even within categories. Figure 38 provides an overview of how the different value categories apply across the three settings (see chapter 4 and Tables 17, 18, 20). Objects and things in the environment were classed as objects of value since they were simply mentioned as facts and it is impossible to assign them to either the material or immaterial value categories. A distinction was drawn between use value and non-use value and material and immaterial benefits, with benefits only used for those categories where an explicit benefit was mentioned (economic activities, sea climate and health, recreational benefit) or a benefit became apparent indirectly (aesthetic qualities for the pleasure of experiencing beauty, nature for the knowledge that it exists). Normative elements a separate category for those mentions that contained some form of evaluation or an element of 'should' (including nature, environment threatened, threat to human life). Categories are not mutually exclusive in this evaluation, so some categories were double counted. Sea climate and health, for example, was classed as use value (due to the economic benefits arising from health-based tourism), but also as a material and immaterial benefit (the latter understood as a personal sense of well-being). Recreational benefits were classed as non-use value and immaterial benefit. Heimat was classed as both non-use value and use value.

Based on this classification, non-use value emerges as the strongest category overall, containing mentions of recreational benefits, environmental distinctiveness, aesthetic qualities, Heimat, environment threatened, threats to human life, nature and symbolic meanings. Nature and symbolic meanings comprise intrinsic value elements, with nature clearly accorded existence value in that it is considered valuable independent of any user or human valuer. 'Sea' and 'West coast' are stronger with respect to non-use values than 'North Sea'.

Objects of value are the second-strongest category overall and strongest in the case of the North Sea. The third most important category are the immaterial benefits to be derived from the settings, comprising mention of sea climate and health, recreational benefits, aesthetic qualities, Heimat and nature. Use value comes in next, comprising economic activities, recreational activities, sea climate and health and Heimat as representatives of commercial activities and the direct and indirect use value of these activities. Material benefits are clearly least prominent in this evaluation, making up only about 8% of all mentions.

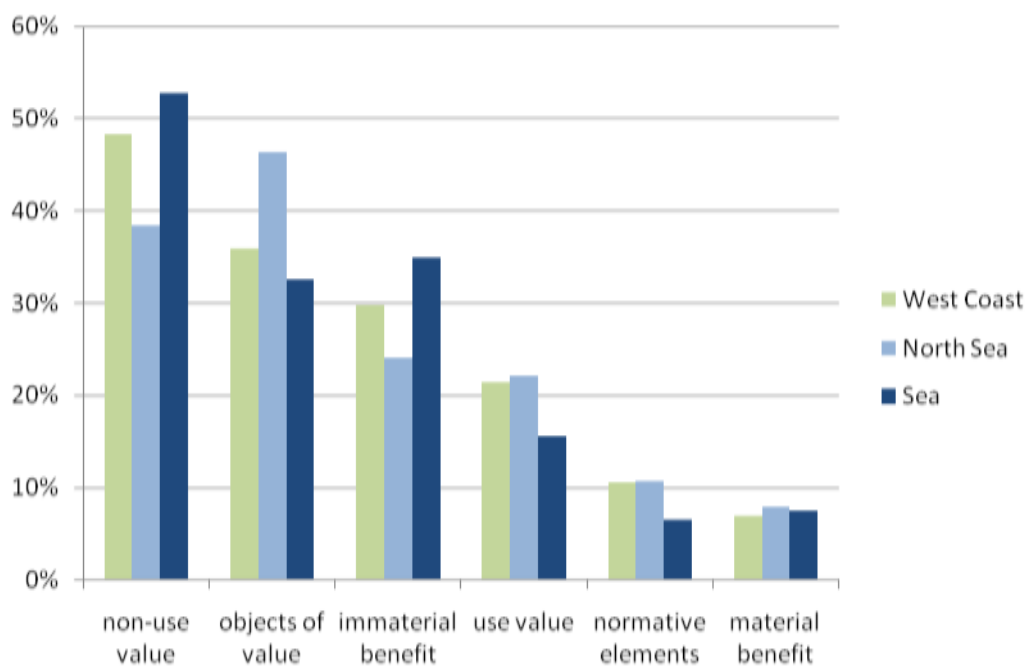


Figure 38: Frequency of mentions across six value categories in the three settings West coast, North Sea and Sea

Intangible qualities thus turn out to be the key to understanding the significance of the settings. Often the actual physical features are only valued indirectly, with the experiences they facilitate constituting the object of value. The visual qualities of the seascape in the context of ‘sea’ can serve as an example. The aesthetic experience obviously depends on the character of the sea environment, which despite its changeability is constant in affording uninterrupted views of the horizon. This character then has to be translated into a valuable sea quality by the observer. At this point, other, more emotional aspects come into play, such as associating this uninterrupted view with freedom or enjoying the contemplative aspects of gazing out to sea and contrasting this with the experience of normal routine. Value in the context of visual aesthetic experiences is therefore not assigned to the actual seascape. Rather, value is assigned to the experiences this seascape can generate and the benefits that can be drawn from these experiences at a personal level. Values are therefore assigned at an experiential level, with personal and cultural ways of seeing the predominant perspectives. More conceptual levels also play a role, in particular where notions of nature, naturalness and the idea of the environment as threatened by human activities comes into play. The specific question of how these values play out in the context of offshore wind farming will be considered in chapter 6.

5.4 How residents use the coast and the sea

Respondents were now asked to confirm selected beliefs about the North Sea and the West coast in order to establish the predominant mental association with both in terms of utilization.

Question 5a asked respondents whether they regarded ‘their’ part of the North Sea as part of their home, as a natural space, as an economic space, or as a recreation space. They were asked to estimate this on a five point scale ranging from ‘not at all’ to ‘very strongly’. The same was asked for the West coast of Schleswig-Holstein (question 5b). Figure 39 shows there are no significant differences in perception, with the North Sea and the West coast turning out very similar in terms of the profile they are given. Both are regarded as an essential part of home by over 50% of the respondents; both are also strongly considered natural spaces and recreation spaces. The view of the North Sea and the West coast as economic spaces is clearly less prevalent.

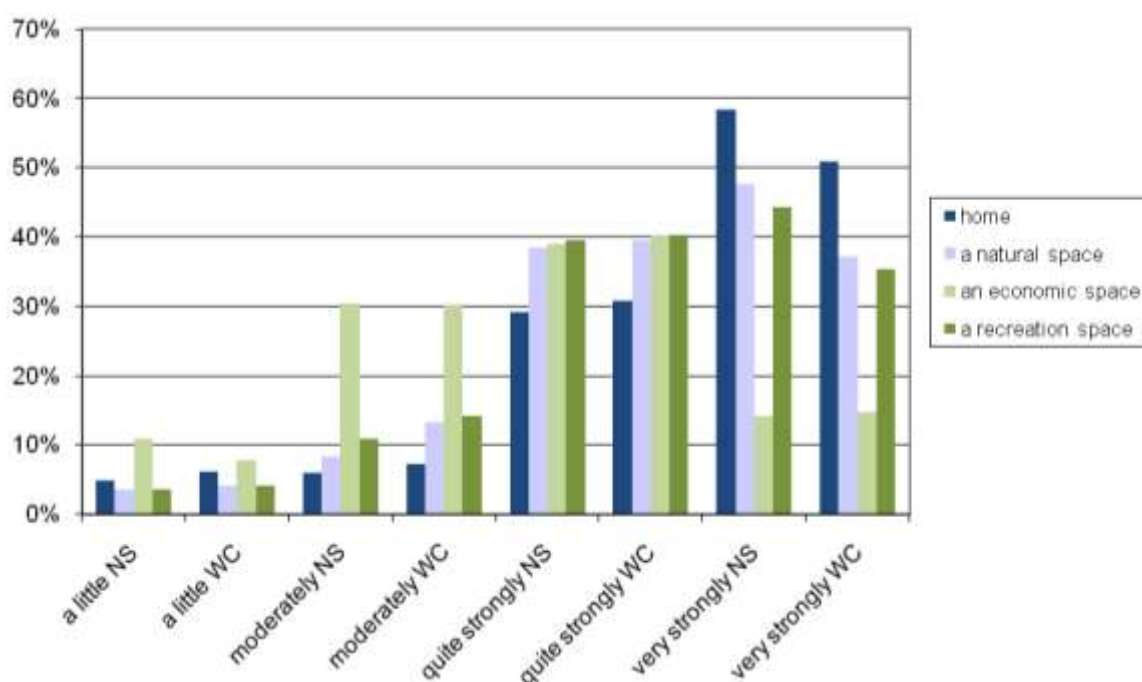


Figure 39: The view of the West coast (WC) and the North Sea (NS) as a part of people’s home, as a natural space, an economic space, and a recreational space (N=387, multiple answers possible)

When it comes to active use, both the North Sea and the West coast are predominantly recreational spaces. Asked in an open question to specify how they mostly used the North Sea and the West coast (questions 6 and 7a, not shown here as a separate figure), most put recreation and spending leisure time or relaxation at the top of their list. The generic ‘leisure time’ was mentioned more frequently for West coast, whilst the North Sea drew more answers such as bathing, walking in the Wadden Sea, birdwatching, fishing, or spending time on the beach. Mention was also made of active sports such as sailing, and lastly also of work, which was either unspecified or, in case of the West coast, related to tourism (such as caring for holiday homes).

To corroborate the direct experiences of the environment, respondents were asked to state when they had last taken a walk on the seashore (question 7b) and when they had last taken a boat out to sea. Most respondents are shown to be frequent users of the seashore, with 53% indicating they had been out for a walk on the shore within the last week (Figure 40). Another 29% stated they had last taken a walk within the last month. Only 3% stated their last walk had been more

than a year ago, and only one respondent said they never walked on the seashore. This confirms that local residents make active use of the coastal environment for recreation and relaxation, indicating that spending time by the sea is an activity that local people enjoy and seek to experience frequently. As expected, direct experience of the sea from a boat is less frequent, with only 9% indicating they had been out on the sea in a boat within the last week. 23% said they had been out on the sea within the last month. Most, however, have more infrequent direct experience of the North Sea, stating that their last boat trip was within the last year or more than a year ago (Figure 40). Experience of the North Sea thus appears to be mostly an indirect one derived from looking at the sea from the shore or experiencing it from the perspective of the Wadden Sea (walking at low tide), or as bathers or fishermen.

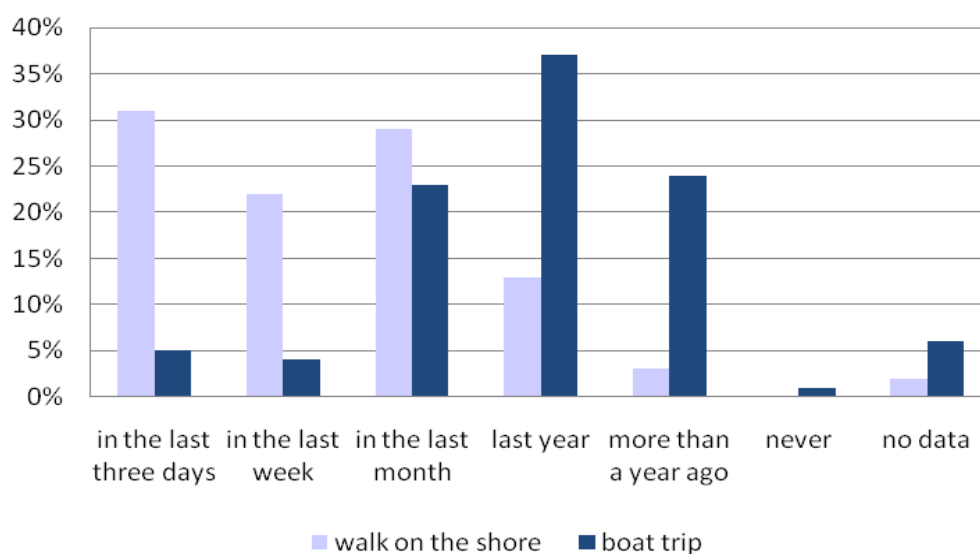


Figure 40: When did you last take a walk on the shore/when did you last take a boat trip? Percentage answers random and active group, $N = 387$

5.5 The relative importance of different values

So far, this chapter has discussed the specific values associated with the West coast and the sea and the ways in which residents experience both. But how important are these values ultimately?

In order to establish what matters most to local residents, an open question was asked “What do you treasure most of all about the sea and the West Coast?” (Question 8). Rather than separating between the sea and the West coast, this aimed at establishing the mix of values that count for most when it comes to living on the West coast. Apart from a better description of sense of place, the question also sought to establish the relative importance of different components in felt quality of life. Below are some typical quotes:

“that they are simply there for me and tell me every day how beautiful it is here and how small we humans really are.”

“The horizon, the light and the inkling of eternity.”

“The wide expanse – the uninterrupted sea view which allows me to just switch off – absolute relaxation and recuperation.”

“the tranquility of the Wadden Sea and the sea, together with the cry of the sea birds and the fresh air. On the beach: no industry as far as the eye can see (apart from the oil platform)s.”

“I only live five minutes from Husum harbour, the coast and the sea. I’m by the sea every day and cannot imagine doing without the water and the wide horizon.”

As in the previous open questions, answers were categorized in vivo and analysed to establish the relative importance of the various aspects mentioned. A total of 818 mentions were counted, distributed across 15 main categories (Figure 41). This time, analysis differentiated between active and random respondents and also between island and mainland residents in order to probe for differences in valuation.

The most prominent categories with the largest number of overall mentions were fresh air, the wide expanse of the landscape and seascape, and the relaxation effect derived from the tranquility of the environment. Nature also plays an important role, as do particular elements of the physical environment (such as beaches, islands, the dyke) and the aesthetic qualities of the environment. These were set apart from specific mentions of the landscape or seascape, as well as specific mentions of the Wadden Sea as an entity in its own right. Intangibles include the symbolic values of the sea and the coast, with freedom listed separately because it emerged as a particularly important category. Low population density also featured relatively frequently together with the idea that life is more relaxed on the West coast, whereas diversity refers to the perceived diversity of landscapes. “Other” is a collection of the large range of mentions that came up only infrequently, including such aspects as tourism, happiness, health-related topics or “green fields”.

In the comparison of the random and active groups, answers are shown to be distributed fairly similarly between the two groups, although there are some differences. Nature seems more important to the active respondents, which is mentioned by 26% compared to 21% of random respondents. The aesthetic qualities of the land- and seascape and the intangible qualities of the environment are also rated more important by the active sample (13% vs. 5% for aesthetic qualities, 11% vs. 3% for intangibles). For “Heimat”, the situation is the reverse, drawing 11% of mentions in the random group but only 5% in the active group. The active group was also much more creative in terms of other values mentioned, with a long list of one-off qualities ranging from specific locations (towns, beaches) to animals (migratory birds) or intangible qualities that sum up the totality of life on the West coast (e.g. happiness)

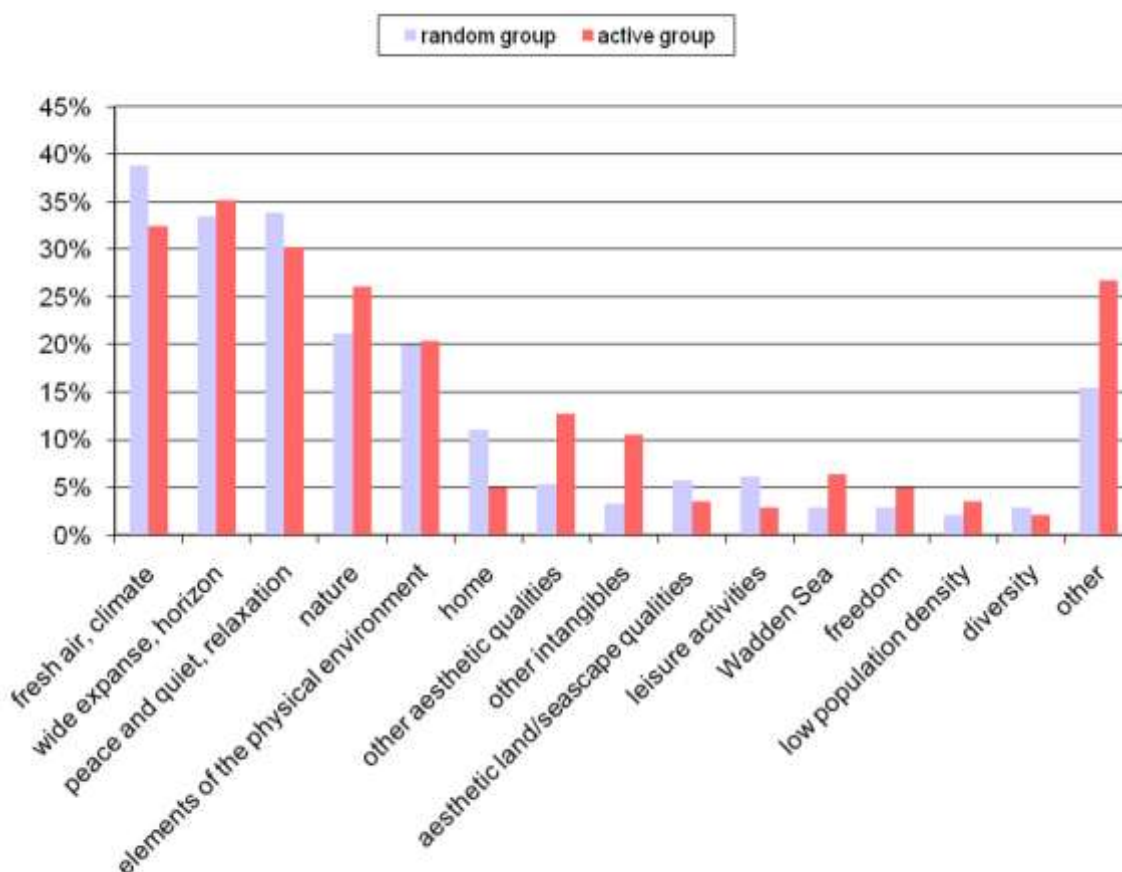


Figure 41: The relative importance of “life on the West coast values” to random and active group members ($n = 245$ (random), $n = 142$ (active), multiple mentions possible).

In the comparison of island and mainland residents, differences are also apparent in particular categories. Island residents value the wide expanse of the surrounding landscape more openly than mainland residents, with 40% of island residents mentioning this compared to 31% of mainland residents. Island residents also place greater value on intangibles (11%) compared to mainland residents (5%). Nature seems to figure slightly more prominently in island residents, mentioned by 27% of island residents and 21% of mainland residents. The aesthetic qualities of the landscape, however, are more important to mainland residents, mentioned by 10% compared to only 4% of island residents. Again, the category “other” brings together a wide diversity of mentions; this time it is island residents that are the more creative sample here. There are similarities between the active sample and island residents, which is due to the fact that islanders comprise a greater share of active respondents than mainlanders.

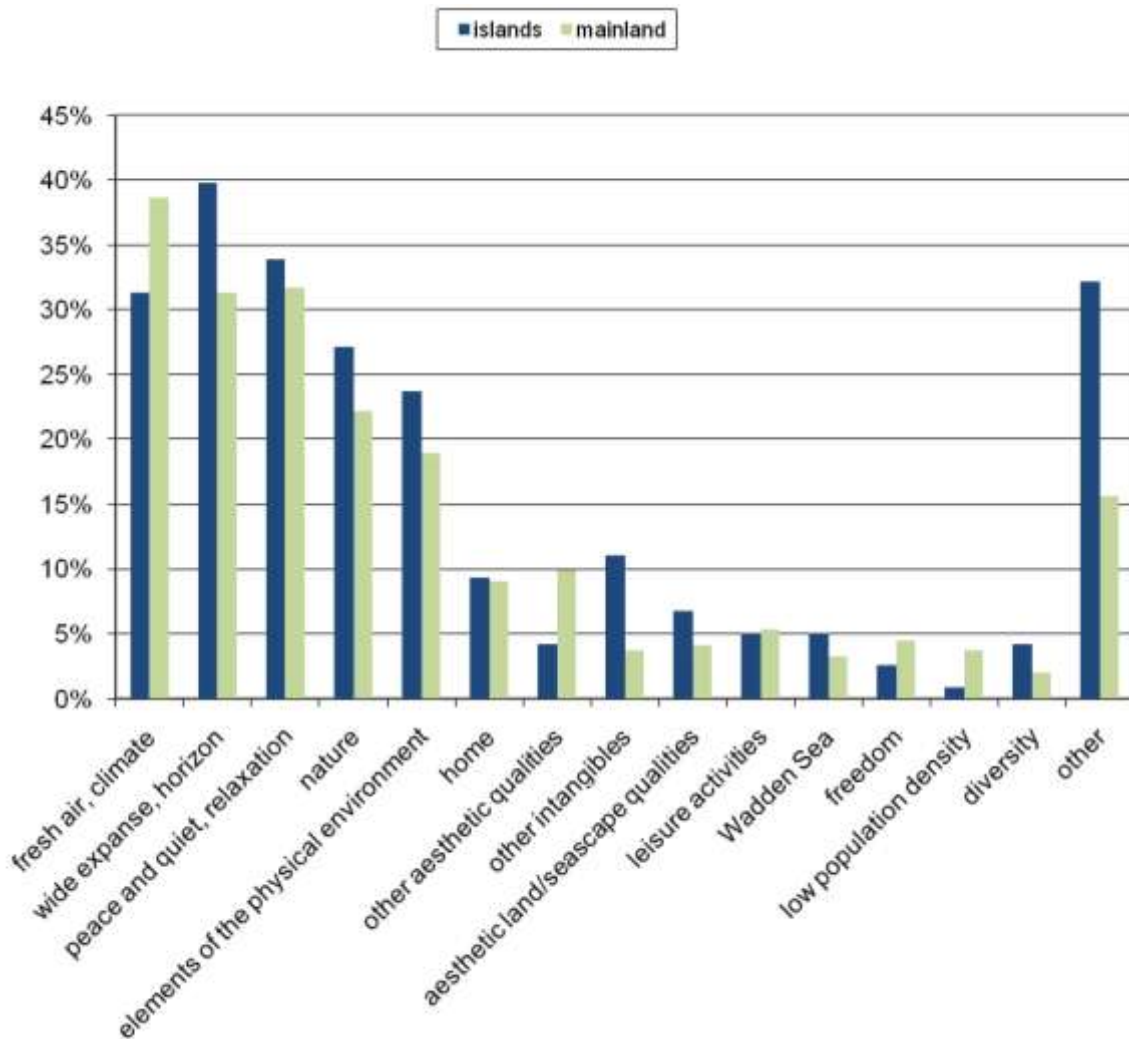


Figure 42: The relative importance of "life on the West coast values" to island and mainland residents ($n = 118$ (island), $n = 243$ (mainland), multiple mentions possible).

5.6 Synthesis

Meyn (2007) describes the West coast environment as an everyday landscape, landscape of conflict and threatened landscape. The everyday landscape is perceived as a functional entity but also as a beautiful landscape subject to aesthetic appreciation. 'Landscape of conflict' represents the conflict between the protected Wadden Sea and the utilitarian landscape on the coast, where the sea takes on the part of the natural environment and the coast the part of a living and economic space. Another form of threat is the landscape marred by wind turbines detracting from the 'naturalness' of the landscape (Meyn 2007 p. 274). The results obtained from the present survey confirm these results.

Survey results show the relationship of people to the sea to be an essential element in the construction of the West coast landscape. On the one hand, identity is constructed around the desire to resist the sea; on the other, active use and experience of the sea and the maritime character of the entire region is an essential characteristic of life on the West coast. The coastal

part of the West coast landscape is perceived as a landscape that is actively shaped and cared for, whilst the seaward part is perceived as natural and unpredictable, ultimately beyond human control. Sense of place, in this case captured by the category of “Heimat”, the sense of home, is confirmed to arise from the physical landscape itself, where forms such as the Wadden Sea play a role, but also from aesthetic experiences of the Wadden Sea and the symbolic interpretation of the sea as ‘unspoilt nature’ and wilderness. At the same time, “home” is also constituted around the communal practice of sea defence. The coastal landscape stands as a symbol for achievement, self-determination, and a shared past, with identity also constructed in opposition to the wider state administration or neighbouring districts.

The sea is assigned values that are shared with the coastal landscape – such as freedom – but also others that are distinct, such as naturalness, its elementary nature, incalculability, or respect. Sea values are linked to the visual aesthetic qualities of the seascape, in particular the wide, expansive horizon, although it is the emotions that arise when gazing out to sea that really form the value base here. These emotions, which include relaxation, a sense of peace and tranquility, and even a sense of the sublime, are then translated into the sometimes wistful belief that the sea is still an untouched space, beyond the reach of humans. The belief that the sea is somehow untameable is in itself a highly valued quality, as it provides an obvious contrast to the (overused) mainland and also allows it to be used as a counterpoint to the normal busy pace of life. These intangible qualities make the sea experience a highly emotional one.

How the environment is valued in the context of offshore wind farming will be considered in more detail in chapter 6.

6 Attitudes to offshore wind farms

This chapter discusses the last link in the conceptual chain set out in the previous chapters, which is the prevailing general beliefs and attitudes to offshore wind farming. Building on the conceptual framework presented in chapter 4, the aim of this chapter is to understand how local people perceive offshore wind farming generally and what values they accord to it in principle. This is then placed into the case study area context, asking what perceived benefits and disadvantages the respondents see emanating from it in their specific setting. Opponents' and supporters' views are of interest here since both can give important insights into what people ultimately value most and how they trade some of the seascape values established above against perceived offshore wind values. It is conceivable for example that two persons expect offshore wind farming to have similar impacts on the seascape, and that both consider these impacts to be undesirable. Nevertheless, one person might accept these impacts on the seascape as a necessary trade-off (ultimately resulting in a positive attitude to offshore wind farming) whilst the other comes to the opposite conclusion (ultimately resulting in the rejection of offshore wind farming). The result of this trade-off will depend on the specific beliefs the person holds about offshore wind farming and the importance assigned to these beliefs compared to other (e.g. seascape) beliefs.

In order to tease out the specific offshore wind values in the case study area, the questionnaire asked a range of questions designed to cover general and more specific beliefs about offshore wind farming. The first question was an open one, designed to draw out respondents' general associations with offshore wind farming. What is it that could be described as offshore wind farming values? Subsequent questions were more specifically about the Schleswig-Holstein case study area and the specific attitudes to offshore wind farms in this local part of the North Sea. After establishing the degree of support and opposition to offshore wind farming on the West coast, questions covered a range of factors that could conceivably influence the attitudes expressed, such as place of residence, whether respondents felt personally affected by offshore wind farms in any way, or whether they could conceive of personally profiting from them. Questions also covered attitudes to wind farming on land, the trust respondents placed in different sources of information, as well as potential alternatives to offshore wind. Most importantly though, questions sought to answer the question of how offshore wind farming values are rated in comparison to other values. Links between offshore wind farming and images of nature were explored as one potential factor. In particular, however, respondents were asked to rate a range of beliefs about offshore wind farming in conjunction with underlying objects of value, seeking to understand the importance of these beliefs in the broader context of life on the West coast. As before, analysis differentiated between the random group and the active group of respondents.

6.1 General associations with offshore wind farming

The first question in the offshore wind farming part of the survey (question 9) read “What do you spontaneously associate with offshore wind farming?” and was designed to solicit respondents’ general beliefs about offshore wind farming. This was based on the notion that it is quite possible to have a positive attitude to offshore wind farming in principle, but still oppose it in the specific West coast setting. Although conscious reference to the West coast was avoided in the question, most respondents did link their answers to an imagined local scenario, so that answers turned out to be a mixture of general associations and sometimes strongly stated opinions. Some overlap thus resulted with question 10b, which asked respondents to justify their attitudes to offshore wind farming on the West coast.

As in previous open questions, responses were scanned for mentions of topics which were then assigned to broader categories. These categories can be said to reflect the value bases associated with offshore wind. Mentions of the landscape, seascape or view were brought together in the value base “aesthetics/visual” for example, whilst any mention of the local economy or jobs was assigned to the category “economy”. Most of the mentions were not expressed neutrally, but came with a positive or negative connotation indicative of the hopes and concerns the respondents hold. In order to capture this, a positive/negative code was introduced for each category. One respondent for instance saw offshore wind farming as “an environmentally friendly way of generating power, but unfortunately it destroys the view!”, which was coded as ‘energy’/‘positive’ and ‘aesthetics/visual/negative’. Each value base therefore comes with an indication of whether it is mainly seen as a positive offshore wind farming attribute (and therefore, a reason for supporting offshore wind farming) or a loss of value as a result of offshore wind farming (a reason to oppose offshore wind farming). Many responses raised several topics and sometimes also contained conflicting statements, indicating that respondents find good reasons to be skeptical and supportive of offshore wind farming at the same time. Overall, results give a good overview of a respondent’s general disposition towards offshore wind farming and why they may look favourably or unfavourably towards offshore wind farming on the West coast. Results also afford first insights into the nature of the value base upon which value bases are built, for example whether arguments are mainly based on societal gains and losses or personal ones.

Table 22 lists the value bases identified and indicates whether they predominantly carry a positive or negative connotation. It also gives the percentage share each category has out of the total of mentions, which indicates which aspects sprang to mind most frequently. At this stage, no differentiation was made between the active and random sample, so results are based on a total of 387 respondents. Categories that are not self-explanatory are defined as follows:

Aesthetics: This includes all associations that relate to scenery or specific visual elements of the land- and seascape. Typically, they refer to the open horizon or concerns that wind turbines could spoil (or enhance) the view, or use is made of the very German description of wind farms as “asparagus” (mostly employed as a disparaging term).

Economy: associations related to local jobs and potential benefits to the local economy.

Energy: This includes all associations relating to energy efficiency, the cost of energy generation, renewable versus traditional, or other specific benefits or disadvantages of renewables.

Table 22: Value bases identified for offshore wind farming, their overall frequency of mention and frequency of mention as a positive or negative association with offshore wind farming

Category of association/ value base	positive	neutral	negative	Total number of mentions	Percentage share of all mentions
energy	82	0	28	110	23.0%
aesthetics/visual	22	0	82	104	21.8%
nature conservation	2	0	70	72	15.1%
factual description	0	59	0	59	12.3%
emotional response	1	1	36	38	7.9%
economy	14	3	8	25	5.2%
economic feasibility	0	1	21	22	4.6%
technology	12	5	3	20	4.2%
shipping safety	0	0	17	17	3.6%
Butendiek wind farm	0	3	0	3	0.6%
politics	0	0	2	2	0.4%
energy policy	1	0	0	1	0.2%
climate	1	0	0	1	0.2%
feasibility	0	0	1	1	0.2%
other	1	2	0	3	0.6%
total mentions by category	136	74	268	478	100.0%
percentage share of mentions by value category	28.5%	15.5%	56.1%	100.0%	

Table 22 shows there are more concerns about offshore wind farming than outright positive connotations. In terms of sheer volume, negative connotations are almost twice as frequent as positive ones. Positive connotations mostly arise in the context of aesthetics, economy, energy and technology, which can thus be termed the main offshore wind farming values. Negative connotations arise in the categories of aesthetics, economic feasibility, economy, emotional response, energy, nature conservation and shipping safety, indicating that offshore wind farming is seen as a threat to these value bases.

The categories "aesthetics", "energy" and "nature conservation" stand out on account of a particular high number of mentions, with "emotional response" of additional interest because it almost exclusively carries negative connotations.

6.1.1 Energy

Containing 23% of all associations, energy is the category most frequently referred to overall. 82 mentions refer to energy in a positive context, which corresponds to about 60% of all positive mentions. 66% of all arguments that are brought to play in the category of energy are positive, making it the most positively charged category and the most important offshore wind farming value base overall. A detailed look at the individual associations in this category shows that this is linked to a positive view of renewable energies in general, which are seen to have distinct advantages over conventional sources of power. In the words of the respondents, offshore wind farming represents an 'alternative', 'clean' and 'green' source of energy, which is regarded as an alternative to 'dirty' oil, coal or nuclear. Often, offshore wind is regarded positively despite some apparent disadvantages, for instance unknown impacts on the ecosystem, or the view that offshore wind energy is expensive and the technology not fully developed. Respondents recognize the trade-offs that may need to be made, but the positive connotations still seem to overrule these.

"Fossil fuels are finite and pollute the environment. Much energy is needed to extract them, and nature is destroyed in the process. Wind farms are not exactly pretty, but we need energy, and all other sources have higher risks".

Negative associations under the heading of 'energy' mainly relate to the fact that this form of energy generation is too expensive and inefficient compared to other forms (including other renewables).

The category of 'energy' thus reveals a group of respondents that seem to accept offshore wind as a preferred energy choice despite some disadvantages associated with it. Some feel they have no choice but accept offshore wind because it is 'better' and less damaging to the environment than conventional forms of energy generation. "Energy" as an offshore wind farming value base thus seems composed of instrumental aspects – renewable energy generation as a source of employment for example – and non-instrumental aspects, in particular 'oughtness' in the sense of a moral obligation to switch to renewables as a less polluting alternative to conventional power sources. The wider benefits of renewables are rated more highly here than the potential visual intrusion of offshore wind farms, for example. This attitude is indicative of the fact that certain basic human values – such as the moral duty to safeguard nature, or responsibility to future generations and society at large – come into play in this category. The trade-off that takes place here is thus between a moral obligation – the basic human value of universalism – and more immediate instrumental values such as personal profit from the landscape.

6.1.2 Economy

Surprisingly few respondents link offshore wind farming to the potential economic benefits it may yield, rendering the economic benefits of offshore wind farming a value base of only minor importance. The local economy and jobs are only mentioned 25 times in total, representing 5.2% of all associations counted. Only just over half of these, however, are positively charged in the sense that offshore wind farm construction and management might lead to more economic growth in the region. This is all the more surprising because economic growth is a favourite

argument of local politicians and other organised stakeholders and often quoted in the media as a decided benefit of offshore wind farming. The result could be interpreted as an indication of a certain degree of mistrust in politics and industry (see chapter 6.3), bringing into play questions surrounding the distribution of benefits as well as the issue of power and wind energy governance. It could also be related to the doubts expressed by 4.6% of respondents with respect to the economic feasibility of offshore wind farming, mostly stating that offshore wind farms are too expensive, will never pay for themselves and waste taxpayers money. Other economy-related arguments to express concerns about offshore wind farms were that they might destroy jobs in other sectors (e.g. tourism) or simply be used as investment opportunities or tax breaks with little local impact, much as was the case with land-based wind turbines.

“Fear that economic arguments will come before the uncontrollable forces of nature”

“Clean energy and an opportunity to create jobs in the region”

One reason why the economic connotation is so few and far between may be the average age of respondents. More than 70% were over 45 years of age and 20% over 65 years old, reflecting the fact that the case study area is an attractive place to retire to but also a structurally disadvantaged region that suffers from gradual out-migration of young people below the age of 30 (Bundesamt für Bauwesen und Raumordnung 2002). The reason may simply also be that older persons feel more obliged to return the questionnaire. Although they might be concerned for other members of the family, pensioners are less likely to be driven by economic concerns, so that the trade-off between preserving certain landscape qualities and accepting change for the sake of economic benefits is not one they need to make. Doubt might also result from the fact that production of wind turbines has recently moved out of the region rather than in, and that many open questions remain regarding the potential for building up a servicing industry for offshore farms in the region. The instrumental value of economic benefit is therefore not a prominent one, and not one likely to outweigh the perceived disadvantages of offshore wind farming in the minds of the respondents.

6.1.3 Aesthetics

For many respondents, the aesthetic qualities of the seascape are the aspect most threatened by offshore wind farms. As a category, aesthetics contains almost 22% of all associations mentioned, making it the second-largest behind energy. Aesthetic arguments carry a negative connotation in 74% of cases, but in 26% of cases the opposite is true. Although they do not necessarily consider offshore wind farms aesthetically pleasing, some respondents perceive offshore wind farms as an alternative to wind farms on land and express the hope that offshore developments might take the pressure off the mainland or even lead to onshore parks being dismantled. This, they argue, would have a much desired positive aesthetic impact on the coastal landscape.

“I hope for less wind turbines on land. There are too many turbines on land already”

There was even one case where offshore installations were explicitly termed ‘beautiful’ in their own right. In the direct trade-off between instrumental seascape and landscape values, seascape aesthetics thus lose out in this case against the perceived benefits of reducing the number of

wind turbines on land. Two instrumental value bases are being traded here without any reference to a societal or moral good.

Much more dominant, however, are fears that offshore wind farming would destroy key visual qualities of the sea. The most frequently mentioned are 'despoiling the sea', 'loss of the open horizon' and 'industrialisation of the sea'. Some typical examples are:

"Our coast is covered in windmills – let's avoid the same fate for the sea!"

"An open landscape and the expansive horizon represent the most important capital of this landscape. This is being destroyed for absolutely no gain."

The actual location of offshore wind farms in the EEZ is not always considered in the concerns raised here. Some respondents for example were concerned about the noise of shadow flicker effect of wind turbines, which clearly would not play a role, indicating a simple transfer of onshore wind farming concerns to the offshore setting. This can either be down to lack of information or uncertainty as to how offshore is different from onshore wind farming; it could equally represent an emotional reaction that rejects any development that could harbinge change. What is clear, however, is that the value base "seascape aesthetics", and the benefits this value base brings in terms of personal enjoyment, is rated more highly by the respondents in this category than any perceived advantages that may be brought by offshore wind farming. Instrumental values associated with the sea are therefore more important than the 'ought' value of renewable energies in this particular case.

6.1.4 Emotional

The category 'emotional' almost exclusively carries negative connotations and is indicative of some strong feelings against offshore wind farming. In total, associations amount to nearly 8% of all mentions and often found linked to aesthetic arguments. "Loss of the open horizon" and "sense of being limited" were stated together for example, as are "loss of everything that is important to me" and "despicable". Most of these responses are gut feelings, such as "feels wrong" or "can't imagine it will look right". Some use very forceful language, expressing a profound dislike and rejection of offshore wind farming as a matter of principle. One respondent went as far as associating offshore wind farms with cruelty and psycho-terror; another said "horror" and yet another "rape of the sea". Clearly, these associations go beyond mere visual impacts and represent some deep-seated antipathy towards any structures that might detract from the special qualities of the sea. Although it is difficult to pinpoint what these special qualities might be, the expected loss is significant and touches the very core of why these respondents value the sea. The sense of freedom seems to play a role in this, as does the desire to view the sea as a counterpoint to ordinary life and daily routine, indicating a strong role of symbolic sea values. In a direct trade-off, offshore wind energy values come a clear second to these symbolic sea values, placing personal benefits derived from symbolic sea values (such as the 'untouched sea') above any personal or societal gain derived from expanding the renewable energy base. There is also a link to existence value of the sea which has been described as the satisfaction humans derive from knowing that things exist irrespective of their use now or in future (Eftec

2006). This view would want the sea safeguarded for its own sake and irrespective of any human benefits to be derived from it, simply because it exists.

6.1.5 Nature conservation

Although arguments of nature conservation only make up 15% of all arguments employed, the category of nature conservation is almost exclusively used to register concerns about offshore wind farming. The category itself is one of the most diverse, with arguments covering indistinct fears that offshore farms will harm the marine ecosystem and also fears of very specific negative impacts on birds and marine mammals. The category also comprises indirect impacts, such as oil spills resulting from tanker collisions with wind farms.

“Offshore wind farms upset nature and animals, never mind the visual impacts”.

“Disappearance of the last remaining porpoises, pollution, even more dead birds, danger of shipping accidents and oil spills.”

Paramount in this category is the desire to see nature protected from harm. Although some arguments are utilitarian in nature - oil spills for instance would affect local beaches and have profound effects on tourism (see also the category ‘shipping safety’) – the great majority is concerned with the existence value of nature. This is tied to the conviction that humans have an obligation to preserve the sea and all its creatures, acting as stewards with a duty of keeping it from harm. This conviction is all the stronger where respondents feel that humans have done enough damage already, either to the planet or specifically the North Sea. Clearly, thus, this category is driven by values and moral principles that go beyond personal and even societal gain.

6.1.6 Other categories

Two other two value bases reached over 3% of all mentions. The first is technology, rated mostly positively with respect to the technological advances offshore wind farming can offer. Technological advances can be classed as a material benefit, although it is unlikely to lead to immediate economic benefits in the region itself. Nevertheless, this corresponds with arguments put forward by Federal government with respect to offshore wind farming, which is considered a useful export along the lines of “technology made in Germany” (BMU 2007). The other is shipping safety, which makes up for 3.6% of all mentions and is exclusively mentioned in a negative context. The underlying fear is that of shipping accidents, in particular oil spills, which could spell disaster for the natural environment of the Wadden Sea as well as tourism. This too is very much a material fear and not one that springs from moral precepts.

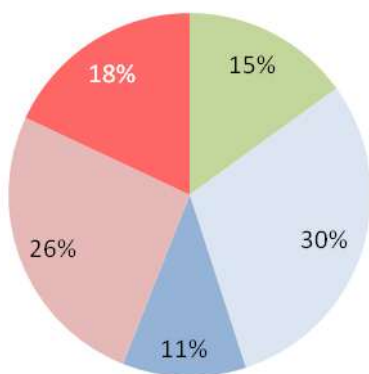
All other categories only received a maximum of three mentions, meaning that Butendiek wind farm, politics, energy policy, climate-related concerns, or the feasibility of offshore wind farming did not feature as arguments. This is particularly surprising in the case of climate, which could have been expected to receive more mentions as a current ‘hot topic’.

6.2 Positions on offshore wind farming on the West coast

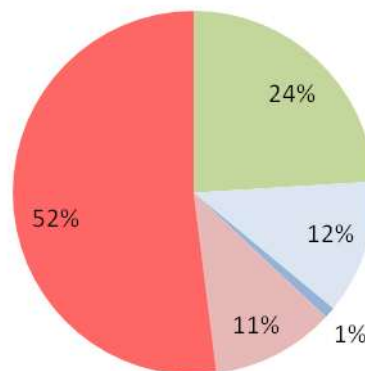
6.2.1 Absolute positions

The previous question gave insights into the positive and negative connotations carried by offshore wind farming and the general dispositions towards it by the respondents. But does this translate into an equal measure of support or resistance to offshore wind farming on the West coast? Question 10a asked “What is your position on offshore wind farms on the West coast of Schleswig-Holstein?” and gave five positions to choose from, ranging from ‘strongly against’ to ‘strongly in favour’. This time, analysis separated the active and random sample and also island and mainland residents (Figure 43).

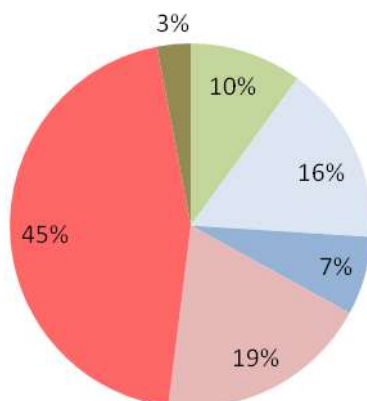
Random group (n = 245)



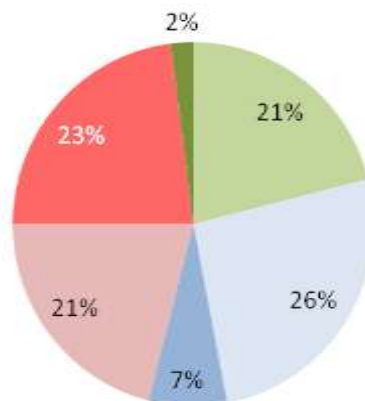
Active group (n = 142)



Island residents (n = 118)



Mainland residents (n = 243)



■ strongly in favour
■ in favour
■ no opinion
■ against
■ strongly against

Figure 43: Comparative positions on offshore wind farming off the West coast of Schleswig-Holstein

Altogether, results indicate that the community is split over offshore wind farming in the case study region. In case of the random sample, opponents and supporters are almost on a par, with 44% generally showing a positive attitude to offshore wind farming off the West coast and 45% showing a negative attitude. As expected, the proportions are rather different in the active sample. 63% state they are against offshore wind farming, and over half of the active group even stating they objected strongly. A surprise is the large share of those indicating strong support for offshore wind farming, reaching 24% in the active sample compared to only 15% in the random sample. The active sample is therefore clearly more opinionated, with strong opponents to offshore wind farming but also a comparatively large camp of supporters.

Given that offshore wind farms would be physically closer to islands, and assuming that island residents may have a different relationship to the sea than mainland residents, island and mainland residents opinions on offshore wind farming were also compared. As could be expected, island residents are more strongly positioned against offshore wind farming, with 64% overall expressing a negative attitude.

Figure 44 shows the opinions of island and mainland residents split according to random and active group, respectively. This reveals some differences between island and mainland residents in the random group but even stronger differences in the active group. A greater share of mainland residents than island residents is strongly in favour of offshore wind farming. This could be an expression of aesthetic landscape values, with the respondents preferring offshore wind

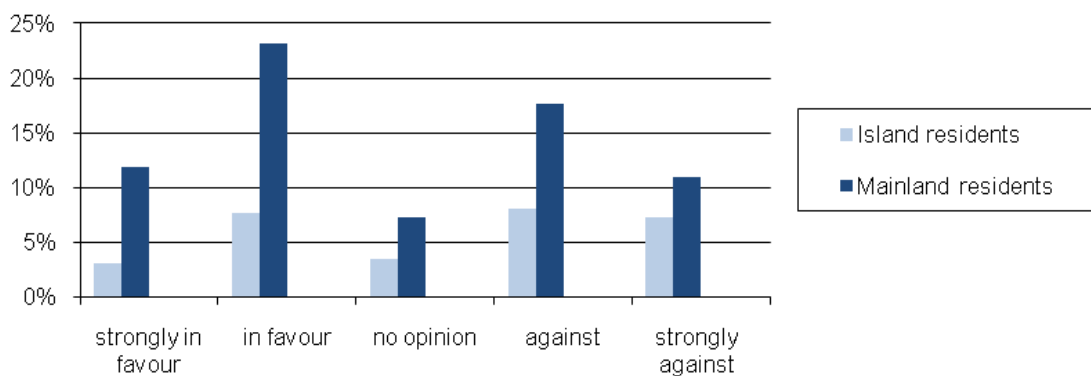


Figure 44: Attitudes to offshore wind farming of island and mainland residents within the random group ($n = 237$)

farming to an expansion of onshore wind farms. In the active group, 27% of those strongly against offshore wind farming are island residents compared to 20% of mainland residents, suggesting that island residents in the active group have a stronger opposing view on offshore wind farming than their mainland counterparts. Place of residence is thus confirmed as a predictor of different opinions, with island residents more likely to oppose offshore wind farming and mainland residents more likely to be supporters. Although this could be related to different value bases altogether, it is more likely to be an indication of a different rating of different value bases, indicating different outcomes in the trade-off between sea values and offshore wind farming values.

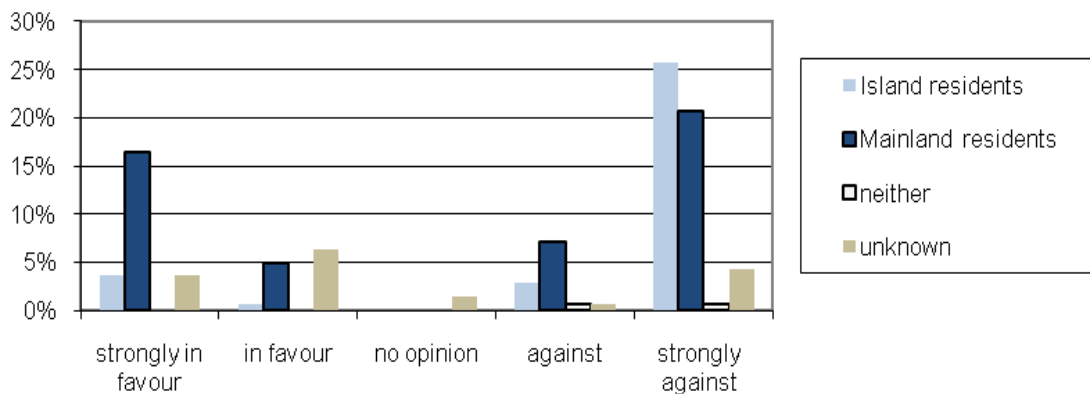


Figure 45: Attitudes to offshore wind farming of island and mainland residents within the active group ($n = 142$)

At the same time, the share of strong opponents in the active sample is almost equally strong in island and mainland residents, suggesting that points of principle are at work here independent of factors such as place of residence. The same applies to the strong supporters of offshore wind farming in the active sample, which could again be those favouring landscape values over seascape values and seeking to push wind farming offshore instead of having it close to home on the mainland.

In order to check for predictors arising from the socio-demographic characteristics of the sample, attitudes to offshore wind farming were correlated to selected demographic factors. Here, the entire sample was used as a basis since any significant effects should show up in both the active and random group. Results show no significant differences in the attitudes held by men and women (Figure 46), except that men hold slightly more pronounced opinions indicated by stronger peaks in the “in favour” and “strongly against” categories.

Attitudes to offshore wind farming are similarly spread across the categories of average and above average income, indicating no special relationship between income and attitude at these levels. The category of ‘below average’ shows the most even spread of all, although this can simply be down to statistics and the comparatively low overall numbers in this category (13% of all respondents).

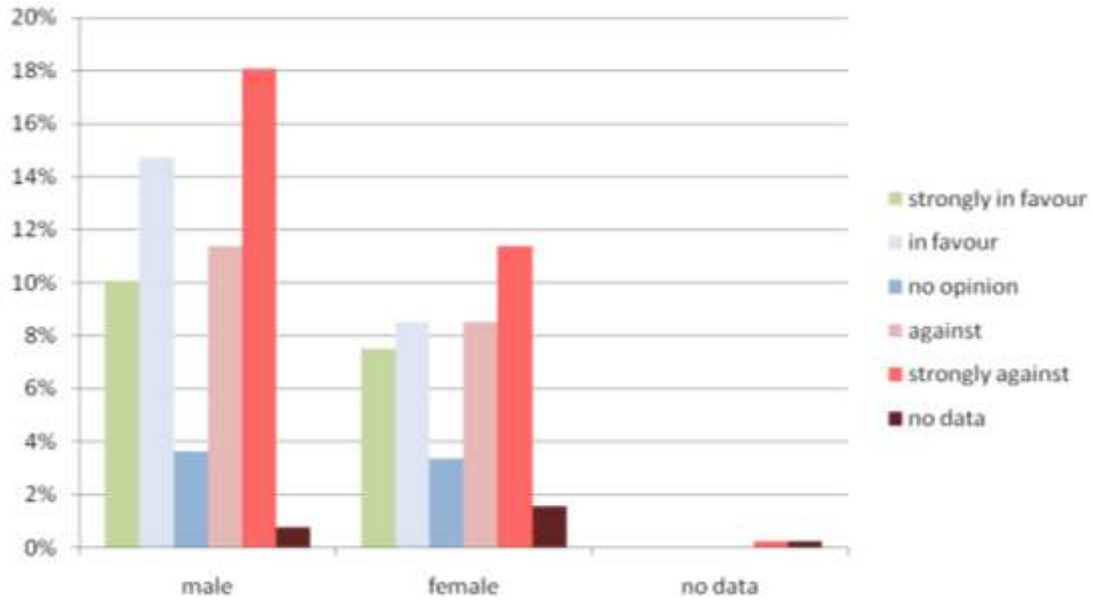


Figure 46: Male and female attitudes to offshore wind farming compared (N = 387). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.

There is no strong relationship between the level of education of respondents and their attitude to offshore wind farming (Figure 47). Those with university entrance qualifications (higher secondary school) have the lowest level of answers in the category “strongly in favour”, whilst those with GCSE equivalents (middle secondary school) are strongest in the category “strongly against”. Rather than an effect of education, this is probably an effect related to the predominant age groups represented in the survey, where the majority is unlikely to have gained higher qualifications.

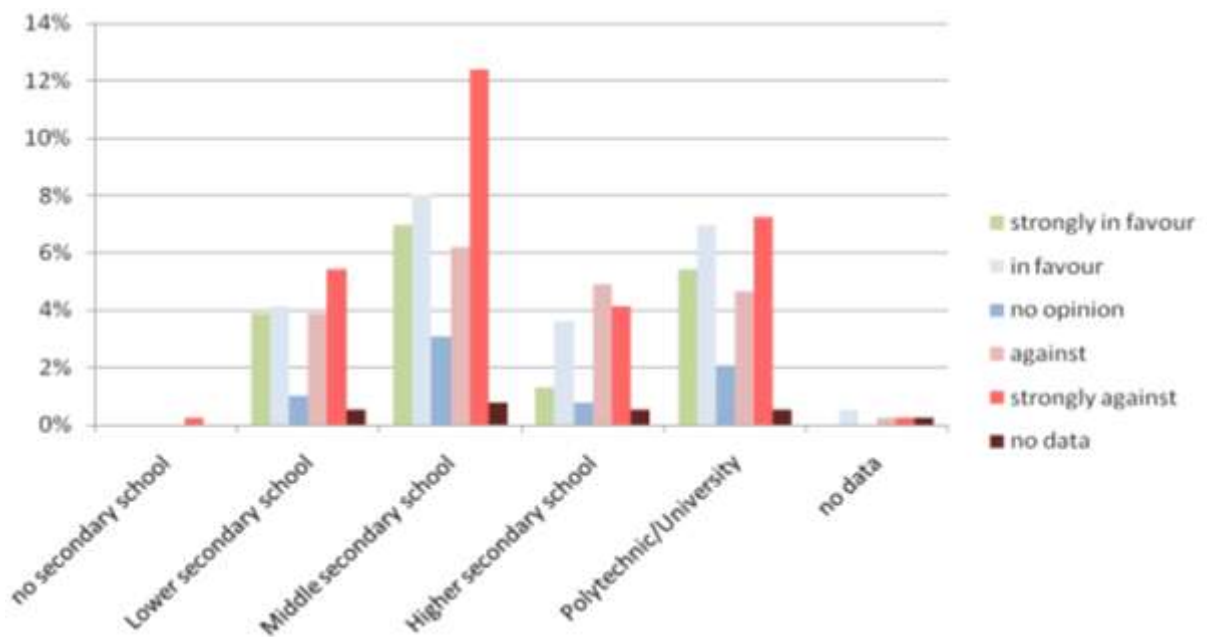


Figure 47: Attitudes to offshore wind farming and level of education (N = 387). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.

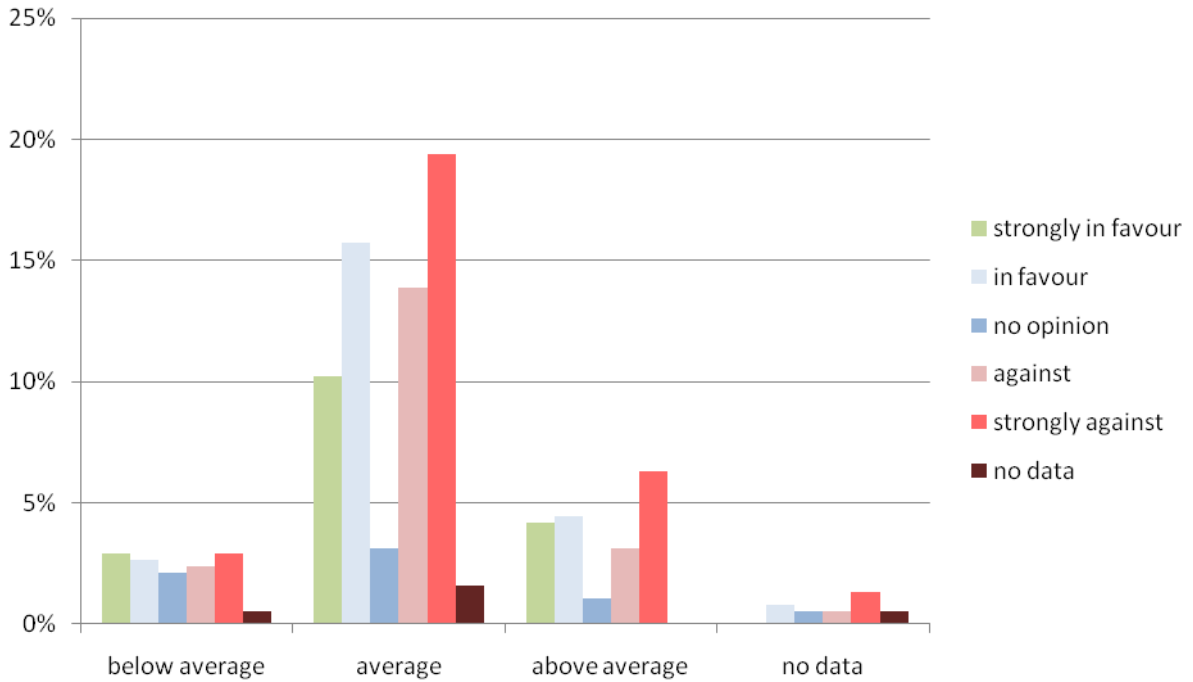


Figure 48: Attitudes to offshore wind farming and level of income (self-assessment, N = 382). Percentage mentions of strongly in favour, in favour, no opinion, against and strongly against.

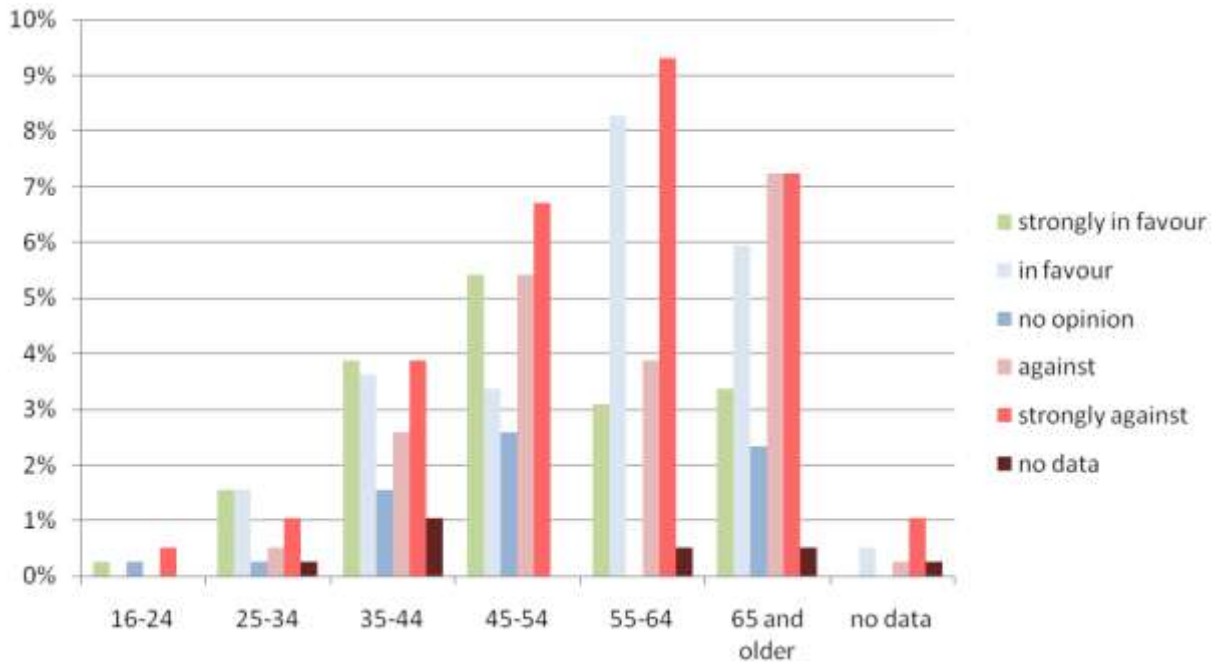


Figure 49: Attitudes to offshore wind farming across the various age groups (N = 387). Percentage mentions for strongly in favour, in favour, no opinion, against and strongly against.

This fits with the results of the cross-comparison of attitudes to offshore wind farming and age (Figure 49). The younger age groups show a greater relative proportion of supporters, although this is a slight trend at best and difficult to confirm due to the small number of respondents in these categories. Strong support seems to peak in those aged 45-54, with the relative share declining somewhat in the subsequent age groups. In the age groups 45 years and older, the share of those “strongly against” is larger than any share in favour, with those aged 55-64 particularly strongly against. This could be interpreted to indicate a more conservative attitude in older persons, although all age groups also have a sizeable share of “strongly in favour” and “in favour”. The peak of “strongly in favour” in those aged 45-54 could also be due to the fact that these respondents can afford to buy into offshore wind farming, generating direct personal profit for themselves (see below).

6.2.2 Arguments fielded to support offshore wind farming positions

In an attempt to elicit the specific reasons for either supporting or rejecting offshore wind farms in their home region, respondents were asked to justify their positions on offshore wind farming on the West coast of Schleswig-Holstein (Question 10b). Results confirm and occasionally extend those obtained from question 9, although this time, it was arguments rather than associations that were raised and also arguments specifically referring to the West coast. Since this was an open question, a similar process was employed as for question 9, subsuming the arguments fielded in thematic categories and again classifying each argument as a favourable, neutral one or negative one. Figure 50 gives an overview of the arguments fielded by both the random and active sample. Most respondents gave only one key argument, with only some fielding several, so that the total number of arguments was $n = 262$ for the random sample and $n = 163$ for the active sample.

a) Arguments in support of offshore wind farming in the case study region (pro)

In the arguments in favour of offshore wind farms on the West coast, the renewable energy argument again predominates, essentially confirming the significance of ‘energy’ as the main offshore wind farming value base. In the random group, 32% of all arguments support offshore wind farming as a form of alternative, clean energy. Whilst 16% simply argue based on the concept of a ‘clean’ alternative, another 16% strengthen this argument with specific reference to a moral obligation and the lack of long-term alternatives. As stated above, the moral obligation is mostly felt to the greater good of the planet or the well-being of future generations, and is often expressed in ‘*should*’ type statements.

“One must not stand in the way of alternative ways of generating electricity.”

“A contribution to CO₂-free energy generation (climate change), does not leave future generations with irreversible waste.”

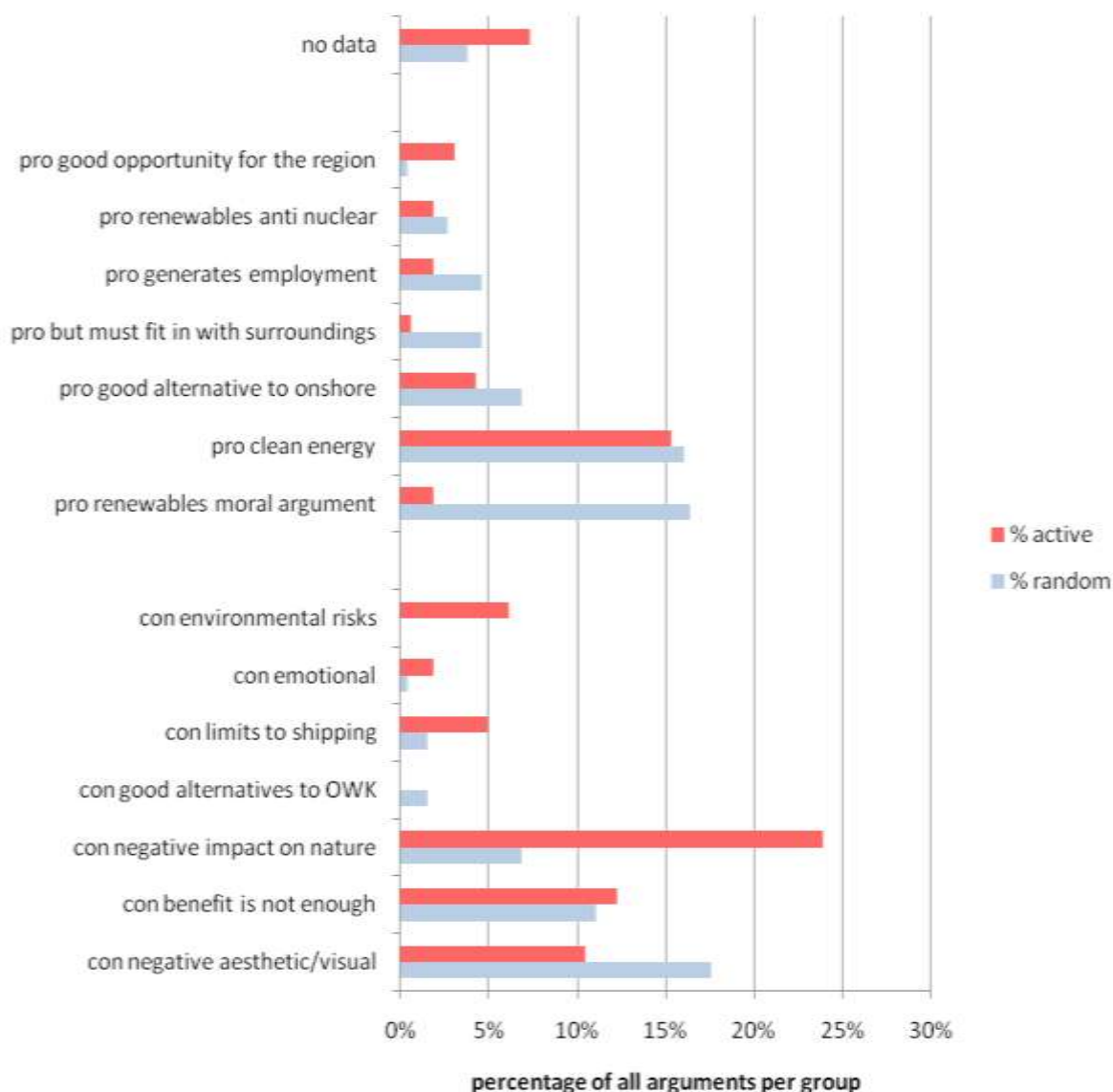


Figure 50: Arguments fielded in favour (pro) and against (con) offshore wind farming on the West coast of Schleswig-Holstein, separated into the random ($n = 245$) and active ($n = 142$) sample.

Energy is therefore confirmed as a value base composed of instrumental values – the idea of personal or societal gain in terms of a clean environment – and ‘oughtness’ as a strong sense of obligation towards society and the planet.

7% of the arguments favour offshore over onshore wind, stating that the offshore solution is definitely preferable to more turbines on land. Some respondents express hope that offshore wind could even replace onshore wind and lead to the dismantling of onshore wind farms – with positive impacts on the amenity value of the coastal landscape. Again, this confirms the trade-off between landscape and seascape values described above.

“Doesn’t bother anyone, in contrast to the many windmills on land”

Nearly 5% support offshore wind in the hope that it will lead to jobs in the region, with another 3% arguing out of strong opposition to nuclear power.

In the active group, support for offshore wind is also mostly related to the fact that it represents a clean, alternative form of energy (15%). In contrast to the random group, however, respondents only rarely extend this argument into a moral obligation to develop renewables (2%). The offshore wind farming value base is therefore only rated highly by 17% of the active respondents compared to 32% of the random group, indicating this value base is less significant compared to other values in the active group. 3% argue that offshore wind represents a good opportunity for the region, although the arguments do not specify exactly what this benefit would be. Contrary to the random group, hardly anyone mentions the specific employment argument, although 4% argue that offshore is a good alternative to onshore. 2% are in favour of offshore wind as a distinct alternative to nuclear power, and there is a comparatively larger group of respondents who did not supply an answer.

In the camp of supporters, the only clear difference between the random and active group is thus the significance of the moral argument, which is employed much more explicitly in the random group than in the active group.

All arguments put forward in support of offshore wind farms on the West coast were fielded by respondents who stated they were in favour or strongly in favour of offshore wind farming in question 10a. The exception is a small group of random group respondents who are in favour of offshore wind, but only under the condition that it must fit in with the surroundings and not be visible from the mainland (nearly 5%).

“ok if they can't be seen or heard from the mainland”

b) Arguments against offshore wind farming in the case study region (con)

In the arguments against offshore wind farming, what stands out most is the argument “negative impacts on nature”, which makes up for almost 25% of all arguments in the active group but only 7% in the random group. Clearly, members of the active group are strongly concerned that offshore wind farming on the West coast of Schleswig-Holstein will affect particular species or habitats. This might indicate strongly held convictions with respect to the intrinsic value of nature. The result also echoes the concerns that were voiced in question 9 with respect to nature, although no distinction was drawn there between the active and random group. In contrast, the random group seems more concerned with the visual/aesthetics impact of offshore wind farms, which amounts to 17% of all arguments fielded by this group but only 10% of the active group.

“A very disrupting factor for nature and animals (never mind the visual impact), noise and doubtful benefits. There are enough interventions in the ecosystem North Sea already.”

The active group is also more specifically concerned about potential shipping accidents (4%) or general environmental risks (including the danger of oil spills resulting from collisions) (6%), neither of which feature in the random group. This may indicate more specific or more comprehensive information held in the active group, or simply the fact that these respondents have given more thought to offshore wind farming than the members of the random group.

“Impacts on habitats, no rescue concept for emergencies in which case our economic basis would be destroyed”

In both groups, a large proportion of opponents to offshore wind farming on the West coast argue that the benefits of offshore wind farming simply do not outweigh the disadvantages. High costs, the need for subsidies, and the fact that only few people benefit whilst many suffer the disadvantages, are the main arguments put forward here:

“Economic nonsense, spoils the landscape, a waste of money for the benefit of few individuals.”

“Ecologically disastrous and anti-social.”

There is also a small contingent in the random group that argues there are good renewable alternatives to offshore wind, making it an unnecessary investment.

Once again, all opposing arguments were fielded by respondents whose absolute positions on offshore wind farming on the West coast were either strongly against or against (see Figure 50).

6.2.3 Feeling directly affected by offshore wind farms

Asking respondents whether they feel directly affected by the potential offshore wind farms on the West coast was a way of making the issue more personal, testing whether opinions and arguments were grounded in a sense of being personally affected by offshore wind farms or grew out of more general beliefs about offshore wind farming. Only 33% of the random sample said they felt directly affected, compared to 64% of the active sample. This seems an obvious difference in that a stronger sense of being affected is likely to lead to stronger positions on offshore wind farming and greater readiness to be involved in the survey. Asked for the reasons, the predominant answer was yet again the seascape as a value base (51% of all answers received in the random group, $n = 82$, and 23% in the active group, $n = 92$), followed by nature in the active group and shipping accidents, which translated into pollution risk to the beaches and in some cases, losses to the tourism industry:

No longer any open horizon to the west, would be looking at an industrial plant in the sea that shreds every sunset“

“They will be built in the same sea area that is the basis of our existence, if an accident happens our existence is threatened too.”

An interesting difference exists between island and mainland residents: Out of those living on an island, nearly twice as many feel personally affected by potential offshore wind farms; in those living on the mainland this is the reverse (Figure 52).

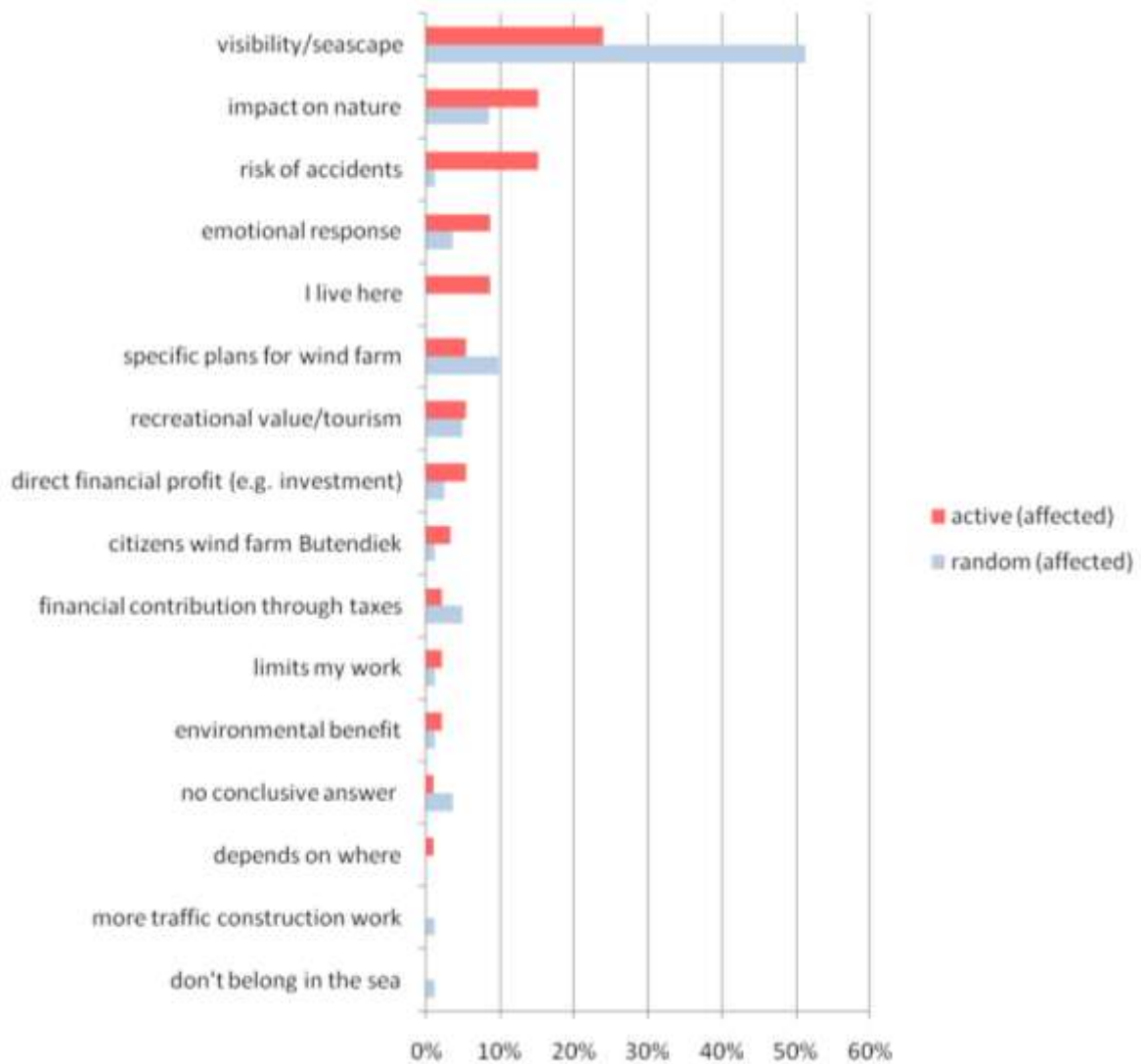


Figure 51: Reasons for feeling affected by offshore wind farms, random and active groups (only those who feel affected, $n = 82$ (random) and $n = 92$ (active)), percentage of answers received.

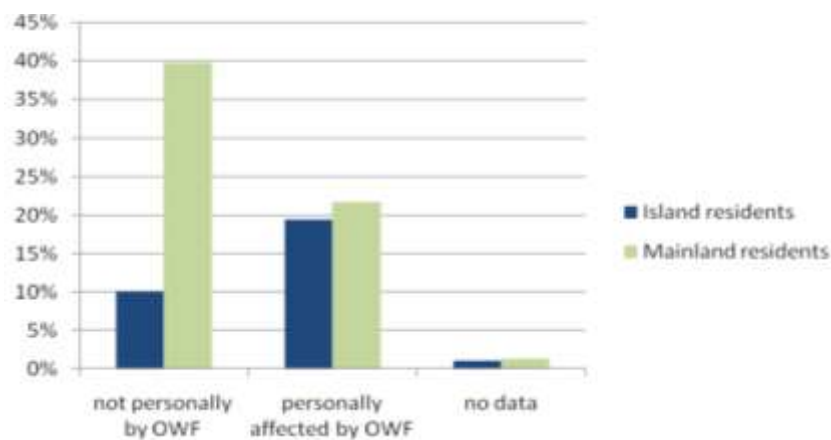


Figure 52: Do you personally feel affected by potential offshore wind farms? Percentage answers according to place of residence (islands versus mainland, $n = 118$ (islands), $n = 243$ (mainland)).

Irrespective of the actual impacts of offshore wind farming, these differences in perception and feeling affected between island and mainland residents therefore do need to be taken into account.

6.2.4 The image of nature and attitudes to offshore wind farming

The importance of 'nature' as an argument against offshore wind farming begs the question whether any links can be established between the images of nature established in chapter 4 and positions on offshore wind farming. Figures 53 and 54 show the results for the random and active group. In the random group, the view of nature as tolerant dominates across all attitudes to offshore wind farming. "Nature capricious" is slightly more prominent in those who are against offshore wind farming, as is the view of "nature ephemeral". Altogether though, each attitude has similar shares of each view of nature, indicating that views of nature have no strong correlation to attitudes to offshore wind farming. Opponents to offshore wind farming for instance do not view nature as particularly sensitive or ephemeral.

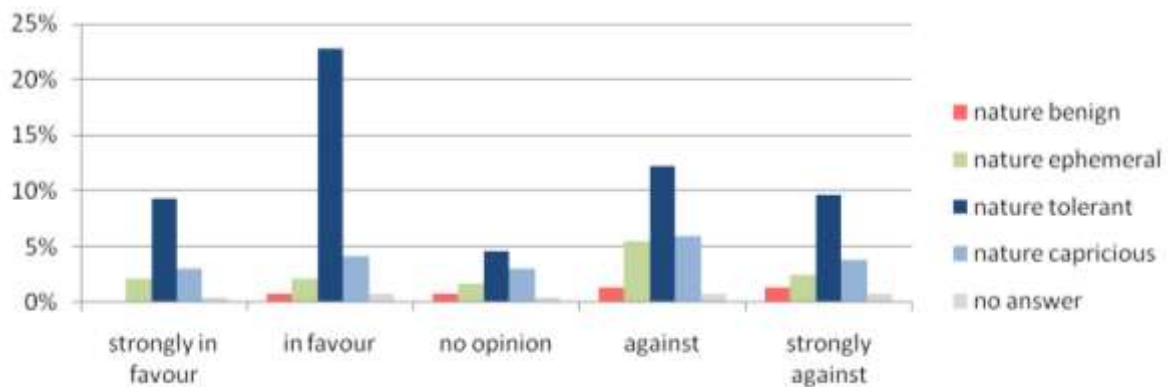


Figure 53: Images of nature and attitudes to offshore wind farming (random group, n = 245).

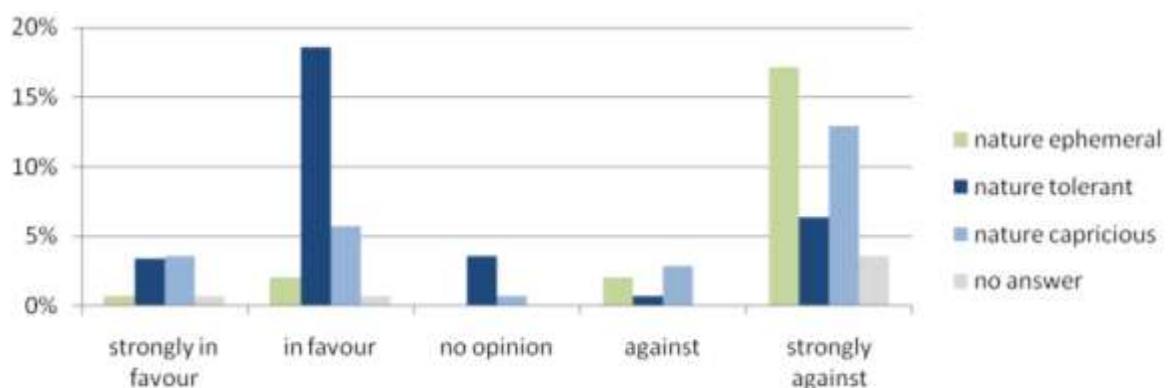


Figure 54: Images of nature and attitudes to offshore wind farming (active group, n = 142).

A different picture emerges for the active group. As in the random group, those in favour of offshore wind farming predominately think of nature as tolerant, which suggests they consider nature well able to cope with offshore wind farming-related disturbance without suffering any significant long-term damage. Out of those that are strongly against offshore wind farming, however, 17% hold a view of nature as ephemeral, which mirrors concern over nature's ability to withstand offshore wind farming as a human intervention. 13% of those strongly against offshore wind farming consider nature as capricious, meaning it is too unpredictable to foresee what impacts offshore wind farming will have in the long term. "Nature tolerant" is only ranked third in this group. This suggests that strong opponents to offshore wind farming in the active group do justify their position out of their general belief about nature. This also correlates with the arguments against offshore wind farming, where nature also emerged as a strong concern.

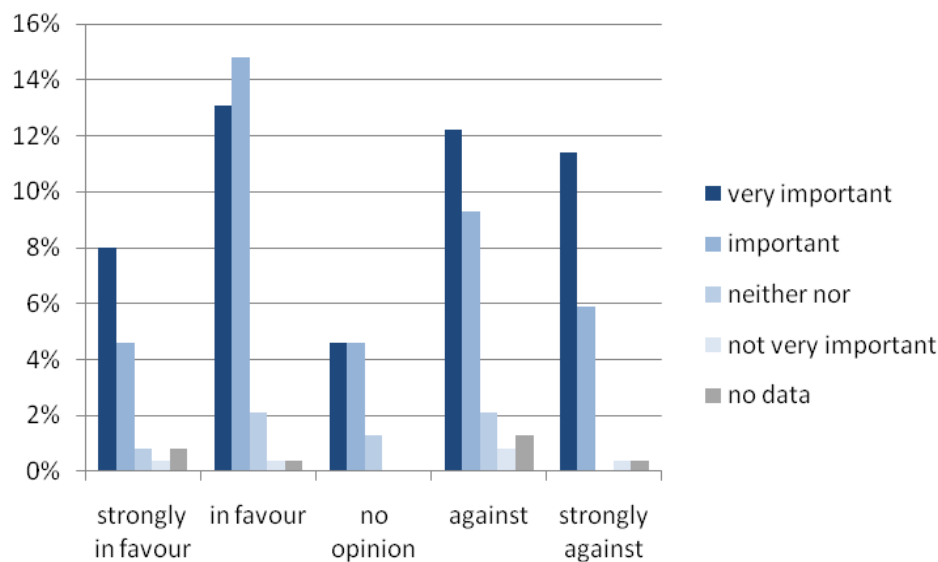


Figure 55: The importance of attractive landscape in life on the West coast correlated with attitudes to offshore wind farming (random group, $n = 245$, percentage answers).

An interesting aspect in the context of aesthetics is the comparison between positions on offshore wind farms and the importance of 'attractive landscape' and 'wide, open sea' for life on the West coast (chapter 4). Differences become apparent when comparing the random and active groups. In the random group, 24% that rated attractive landscape very important also opposed offshore wind farming (against and strongly against). In the active group, that same share is 51% (Figure 55 and 56). 29% of those that rated wide, open sea as very important are also opponents of offshore wind farms (against and strongly against), whilst the same percentage is 53% in the active group (Figures 57 and 58). In the active group, there is a much stronger correlation between high value placed on attractive landscape and wide, open sea and a negative attitude to offshore wind farming, suggesting that landscape and seascape concerns are an important driver of these attitudes.

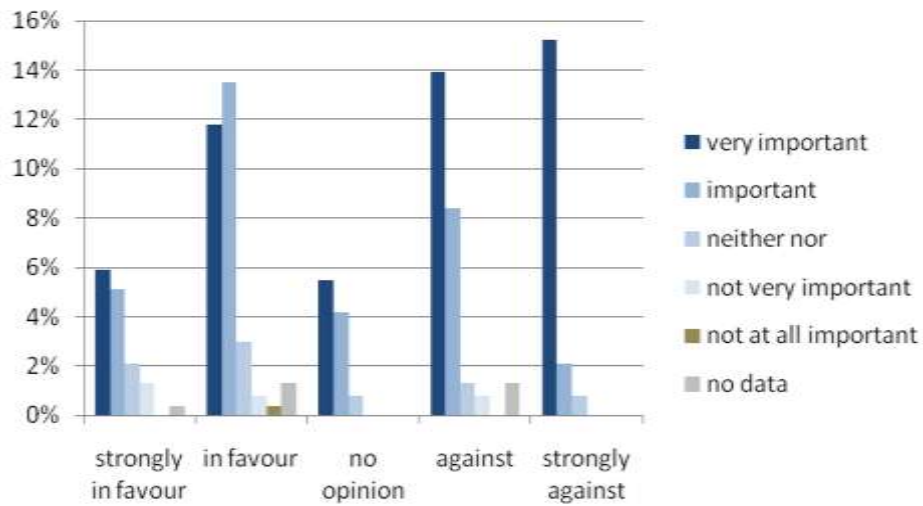


Figure 56: The importance of attractive landscape in life on the West coast correlated with attitudes to offshore wind farming (active group, n = 142, percentage answers).

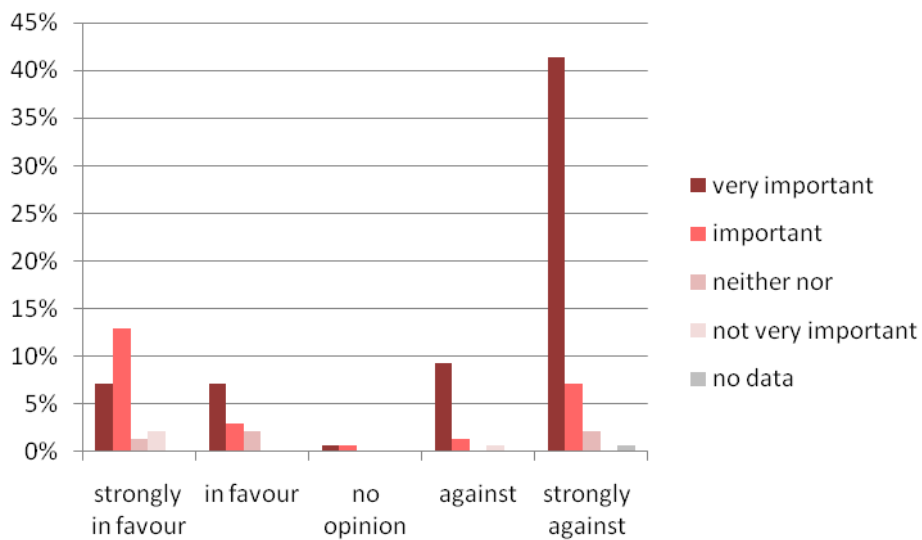


Figure 57: The importance of the wide, open sea in life on the West coast correlated with attitudes to offshore wind farming (random group, n = 245, percentage answers).

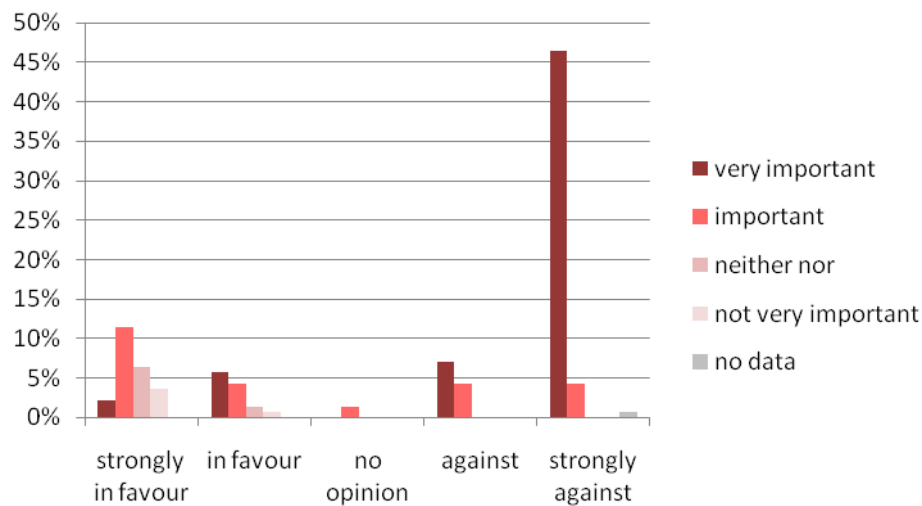


Figure 58: The importance of the wide, open sea in life on the West coast correlated with attitudes to offshore wind farming (active group, $n = 142$, percentage answers).

6.2.5 Consistency of arguments: General attitudes to offshore wind farming and attitudes to offshore wind farming on the West coast

A comparison was made of the arguments fielded in questions 9 and 10b, checking whether a negative, neutral and positive spontaneous association with offshore wind farming always led to a similar attitude with respect to offshore wind farms specifically on the West coast. The comparison was based on nine possibilities overall, three of which were consistent (respondents taking a negative/negative, neutral/neutral or positive/positive view), three of which represented a change for the better (negative positions in question 9 switching to neutral in question 10b, a negative/positive or neutral/positive switch) and three a change for the worse (neutral/negative, positive/negative and positive/neutral switches). Figure 59 gives an overview of results.

In the random group, 51% of respondents showed consistency in their answers, meaning a favourable disposition to offshore wind farming directly translates into support of offshore wind farming off the West coast of Schleswig-Holstein. The same applies to a neutral and negative attitude and opposition. 33% of respondents showed some form of inconsistency. Out of those that start out with no particular association with offshore wind farming, 10% come to support offshore wind farms on the West coast; this is mostly on account of the renewable energy argument. 2% see problems with offshore wind farming such as its need for subsidies or the fact it has led to political strife, but choose to support it nevertheless; again this is mostly on account of the perceived need for renewables and alternative sources of energy. 15% have no particular association with offshore wind farming to begin with, but definitely oppose the technology for the West coast of Schleswig-Holstein. 2% switch from a positive overall association to a negative position, mostly due to the economics argument (“clean energy” vs. “despoil the seascape, not enough benefit”).

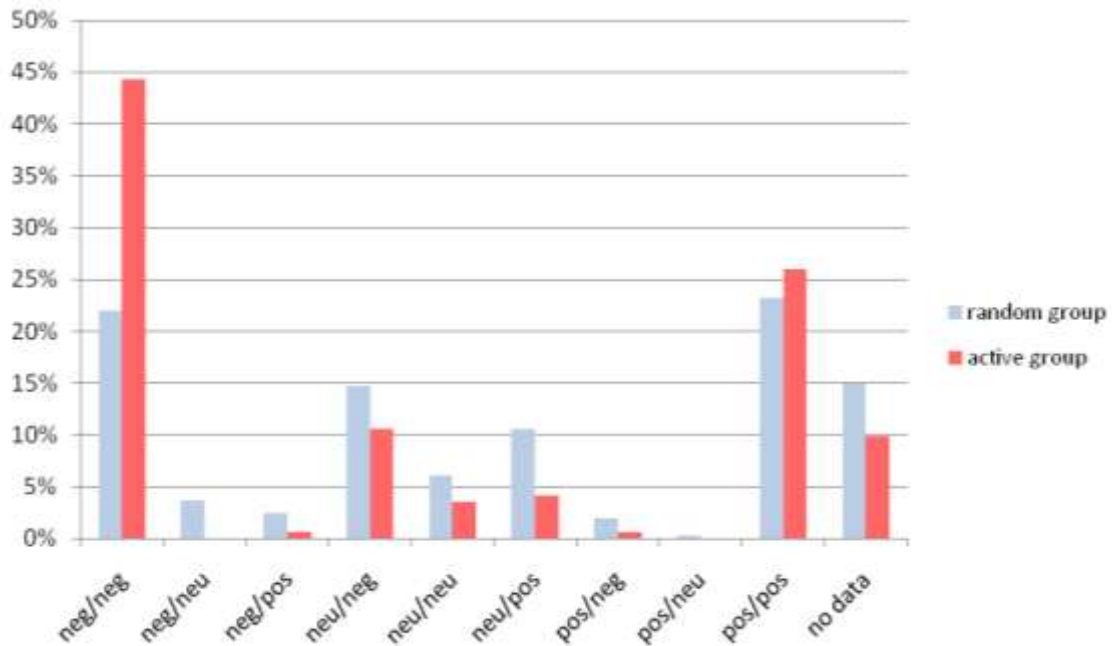


Figure 59: Consistency between attitudes to offshore wind farming generally and positions on offshore wind farming on the West coast of Schleswig-Holstein (percentage respondents, $n = 245$ (random group), $n = 142$ (active group)).

With a total of 74% consistency is even higher in the active group. Only 16% of the respondents show inconsistencies, with 10% inconclusive due to lack of data. 44% have a negative disposition towards offshore wind farming and also reject it for the West coast; this is mostly due to concerns about nature and marine wildlife as well as economic arguments. 4% stay with a neutral attitude throughout, and 26% have a positive initial disposition that translates into support for offshore wind farming on the West Coast (“we’ve got plenty of wind here, let’s use it!”). Just under 11% start with a neutral association but end with a negative position on offshore wind farming for the West coast, mostly because of the expected expense, the impact on the landscape and tourism, and the perceived environmental risks (“too expensive to manufacture and maintain, bad for wildlife, bad for shipping”).

Consistency would be expected in the arguments where respondents do not sufficiently differentiate between the two questions, fielding essentially the same arguments in both cases. However, the inconsistencies that did emerge show that respondents certainly do differentiate between their more general beliefs about offshore wind farming and the specific beliefs about offshore wind farming in the case study region. Even though they may believe offshore wind farming to be worthy of general support, there may still reject it as an option for the case study region and vice versa. This shows that general beliefs about offshore wind farming need to be carefully separated from beliefs about their local impacts. Acceptance of offshore wind farming is thus also a case of weighing general values against local values, with the two not necessarily coinciding.

6.2.6 The ability to personally profit from offshore wind farms

In order to test a factor that has been shown to influence attitudes to onshore wind farming, question 12 asked whether respondents could envisage to personally profit from offshore wind farms. It deliberately left open what kind of profit this might be or whether this referred to personal or societal profit. In the random group, 28% of respondents said they could envisage profiting from offshore wind farms, compared to 34% in the active group (Figure 60).

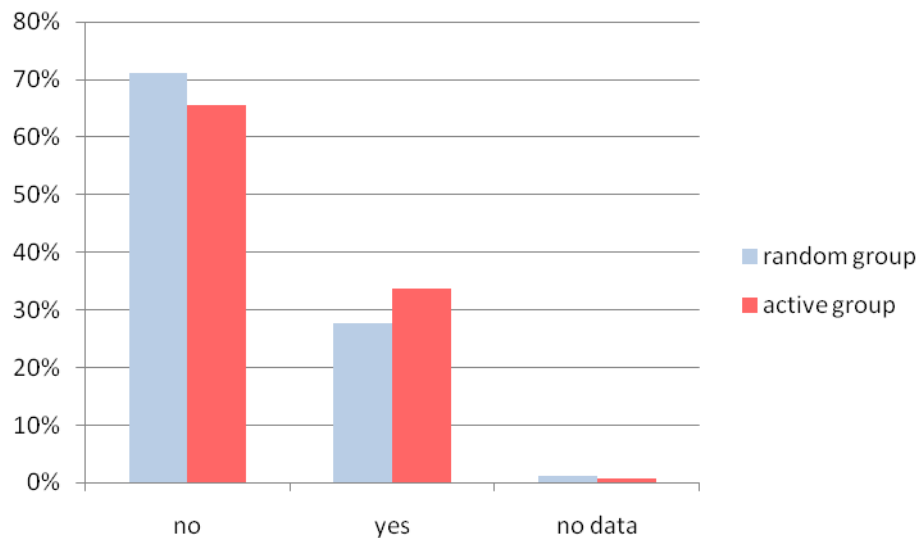


Figure 60: Could you envisage personally profiting from offshore wind farms? Random and active samples compared ($n = 245$ (random) and 142 (active)), percentage answers.

Both direct and indirect forms of profit and benefits were quoted. Direct profit was mostly interpreted as financial gain, whereas indirect profit usually refers to indirect benefits to society such as greater energy independence, independence from nuclear power or making use of a green form of electricity. Indirect benefits are therefore very similar to the arguments raised in support of offshore wind farming. A small number of respondents (below 5% in both groups) also envisage direct benefits through job generation in the wind farming sector. Those that cannot imagine any personal profit sometimes point out that the cost of offshore wind farming is borne by society as a whole whilst the profits are reaped by only few.

There is a marked difference between the random and active groups in the type of profit envisaged. Out of those that could envisage a personal profit, 32% in the random group ($n = 68$) envisage this to be financial profit, for instance through becoming a shareholder in a community-owned offshore wind farm (such as Butendiek, which was still proposed as a community wind farm at that time). In the active group, this share is 56% ($n = 48$). 32% of the random group but only 14% of the active group envisaged an indirect profit through obtaining green electricity (a preferred choice over nuclear and regarded as a clean form of energy and an immaterial benefit), and 20% of the random group and 10% of the active group envisage cheaper electricity prices. In the active group, the financial argument thus weighs more strongly than in the random sample, with over half of those that can envisage some form of personal profit picturing investment

opportunities before anything else. This confirms the importance of the opportunity to become a shareholder in accepting offshore wind, possibly not only for financial reasons but also for reasons of local control and involvement.

The perceived ability to personally profit from offshore wind farms was then contrasted to the attitudes to offshore wind farming on the West coast. Analysing both samples together, this shows a rather interesting relationship, indicating that the stronger the opposition to offshore wind farming generally, the less likely the view that some form of personal profit could be drawn from offshore wind farms. Out of those that are strongly against offshore wind farming, only very few could envisage to obtain some personal profit from offshore wind farms (Figure 61). In contrast, the great majority of those that could envisage a profit from offshore wind were either in favour or strongly in favour of offshore wind farms on the West coast of Schleswig-Holstein.

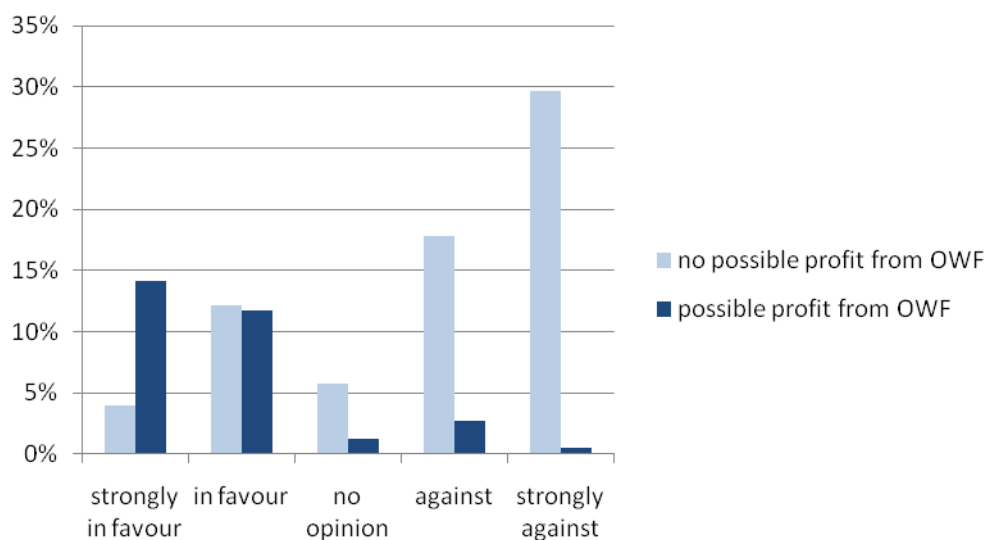


Figure 61: Links between the general attitude to offshore wind farming (strongly in favour to strongly against, see Figure 43) and the possibility to personally profit from offshore wind farms. Random and active sample were analysed together (N = 387)

As shown above, both personal and wider societal profit can matter here, depending on which value base the person subscribes to. This would seem to strengthen the argument for community-owned offshore wind farms as a means for enhancing acceptance and winning over at least some of the sceptics with the notion of personal gain.

6.2.7 Offshore versus onshore wind farms

In the earlier questions, some respondents had stated they would be willing to accept offshore wind farming if the number of onshore turbines were reduced in return. The relationship between onshore wind – an actual experience for respondents – and offshore wind as an option is therefore an important one to explore in terms of potential trade-offs.

Doing so must bear in mind that in contrast to offshore wind, onshore wind farming has been a long-standing reality for the residents of Dithmarschen and North Frisia. Both Germany's first wind turbine (GROWIAN) and first wind farm were built in Dithmarschen in 1983 and 1987, respectively. Expansion has been steady since, so that today, the district has about 800 wind turbines, which amounts to about 5% of all German wind turbines on just 0.15% of the total land area. Most of the turbines are situated in the low-lying marshlands, where they spread along the entire coastline and where they generate considerable income for the turbine's owners and the respective land owners. A recent decree issued by the state government permits the erection of new turbines with a hub height up to 150 m, which will be visible from 40 km away. Resistance has sprung up within the population against the large-scale transformation of the landscape into an industrial park; negative effects on tourism are also feared, especially since it is not certain that the total number of turbines will be reduced in return for installing larger, more powerful ones.

Against this background, question 13 explicitly asked what respondents thought of onshore wind farming, the results are shown in Figure 62.

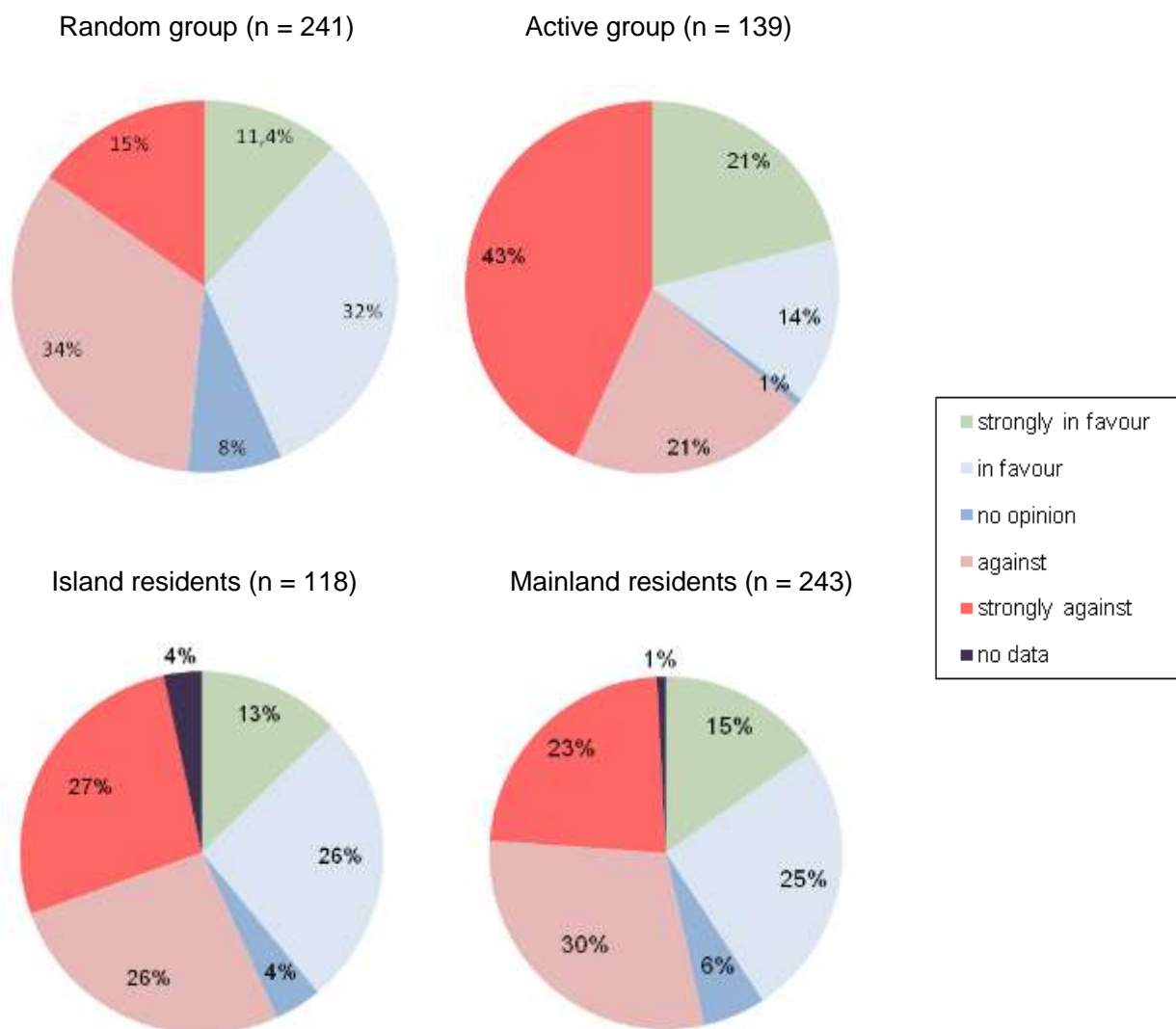


Figure 62: Comparative positions on onshore wind farming in Dithmarschen and North Frisia

As is the case with offshore wind farming, onshore wind farming drew a mixed response. Results in the random group are very similar to those for offshore wind farming, with 45% of respondents positioned in favour or strongly in favour and 44% against or strongly against. In the active group, positions are again stronger at the extreme ends of the scale, with 21% strongly in favour of onshore wind and 43% strongly against (compared to 52% who were strongly against offshore wind farms on the West coast). In contrast to offshore wind, the differences between island and mainland residents are marginal here, with both showing a slightly larger share of respondents against onshore wind farming than in favour. As is the case with offshore wind farming, the community seems split in their attitude to onshore wind farming. Support could be down to the fact that many onshore wind farms are owned by citizens associations, allowing at least some people in the region to become actively involved and benefit economically.

Given the long history of onshore wind farming in the region, could it be that attitudes to offshore wind farming simply transferred to the offshore setting? This was tested by cross-referencing on- and offshore wind farming attitudes to see where the two coincide (Figure 63 and 64). The figures show the active group to be more consistent in accepting or rejecting both forms of wind farming. The 52% share of those who are strongly against offshore wind farming also holds a 36% share of those that are strongly against onshore wind farming, indicating strong opposition to wind power generally. The same holds true for the opposite end of the scale: Out of the 21% that are strongly in favour of offshore wind farming, 19% are also strongly in favour of onshore wind farming. In the random group, those in favour of offshore wind are also most likely to be in favour of onshore wind and vice versa, although the overlap is much less pronounced than in the active group.

For those that hold consistent positions for or against both form of wind farming, it could thus be argued that some transfer of experience is taking place from the onshore to the offshore setting. 60% of the random group and 80% of the active group stated they lived in close proximity to a wind farm, suggesting that attitudes to onshore wind at least will be based on direct experience. Consistent positions, however, might equally indicate that views are based on principles, such as the view that no form of wind farming is worth the trade-offs that need to be made. Given the detailed arguments put forward above, it also seems clear that respondents do regard offshore wind farming as a separate and distinct activity from its onshore equivalent.

This was confirmed in question 14, which asked respondents to rank four different options for wind farming in order of preference. Although results are inconclusive due to the high rates of no answers given, results for the random and active groups are very similar (not shown in figure). What stands out most clearly is the high rate of respondents to whom no wind farming is the least preferred option (28% in the random and 25% in the active group), although no wind farming is also the favourite option for 16% (random) and 14% (active) of respondents. 16% (random) and 22% (active) picked both on- and offshore wind farming as their favourite option, indicating strong supporters of wind farming per se. The jury still seems out on whether onshore wind only or offshore wind only is the better option: Offshore wind only scores highest as the second best option, and onshore wind only scores highest as the third best option.

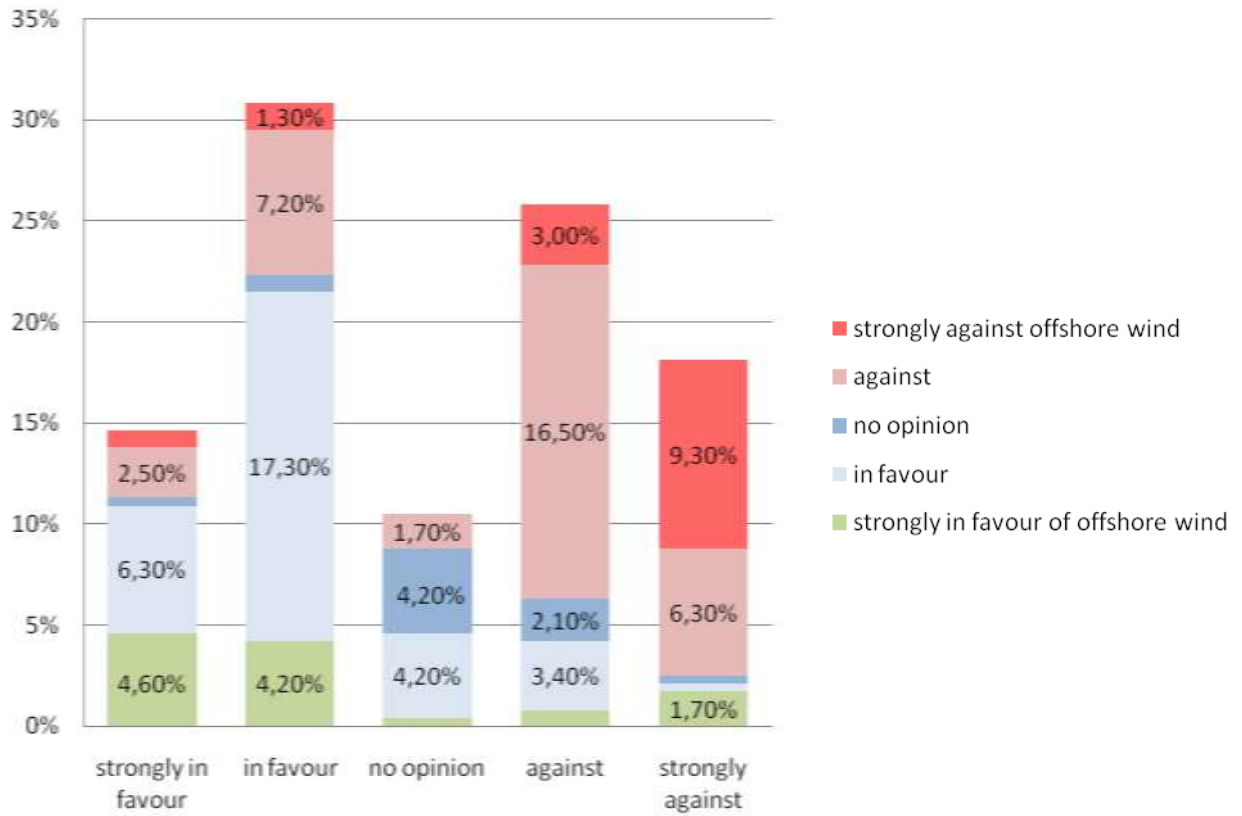


Figure 63: Attitude to offshore and onshore wind farming compared (random group, n = 245). x-axis: Attitude to onshore wind

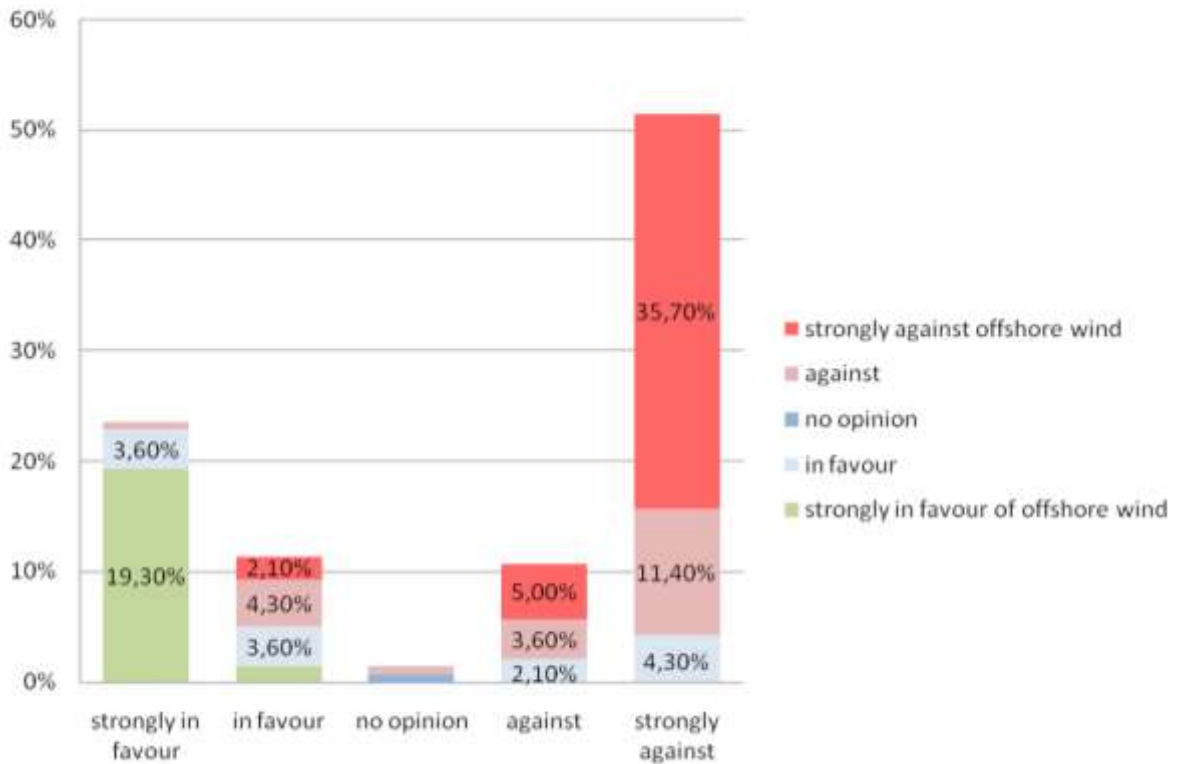


Figure 64: Attitude to offshore and onshore wind farming compared (active group, n = 142). x-axis: attitude to onshore wind.

6.2.8 Perceived alternatives to offshore wind farming

Another aspect that could influence attitudes to offshore wind farming is the availability of viable alternatives consistent with the respective value bases. A person strongly subscribing to the 'renewable energy' value base, for example, may still oppose offshore wind farming if they perceive other renewables to be more efficient or better placed to deliver the expected societal gains of renewables. Question 19 therefore asked respondents whether they perceived any alternatives to offshore wind farming, deliberately leaving open what kind of alternatives these would be. Analysing the entire sample together ($n=387$), it emerges that those strongly against offshore wind farming are also most likely to perceive viable alternatives to this technology. Alternatives were a mix of other forms of renewables, conventional forms of energy generation, and saving energy. Out of those strongly in favour of offshore wind farming, the share of those that saw no alternatives to offshore wind is slightly larger than the share of those that did, although this difference is marginal. Nevertheless, in about half the cases, strong support of offshore wind farming does not seem to be down to a mere lack of alternatives, which could have indicated support out of the feeling that this is the best option out of bad lot. Support seems to be due to dedicated reasons favouring offshore wind as a specific case.

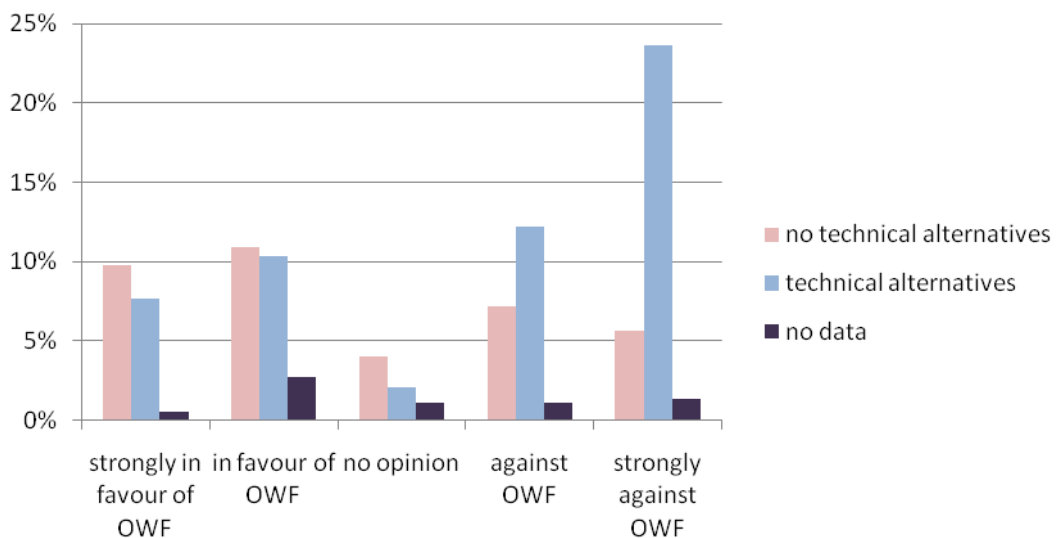


Figure 65: Percentage of respondents perceiving alternatives to offshore wind farming, shown against the general attitude to offshore wind farming. Random and active groups together, $N = 387$

6.3 Specific beliefs about offshore wind farming on the West coast and their relative importance

So far, this chapter has discussed general associations with and attitudes to offshore wind farming and explored selected influencing factors. It is now time to consider how the various specific beliefs about offshore wind farming are rated and how much these ultimately matter to the respondents.

In order to do so, the questionnaire provided a list of statements about offshore wind farming which brought together a range of aspects that could conceivably play a role. Each of these statements was directly followed by an evaluation question directly related to the statement (question 15). This gave pairs of questions such as “Offshore wind farming has negative impacts on West coast tourism” followed by “Tourism on the West coast is... to me”. The first question in each pair was rated on a five-point scale from “agree” to “disagree”, the second one on a five-point scale from “very important” to “not important”. The purpose was to test for discrepancies between the beliefs expressed in the first statement and the values reflected in the second. It could be, for example, that the majority of respondents believe offshore wind farming to have significant impact on the visual landscape, but that the visual landscape is not valued as particularly important. Such insights would be important to decision-makers and managers: The greater the estimated (negative) impact of offshore wind farming on a particular object of value, and the more important the object of value in question, the stronger the potential for rejecting offshore wind farming on these grounds. Since these are questions of principle the entire sample was analysed together in this instance rather than differentiating between the random and active groups. A total of 18 statements and values were analysed and then ranked in order of the respective levels of agreement (Table 23, Figures 66 and 67).

“Offshore wind farming only brings advantages to a few people” came out top of the list of offshore wind farming statements, with 45% of all respondents agreeing with this statement (Table 23). Only 21%, however, considered equal advantages from offshore wind farming to all to be a very important value, placing it 17th out of 18 value statements. However, 32% still considered this an important point, and only 14% considered it unimportant, meaning it still ranks as somewhat significant to the respondents.

Near the top of the table, a number of items ranked highly both as an offshore wind farming statement and underlying value base. Just under half of the sample thus share similar beliefs about offshore wind farming and also agree on the importance of a particular object of value. “(Offshore wind farming) destroys the particular attraction of the coastal landscape” and “destroys the characteristic look of the landscape” ranked 2nd and 3rd (with 45% and 44% agreeing with these statements, respectively), with the value statements “An attractive coastal landscape” rated as very important by 57% and 53% of respondents, respectively. Over 40% of respondents also agreed with the statement “(offshore wind farming) lowers the recreational value of the region (ranked 5th), compared to 57% considering the high recreational value of the region to be very important (ranked 3rd). Landscape values (including seascape values in this instance) and recreational values are thus confirmed to be important value bases, and are confirmed to be perceived as threatened by offshore wind farming. The belief that (offshore wind farming) “generates expensive electricity” was shared by 43%, (ranked 4th) but cheap electricity was only considered very important by 36% of the respondents (ranked 12th).

In terms of the value statements, “using taxpayer’s money and subsidies sensibly” came top of the list, with 66% of respondents considering this very important. 37% of the respondents agreed with the statement “offshore wind farms are a waste of taxpayer’s money and subsidies” (ranked 7th), although 21% disagreement with this statement is one of the largest shares of disagreement overall (Figure 66). On this issue, the community thus seems split, with about half considering

offshore wind farming to be a good use of taxpayer's money and subsidies and the other considering it money ill spent.

Table 29: Comparison of beliefs about offshore wind farming and the importance of objects of value (all respondents together (n=387), ranking based on the percentage of respondents in the categories "agree" and "very important", respectively)

Rank	Offshore wind farming...	Rank	Value statement
1	only brings advantages to a few people	17	Equal advantages from offshore wind farming to all is...
2	destroys the particular attraction of the coastal landscape	4	An attractive coastal landscape is...
3	destroys the characteristic look of the landscape	5	The characteristic look of the landscape is...
4	generates expensive electricity	12	Cheap electricity is ...
5	lowers the recreational value of the region	3	High recreational value of the region is...
6	creates intermittent energy only	14	Steady energy generation and feed-in is...
7	is a waste of taxpayer's money and subsidies	1	Using taxpayer's money and subsidies sensibly is...
8	causes property to lose value	13	Stable property prices are ...
9	has negative impacts on West coast tourism	15	Tourism on the West coast is...
10	is an uneconomical way of generating electricity	9	Generating electricity economically is...
11	creates social unrest	8	Social peace is...
12	is incompatible with nature conservation	11	Compatibility of offshore wind farming with nature conservation is...
13	has a bad energy balance	10	A good energy balance is...
14	cannot be combined with other uses	18	Co-use of offshore wind farms is...
15	leads to shipping accidents	2	Avoiding shipping accidents is...
16	does not create new jobs in the region	7	New jobs in the region are ...
17	represents (technological) progress	16	(Technological) progress is...
18	is not an environmentally friendly way of energy generation	6	Environmentally friendly energy generation is...

A close second in terms of the value statements is "Avoiding shipping accidents", which was considered as very important by 62% of the respondents. The belief that offshore wind farming causes shipping accidents, however, is not as widely shared as other beliefs; only 22% of respondents agreed and 13% somewhat agreed with the corresponding statement. 20% and 21% did not really agree or disagreed.

The belief that offshore wind farming leads to a loss of property values is shared more widely than the belief that it will have negative impacts on West coast tourism (ranked 8th and 9th).

Neither issue is valued as particularly important by the respondents, with “stable property prices” and “Tourism on the West coast” ranking 13th and 15th. Tourism is rated as very important by 31% of respondents, and as somewhat important by nearly 30%, indicating widespread awareness of tourism as an issue and one that is not to be neglected. 18% do not really agree that offshore wind farming will impact negatively on tourism, and 17% think it will not impact on tourism at all.

Of interest is the position of “offshore wind farming is incompatible with nature conservation”, which ranks 12th in the table. 26% agree with this statement, 18% somewhat agree, with 20% not really agreeing and 21% disagreeing. Equal shares thus believe offshore wind farming to be compatible with nature conservation. This could either indicate the belief that appropriate management measures can be taken to enhance compatibility (e.g. by appropriate siting of offshore wind farms), or indicate interpretation of ‘nature conservation’ in the sense of ‘clean energy’, meaning a form of energy generation that does not pollute the environment.

20% of the respondents agreed with the statement that offshore wind farming does not create any new jobs in the region. A greater share of respondents disagreed with this statement than agreed, however, indicating at least the belief in the job potential of offshore wind farming. This should be contrasted to an earlier result, which showed that economic growth in the region was rated as comparatively unimportant to the respondents personally (Tab xx). The community is thus capable of rather differentiated views, separating their general beliefs about offshore wind farming from the impact this might have on them personally and the desirability of that impact.

Offshore wind farming is not widely believed to represent technological progress, nor is progress considered to be particularly important. Last in the list of value statements is the issue of co-use, which is considered as very important by only 9% of the respondents and 19% as not important. 12% did not answer this question, indicating lack of knowledge or uncertainty with respect to the meaning of co-use. Last in the list of the offshore wind farming statements was “offshore wind farming is not an environmentally friendly way of energy generation”, which drew 19% of agreement and 30% of disagreement. Over half of the respondents believe offshore wind farming to be an environmentally friendly way of energy generation, compared to about 30% that do not or have some doubts. 51% consider environmentally friendly ways of energy generation to be very important and 38% important (ranked 6th), with only a very small minority not considering this important. This confirms earlier results that have shown widespread support of offshore wind farming on account of the fact it is a renewable form of energy generation.

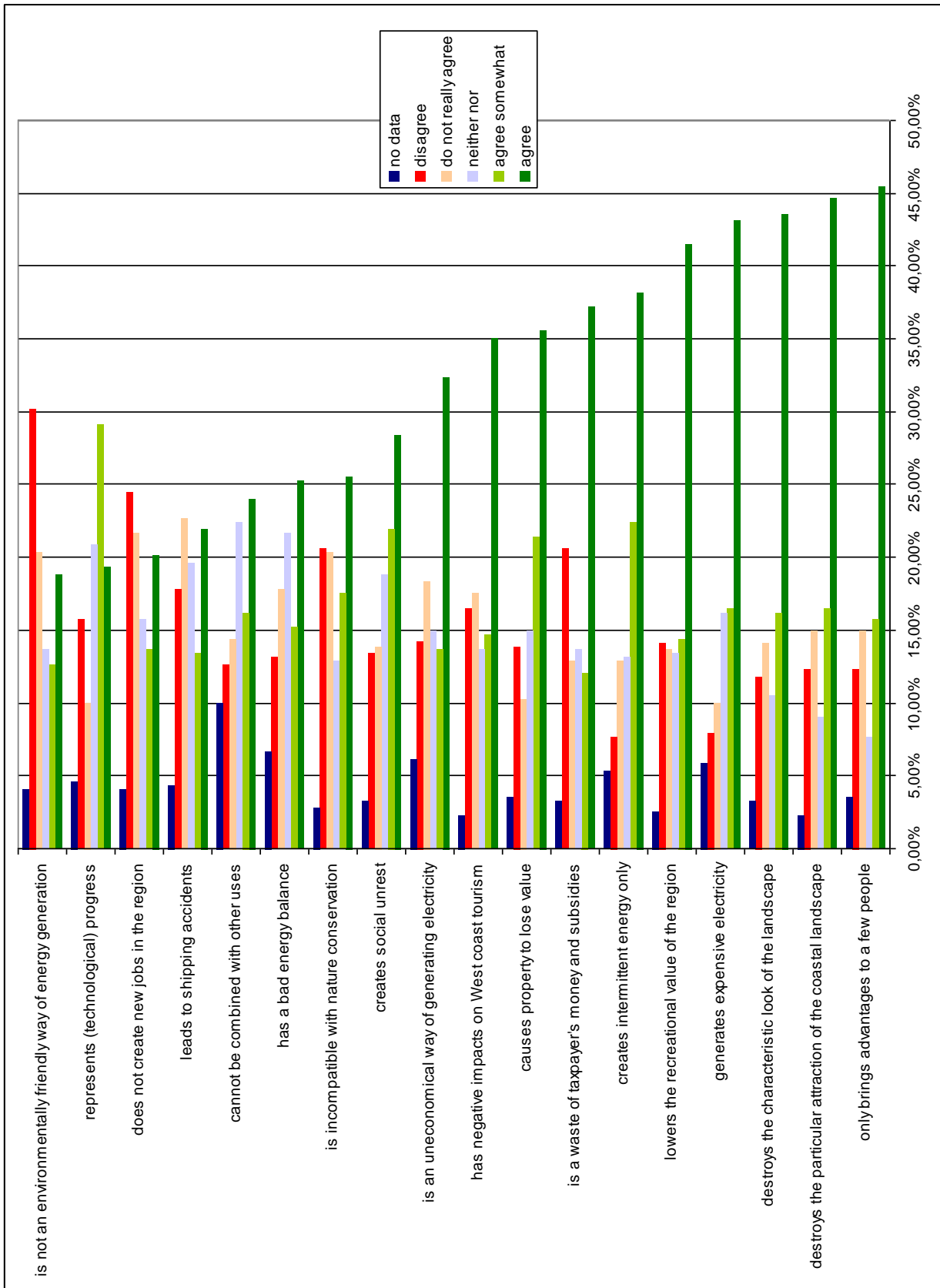


Figure 66: Beliefs about offshore wind farming: Percentage answers how offshore wind farming is expected to impact on objects of value. Random and active groups together, N = 387

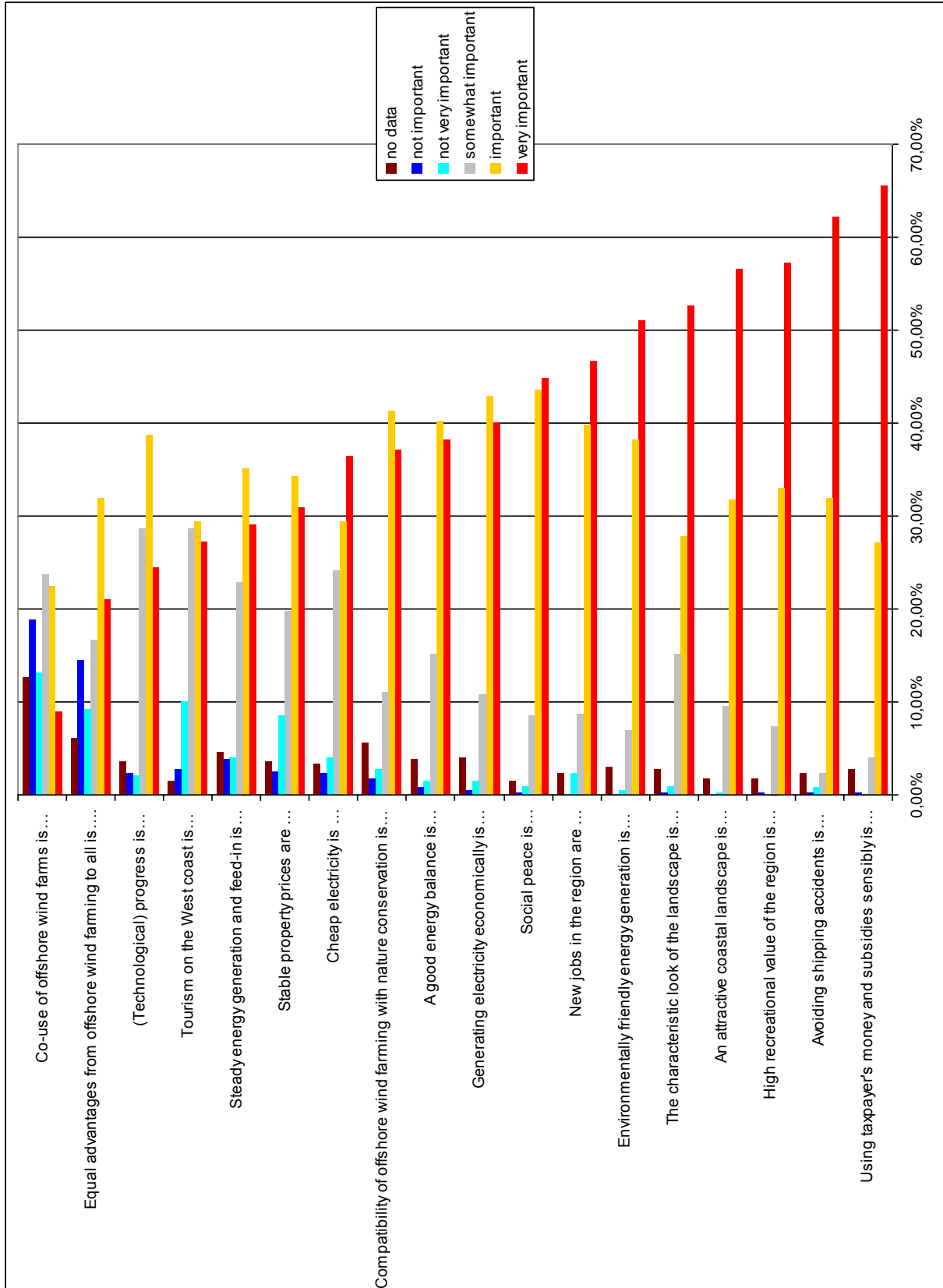


Figure 67: Percentage rating of the objects of value affected by offshore wind farming. Random and active groups together, N = 387

Given the sometimes rather complex questions above, a point of interest was how informed the respondents consider themselves to be on wind farming generally (both on- and offshore) and where such information might have come from. Question 16 asked whether respondents had come to their respective opinions on wind farming based on actual information or more based on a gut feeling (Figure 68). On the whole, the active group seems better informed than the random group, which is also confirmed in the next question, which asked whether respondents had ever attended any information event on wind farming (Figure 69). Both questions referred to wind farming generally and could be understood to mean both on- and offshore wind. This was done to include all those that feel well informed on wind farming generally, and did not exclude those who consider themselves less well informed on the specific case of offshore wind.

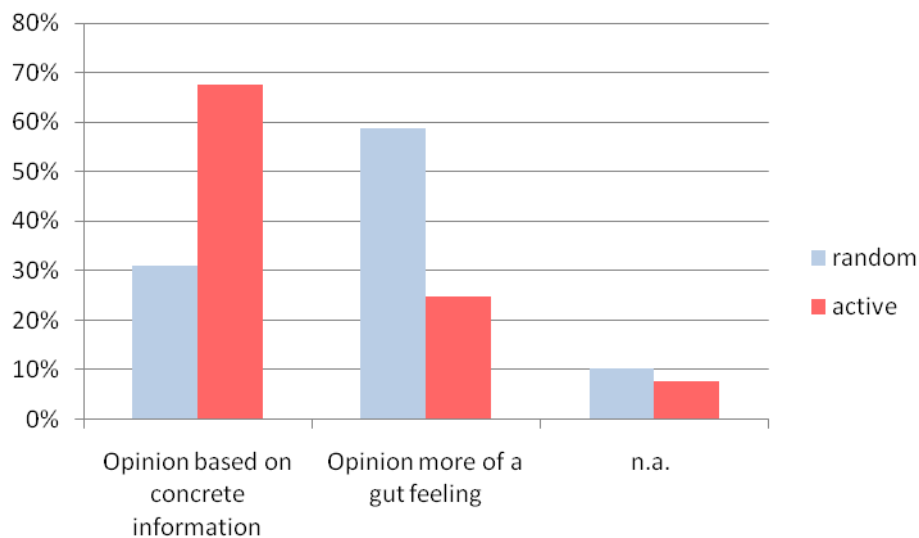


Figure 68: Percentage answers “Did you arrive at your opinions on wind farming based on actual information or more on a gut feeling?” (n = 245 (r) and 142 (a))

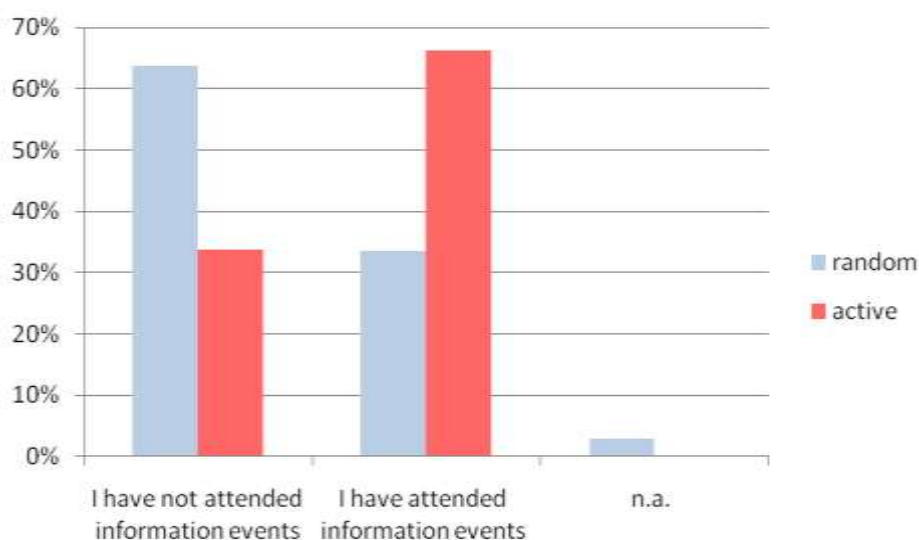


Figure 69: Percentage answers “Have you ever attended any information events on wind farming?” (n = 245 (r) and 142 (a))

Information about wind farming can be derived from many different sources, including word of mouth, newspapers, information events, the internet etc. A media analysis of local newspapers (Fuchs 2006) concluded that wind farming, and specifically also offshore wind farming, was indeed present in newspaper articles and discussions, although it was largely reported in an uncritical manner focusing mostly on the purported opportunities presented by an expansion of wind farming. Risks or fears such as those voiced by the respondents in this survey were only mentioned rarely, with the exception of the initiative “Gegenwind” (anti-wind) which is a strong voice on the island of Sylt. The opportunity to learn about offshore wind farming, or at least to be aware of the debate, therefore exists even for those who do not explicitly seek such information, for instance by attending events or through membership in any organisations or NGOs.

Rather than asking specifically which information sources had been used in forming an opinion, the questionnaire referred to the general trustworthiness of different sources of information. Respondents were asked to rank a series of potential information sources in the order of their perceived reliability, using a scale of eight from “absolutely trust” to “do not trust at all”. In both groups, what emerges most clearly is the widespread perception of politicians as untrustworthy and the perception of scientists as highly trustworthy (Figures 70 and 71). There is also some skepticism towards the information provided by wind farm operators and turbine manufacturers. Nature conservation organisations, the Federal Ministry for the Environment and the local district administration are also not entirely trustworthy, although opinions are more in the undecided region of the scale. Results in the active group are more pronounced overall but follow this trend. What is noteworthy is the lack of trust in the local district administration, which the majority somewhat trust but some also do not trust at all – perhaps a reflection of past experience of the administration and a perceived lack of impartiality.

6.4 Summary of results

What, then, does the above tell us in relation to the cognitive belief framework proposed in chapter 4 and with respect to different types of offshore wind farming opponents and supporters?

6.4.1 Objects of value and assigned values

Associations with offshore wind farming and the reasons given for supporting or opposing offshore wind farming on the West coast have given insights into the specific value bases associated with offshore wind farming. These can be summarized as energy values, economic values and technology values. Energy values are understood as the values assigned to offshore wind farming on account of the type of energy generation it represents. Technology values are the values assigned to offshore wind farming on account of the technology associated with offshore wind farming. Economic values are the values assigned to offshore wind farming on account of the monetary value it may generate.

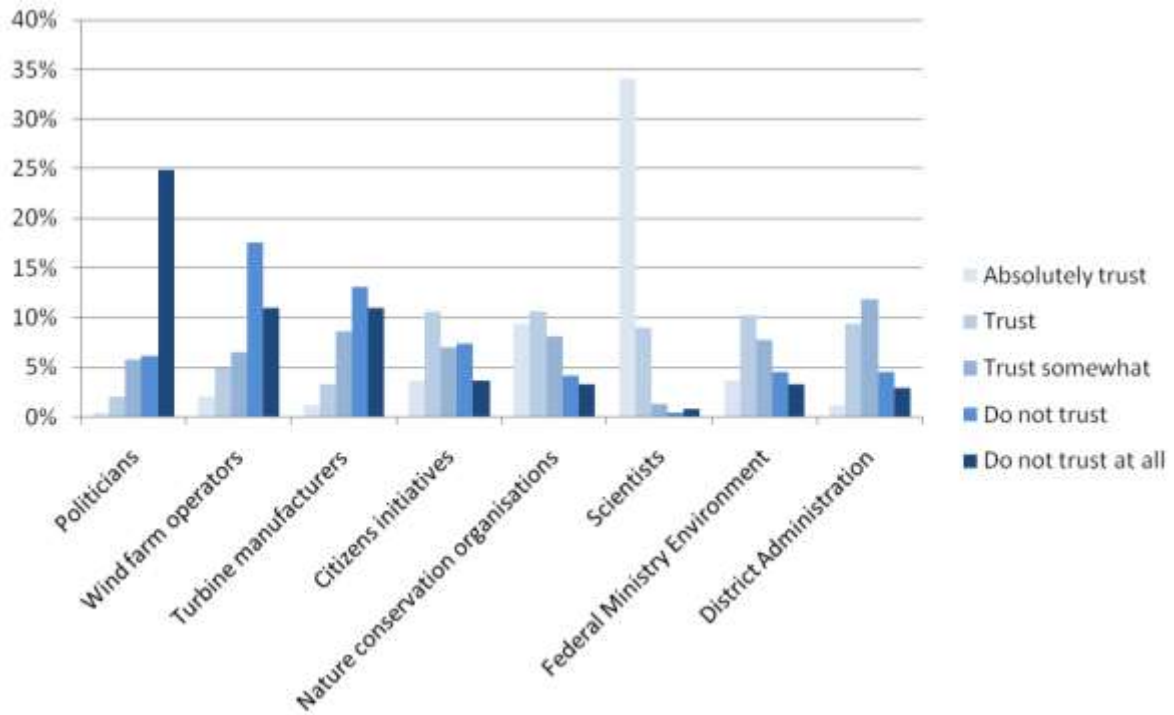


Figure 70: Percentage answers trustworthiness of different sources of information (random group, n = 144; 101 had not provided any data)

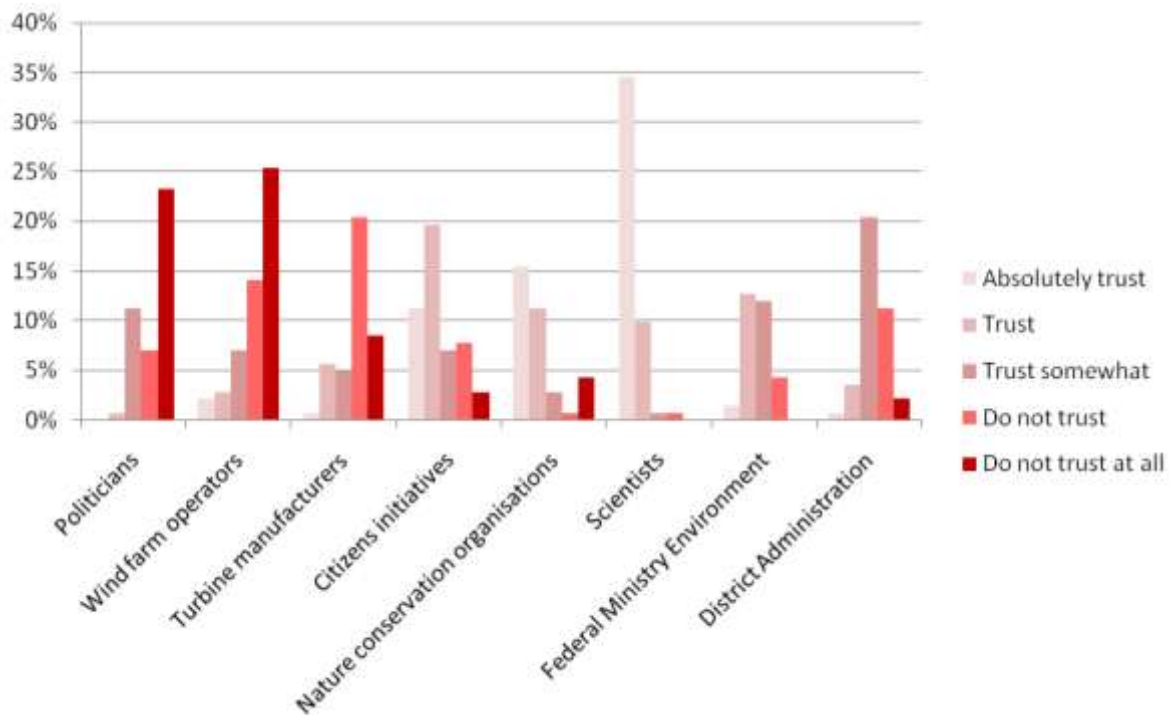


Figure 71: Percentage answers trustworthiness of different sources of information (active group; n = 94, 48 had not provided any data)

Energy values emerge as the most prominent, while technology and economic values associated with offshore wind farming rank comparatively low. In the case of energy values, the object of value is renewable energy. This object is assigned value because of the immaterial benefits it is perceived to yield both to the respondents individually and to wider society. Bequest value comes into play as the immaterial benefit obtained from offshore wind farming is a reduction of pollution, which in turn leads to a cleaner, safer and more worthwhile living environment in the future. This particular value assigned to offshore wind farming is rated very important by the respondents (Table 31).

In the case of economic values the object of value is the direct profit that may be obtained from offshore wind farming in terms of job creation and income. This is a form of direct use value, although only few respondents appear to be truly convinced of its existence. The same applies to technology, where the object of value is technological progress. This is a direct use value which applies to wider society and not one that necessarily applies to the respondents themselves. It also carries elements of indirect use value and immaterial societal benefit in terms of appreciation of and pride in technological progress (Table 31).

Table 31: A typology of offshore wind farming values and the overall rating of these values

Value base (offshore wind farming)	Objects of value	Assigned value	Rating
Energy value	renewable energy	bequest value: immaterial benefits to self and society	high
technology value	technological progress	direct use value, indirect use value: material and immaterial benefits to society	low
economic value	employment, income	direct use value: material benefit to self and society	low

The objects of value identified for offshore wind farming are available for trade-off against the objects of value identified for the sea. The main trade-offs appear to be between offshore wind values and aesthetic seascape values, aesthetic landscape values, symbolic sea values and (marine) nature conservation values (Table 32). Aesthetic seascape values feature very strongly in this trade-off, as these are put forward as one of the main arguments against offshore wind farming, but so do symbolic sea values and the value assigned to the natural marine environment. Overall, the seascape reveals a greater diversity of values that are rated as important by the respondents, indicating that the seascape is valued highly for several reasons. Offshore wind farming, in turn is only valued highly because of one key argument, which is the renewable energy argument. On average, only energy values are able to hold their own or even win out against the range of seascape values. Opponents to offshore wind farming thus assign higher value to seascape values than to offshore wind farming values while the reverse applies to supporters of offshore wind farming.

Table 32: A typology of seascape values and the overall rating of these values

Value base (seascape)	Objects of value	Assigned value	Rating
aesthetic values	visual manifestation of the seascape	bequest value, indirect use value, use value: immaterial and material benefits to self and society	high
symbolic values	the sea	indirect use value, bequest value, immaterial benefits to self and society	high
nature values	flora, fauna, nature	indirect use value, bequest value: immaterial benefits to self and society; intrinsic value	high

6.4.2 Links to basic human values

Four value groups can be identified in the respondents, each characterized by a different trade-off between the respective value bases outlined above and different preferences for offshore wind farming. This grouping is also interesting because it shows the differences arising from different combinations of basic human values and assigned values.

The first group is the value group “*principled supporters of renewable energies*”, which shows mostly positive associations and a strong preference for offshore wind farming. This group is characterized by the general belief that renewable energies are a desirable thing, which translates into high assigned value of offshore wind farming as a means of delivering this. Believing renewable energies to be a desirable thing can be linked to the basic human values discussed in chapter 4, in particular the value base of universalism, which is motivated by the survival need of the group and concerned with the welfare of all people as well as nature. In this case, universalism translates into the desire to benefit society as a whole and to achieve intergenerational justice by means of achieving a cleaner, less polluted planet. There is also a close link to ‘oughtness’ as a moral value base, which drives the conviction that offshore wind *should* be supported because it is the least harmful means of energy generation. The expected gain is only indirectly a personal one; in this value group, societal and long-term benefits are placed above any immediate benefits or personal gains that might be obtained from preferring other value bases.

The second group is the value group “*landscape lovers*”. Although the respondents in this value group do support offshore wind farming, their preference for offshore wind farming does not arise from outright choice, as is the case with the principled supporters. Rather, support arises from the desire to preserve and even strengthen other values, in this case the coastal landscape values. Landscape values are indirectly associated with offshore wind farming in this instance in that they become the object that is traded against seascape values. Those assigning high value to the

coastal landscape do not object to wind farming in principle, but they do regard landscape values as more important the instant the sea becomes available as a convenient alternative setting. Two aesthetic value bases are therefore weighed against one another, with the outcome indicative of a possible NIMBY syndrome (not in my backyard) or simply greater immediate appreciation of the landscape rather than the (more remote) seascape. No moral imperatives can be identified in this value group, which seems motivated by personal immaterial gain only.

The third value group is the value group "*Sea value lovers*", which prefers symbolic and aesthetic seascape values to any offshore wind farming values. Although there is recognition of the moral desirability of renewable energies, sea values are valued much more highly based on rarity value. This value group also believes there are alternatives to offshore wind farming, which means they do not see the need to trade sea values against renewable energy goals. Aesthetic and symbolic sea values are considered fragile in this group and threatened by offshore wind farming; once lost, they cannot be recouped. This value group is composed of a mix of immaterial and instrumental values. Whilst some apply the moral 'oughtness' argument to the sea, stating these values should be preserved as a matter of principle, others argue from the point of view of personal gain in terms of the pleasure obtained from experiencing the sea in a particular form.

The fourth group is the value group "*principled nature conservationists*", which is the group with the lowest level of preference for offshore wind farming. Similar to the value group "sea value lovers", the sea is considered a unique natural value base; this is combined with the belief that offshore wind farming will be harmful to this value and the moral precept that the marine environment must be protected. Immaterial sea values play a strong role in the trade-off, which are considered much more important than offshore wind farming values; there is also a strong sense of 'oughtness' applied to the sea and its inhabitants. As in the category "principled supporters of renewable energy", links become apparent to the basic human value of universalism, although it is expressed here as benefiting the environment rather than wider society. This holds an important lesson, which is that the same basic human value can lead to the expression of different value preferences, depending on whether nature or society is accorded preference. In the active sample, links also become apparent to images and beliefs about nature. Those expressing strong opposition against offshore wind farming are mostly of the opinion that nature is ephemeral, which is the view of nature as fragile and limited, or that nature is capricious, which views nature as inaccessible and difficult to control. Nature ephemeral goes with the view that nature needs to be protected, whilst nature capricious goes with the view that negative human impacts should be avoided because the consequences are impossible to predict. Both general beliefs about nature can explain the high assigned value to marine nature conservation values. In conjunction with the value orientation of universalism, this may explain why nature conservation values are placed up and above any benefits that may be had from offshore wind farming in this value group.

The trade-offs between offshore wind farming values and sea values can be summarized as follows (Figure 71):

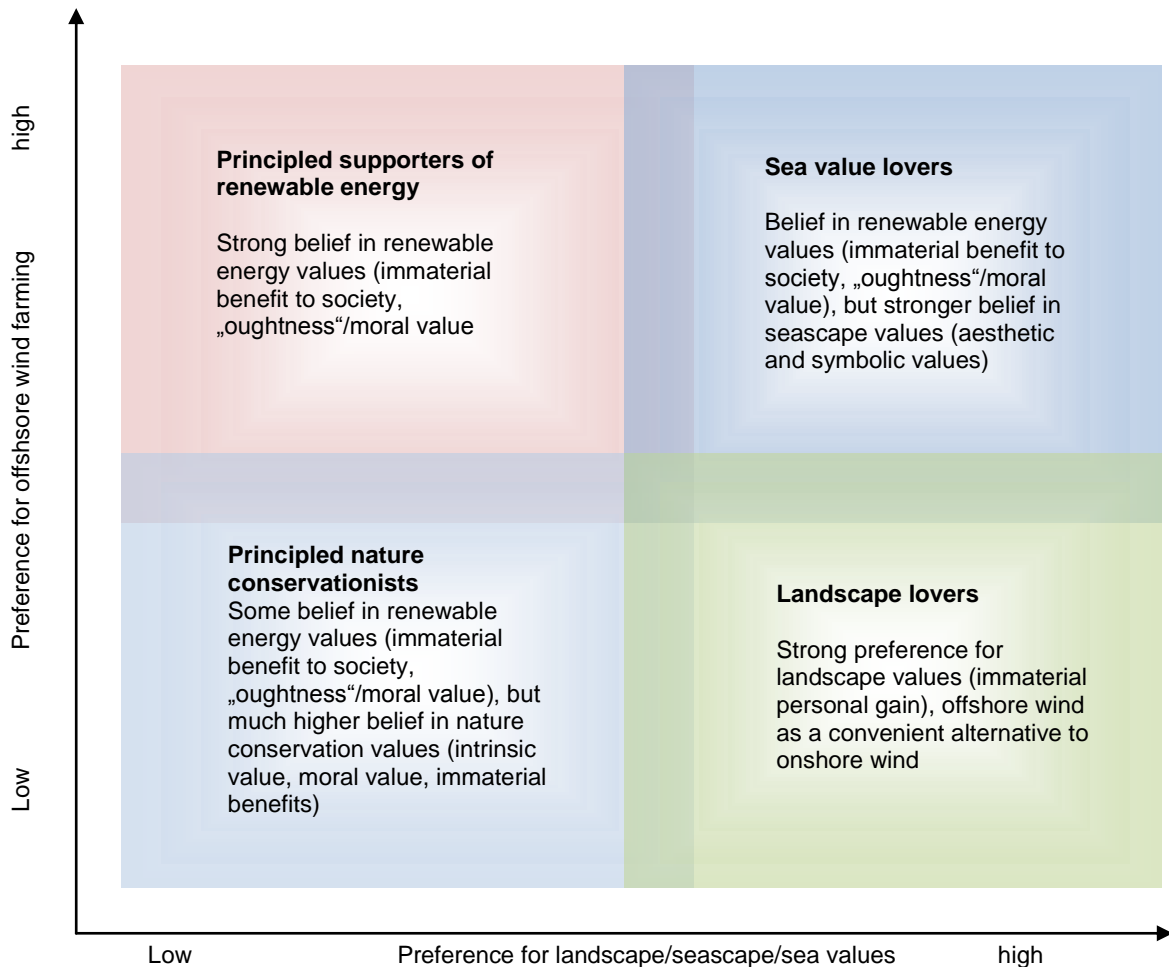


Figure 71: Value groups identified in the respondents

6.4.3 The group of strong active opponents

Throughout the survey, the active group has stood out on account of more pronounced values and opinions. This is particularly true for opponents of offshore wind farming in the active group which appear to base their attitudes to offshore wind farming on a specific collection of values. Although the sample size of the active group is relatively small, 52% classed themselves as strong opponents of offshore wind farming, which is a reasonable group size for drawing some general conclusions, in particular since both island and mainland residents make up this subgroup to an almost equal share.

Generally speaking, the active sample is more consistent in that a negative general disposition to offshore wind farming more readily goes with opposition to offshore wind farming in the case study region. They also feel much more readily affected by the prospect of offshore wind farming, which may go some way towards explaining the more emotional responses to offshore wind

farming that were received from this group. The active group seems to find no form of wind farming entirely convincing, meaning there is no reason for them to trade wind farming against the more precious sea values or nature conservation values. Strong opponents of offshore wind farming in the active group were shown to subscribe to different general beliefs about nature, which could be one of the reasons why nature conservation values are rated so highly by this group. Fig. x has shown that the fear of losing marine conservation values (which are assigned non-instrumental or existence value) is the most important driver of opposition in the active group, in contrast to the random sample where opposition to offshore wind farming is more strongly driven by fears of losing seascape values (which are assigned instrumental values).

The active group also considers itself to be more informed about offshore wind farming. In the case of opponents, this may have confirmed some previous concerns and make people more ready to state their sometimes strong views.

6.4.4 The role of the seascape as a value base

Although nature conservation values came across strongly as a basis for rejecting offshore wind farming in the case study area, it is the aesthetic seascape values that matter most to opponents overall (Figure 50) as the characteristic look of the seascape was rated as particularly threatened by offshore wind farming. These same aesthetic values were assigned high instrumental value, mostly expressed as the immaterial benefits that can be derived from them. A key benefit is the pleasure to be obtained from looking out to sea (the wide, open horizon); others include the pleasure derived from recreational pursuits or the inspirational value of the seascape. A similar value base can be made out for symbolic values assigned to the sea, although these are less widespread in the trade-off between sea-based values and offshore wind farming values.

6.4.5 The role of perceived threats in bringing out the importance of values

An important conclusion is that the assigned values for the landscape, the seascape and the sea only truly emerge when confronted with a perceived threat. Although respondents characterized the seascape as important in its own right in terms of the immaterial benefits it yields, the significance of these values only becomes apparent when they are forced to weigh them against another value base. Attachment to values, in this case place-based values, is thus only revealed when there is a threat of losing these values. The same applies to nature. There is strong belief that the sea should be protected for the rare intrinsic values it possesses (including those assigned to nature) and the rare immaterial experiences it can still offer to humans because of non-use values, bringing to the fore “ought” values and awareness of certain beliefs which would otherwise remain hidden. It is not surprising therefore that the high assigned value for the landscape, the seascape and the sea link back to the strong value assigned to nature identified in chapter 4.

7 Summary of results

The purpose of this study is to explore the attitudes of local residents on the West coast of Schleswig-Holstein to the prospect of offshore wind farm development “in their backyard”. Given that no offshore wind farms have so far been built, results are explorative, focusing on the expected impacts of offshore wind farming on key values on the Schleswig-Holstein West coast rather than actual experience. In addition to quantitatively assessing the share of opponents and supporters, the aim of the study was to highlight the reasons for rejecting or accepting offshore wind farming on the West coast of Schleswig-Holstein.

As set out in chapter 3, the study was based on a problem-oriented questionnaire survey carried out in selected municipalities in Dithmarschen and North Frisia. The sample (N=387) was divided into a random group (n=245) and an active group (n=142) which formed the basis for comparative analysis. The relatively small sample size is a weakness of the study in that it limited the possibility for quantitative statistical analysis. However, the primary focus of the work presented here is proof of concept, setting out a means for tracing the qualitative links between held values, beliefs and landscape-based and offshore wind-related values.

Following a brief reminder of the key socioeconomic characteristics of the case study area, this chapter brings together the empirical results under the following headings:

1. Seascape values as a basis for the evaluation of offshore wind farming,
2. Gains and losses expected to result from offshore wind farming in the case study area,
3. The added value of the cognitive belief framework in exploring attitudes to offshore wind farming.

7.1 Key socioeconomic forces at play in the case study area

The administrative districts of Dithmarschen and North Frisia were chosen for this case study because of contradictory driving forces at play. It is worth recalling some of these as they provide some essential external context to the study.

The first aspect is that in both Dithmarschen and North Frisia, ‘traditional’ landscape and seascape assets play a key role as instrumental and non-instrumental values, not only generating revenue for tourism but also contributing to resident’s perceived quality of life (Busch et al. 2011). In terms of market values, much effort goes into crafting the region’s image as a rural coastal holiday destination ‘away from it all’: Dithmarschen for instance is marketed as “water, wind and a wide-opened countryside [sic] - where the gulls screech and the fresh sea breeze fills your lungs, where you can take endless walks on our green dykes or in the mudflats [...]” (www.dithmarschen-tourismus.de, last accessed November 2011). Nevertheless, the visual appearance of the classic West coast landscape has changed significantly over recent years. The agent responsible for this change is onshore wind farming, which has brought much needed income for local communities and farmers but arguably also detracted from the very qualities that allow the region to market itself as it does. Interestingly, it is mostly local residents who perceive

this as a negative change, with no direct impacts noted in terms of visitor numbers (see also chapter 3).

The second aspect is the duality inherent in the remote location of the case study region. On the one hand, the region is structurally weak, located some distance away from metropolitan areas and important transport corridors. Young people in particular suffer from a lack of infrastructure (e.g. tertiary education) and job opportunities, so that attracting new forms of (qualified) employment would go some way towards halting the gradual population decline that is noted in the younger age groups. On the other hand, the region is conservative at heart, still largely relying on traditional values in shaping its future. Although the State of Schleswig-Holstein has made considerable efforts to promote maritime industries, the West coast has not been able to capitalize on this, so that other coastal regions in Germany (including some with better prerequisites such as large sea ports) have been able to attract the larger share of industries such as offshore wind farming and the associated servicing industry. Even if large-scale offshore wind farms were to be built off the North Frisian and Dithmarschen coast, it is therefore questionable whether the region could still draw direct economic benefits from this.

The third aspect is the duality inherent in the desire to play a more active role in shaping the future. On the one hand, the region, and in particular the islands of North Frisia, are keen to develop a joint profile within the larger context of EU regions (Bruns & Gee 2010). On the other hand, the region's communities retain a certain insular mentality. This is closely linked to a strong sense of independence and the desire to live a self-determined life which is not subject to any outside direction. Local residents take pride in their traditions, and place attachment is high both in long-term residents and more recent arrivals. Results of the survey show the quality of the landscape, the proximity of the sea, and the rural character of the region 'away from the hustle and bustle' of more urban regions to be important elements of place attachment.

The contradictory pull of these external and internal forces implies there can be good reasons for local residents to support or object to offshore wind farming.

7.2 Conceptualisation of the seascape

A key question in this study was whether a special relationship can be shown to exist between seascape values and attitudes to offshore wind farming. With respect to the sea as a setting, two possibilities were postulated. One was that local residents regard the sea as a convenient setting and good alternative to wind farming on land. In this case, the sea would have been a more or less abstract mental category of no outstanding value, but available as an alternative space to be given over to wind farming in order to save the landscape from becoming despoiled. The other was that local residents consider the sea valuable in its own right and that it holds distinct meanings potentially related to sense of place. These values would probably be less easily traded, even if the expected benefits of offshore wind farming were considerable.

A key outcome of the study is the differences in perception between the conceptual entities of 'sea', 'North Sea' and 'West coast of Schleswig-Holstein' (chapter 5). A specific set of sea values could be identified (sea and North Sea), which are linked to but distinct from the land-based

landscape values (West coast of Schleswig-Holstein). The highly differentiated perspective on 'sea' and 'North Sea' offered by the respondents makes clear that both entities are carriers of multiple values, perceived as they are both as a tangible physical place, a place of particular experiences and an emotional construct. Of particular importance is the sea/North Sea as a natural space and the 'sea of the imagination', which clearly springs from daily experience with the sea and memories of past experiences. As a result, the sea is not simply an abstract space which is conveniently available for offshore wind farming, but a valuable entity in its own right. The sea is a place which is entirely on a par with the landscape on the other side of the shoreline.

Using categories drawn from landscape research, it is apparent that a wide range of objects are perceived as of value in the sea. Different degrees of value are then assigned to them (from highly valuable to not very valuable). Assigned value – the degree of importance of objects perceived – was identified in the following categories:

- physical objects or things in the environment (such as the elements of the man-made or natural environment),
- the benefits that can be derived from the environment (such as aesthetic experiences, recreational experiences, or tranquility),
- the meanings ascribed to what is perceived (such as symbolic interpretations of the sea).

Conceptually, it becomes clear that 'seascape' is constructed much like 'landscape', incorporating the same fundamentally different ways of seeing as 'landscape' does. A planning-oriented view for example regards the seascape as a material, tangible piece of sea, which is made available to management approaches by means of (often administrative-based) delineation. But the seascape is also the "external world mediated by human experience" (Cosgrove 1984), a body of symbolic forms that can be invoked to express meaning and values. Although there is a fundamental difference to the landscape in that the sea is not inhabited – and therefore not man-made or shaped to the same degree as the land – the seascape is more than a prospect. Just like landscape, seascape is a concept that brings together the full range of sea uses, natural habitats, site conditions, flows, and manifestations of the water.

To date, 'seascape' has often been used to describe the specific visual-aesthetic qualities of the sea. The results obtained here underline the inadequacy of this one-dimensional use of the term. 'Seascape' needs to be re-defined as an entity that encompasses exactly the same dimensions as landscape. The physical properties of the environment (the material perspective and form of the sea), the aesthetic qualities of the seascape (the immaterial perspective) as well as the internal perspective, the 'sea of the mind' and meanings assigned to the sea, are suggested as key categories for capturing the entirety of what is seascape (Figure 72). Through its combination of the physical and aesthetic seascape and seascape of the mind, such a new theory of seascape is well suited to showing the range of objects of value associated with the sea. It should also be noted that landscape and seascape cannot be readily demarcated in a coastal setting as both have constituent elements of the other, as was shown for North Sea and West coast in the case study region.

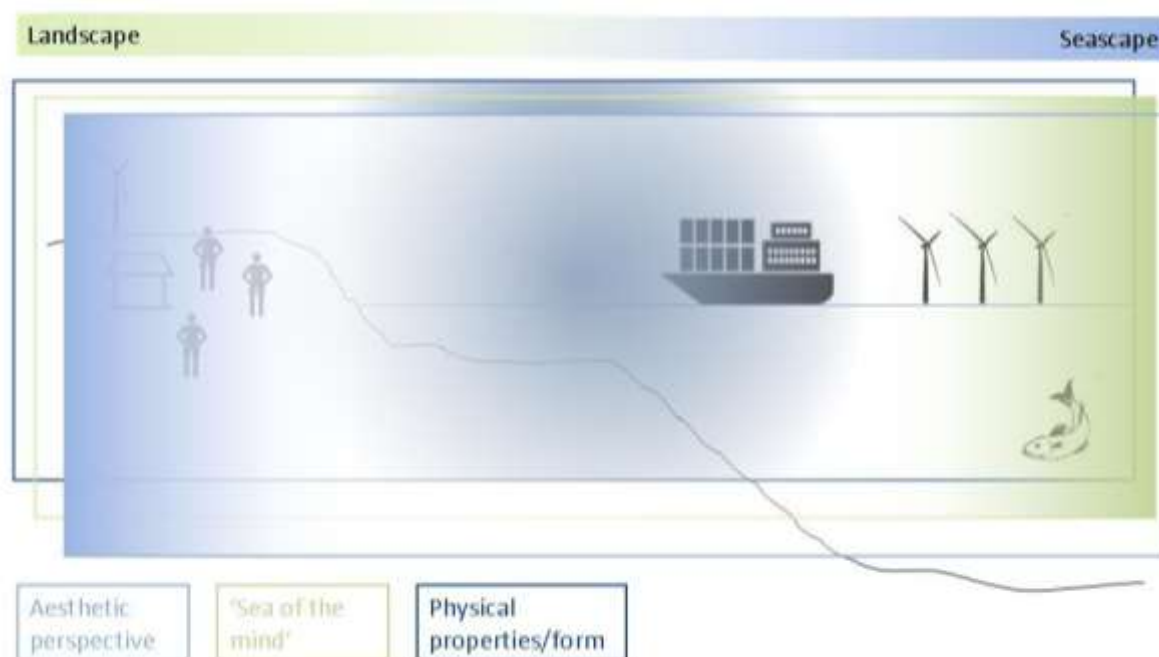


Figure 72: Physical properties, the aesthetic experience and the seascape of the mind as overlapping constituent elements of the seascape. Landscape and seascape have no clear demarcation, but merge into one another.

Results also show the appropriateness of sense of place experiences when discussing the sea. Results from the category 'North Sea' demonstrate the role of the physical properties of the seascape in producing meaning and reflecting back on sense of place experiences (Stedman 2003). These experiences are quite specific for the North Sea and distinct from those of 'sea'. The physical characteristics of the seascape and the special qualities of the North Sea environment clearly shape the place experiences obtained from the North Sea, as well as the aesthetic experiences available of the seascape in the case study region. The specific qualities of the North Sea, such as the storminess of the North Sea, or the specific shallow Wadden Sea environment, or the living worlds on the islands, encourage certain behaviours (such as dyke building as a means of reducing risk, or certain traditions such as land reclamation and maintenance), which in turn influence the meanings that constitute sense of place in the case study region, including for instance pride in past achievements, a distinct community spirit, or the unquestioned importance assigned to ongoing coastal defence.

Differences in how the landscape, the seascape and the sea are constructed underscore the differentiated perception of the environment by local residents. In order to understand the delineation of sea-based and coastal values, it is therefore important to carefully differentiate between the three categories.

Unsurprisingly for a sample of coastal residents who are surrounded by a maritime setting every day, all three categories were strongly associated with the constituting physical elements and properties of the environment. 'North Sea' was most strongly associated with the immediate and tangible elements of the environment, such as dunes, water, waves or wind. 'Sea' in contrast was least associated with this category, indicating the possibility that 'sea' is more of an imagined

entity, a mental concept rather than a 'real' experience. 'North Sea' can therefore be classed as a local manifestation of 'sea', which is why the values expressed here can be considered local rather than general values. 'North Sea' scores moderately across all value categories with the exception of the physical environment, whose overall importance is not surprising given the direct experience of the this environment in the region. 'North Sea' is also more readily associated with habitat value than the other two categories, possibly as a result of the Wadden Sea National Park on this coast and ability to experience wildlife such as migratory birds and seals first hand. Visual properties only score moderately importantly, although 'North Sea' is also readily linked to the sense of home, indicating it is regarded as part and parcel of people's living environment.

'Sea' generally was strongly associated with both visual and non-visual aesthetic sea experiences and the (recreational) activities and benefits obtained from experiencing the sea. At the same time, 'sea' scores comparatively low in the category of 'home', which confirms it as the least 'local' of the three categories. This is not to say that 'sea' is not grounded in the tangible environment, merely that this environment is readily overlaid with meaning in a manner that is less apparent for the other two categories. Given that most residents will have had direct experience of the North Sea, possibly also unpleasant experiences such as storm surges, it is not surprising that views of the North Sea are less mystical. At the same time, this result underlines the importance of the sea as a foil for the imagination. The sea is a place for dreams, ideals and exploring unknown depths, which makes it an unparalleled source of inspiration and felt quality of life. This makes 'sea' a category laden with meaning and full of intangible values, much more so than the other categories. These intangibles have impacts on attitudes to offshore wind farming.

'West Coast' scores highest for Heimat-related values (a sense of home, local distinctiveness) as it is clearly more of a living environment than the sea. As such, it also comprises values related to the social environment such as family values, or descriptions of the specific character of local communities, as well as place-based values. 'West coast' also scores comparatively highly for visual aesthetic values, which could explain the trade-offs that were found between onshore and offshore wind farming.

Results make clear that 'sea', 'North Sea' and 'West coast' are constituted based on the same range of values, but differ in how these values are assembled. 'Sea' for example comes closest to representing a true landscape of the mind in that it carries a wide range of symbolic meanings indicative of the imagined rather than direct experience. 'North Sea' and 'West coast' are more indicative of direct tangible experience of the local physical environment.

7.3 Perception of offshore wind farming: Revisiting the hypotheses of the study

Chapter 3 set out the mental process that leads to the formation of an opinion on offshore wind farming. Essentially, this can be broken down into the following two stages: (1) Making assumptions about the likely impacts of offshore wind farming based on what is believed to be true about offshore wind farming, and (2) evaluating the desirability of these impacts based on existing values and beliefs. Figure 73 shows the two stages of the decision-making process. At the top are the beliefs residents hold about offshore wind farming, which essentially translate into a range of expected impacts of offshore wind farming. These in turn can be linked to the

assessment of the expected gains and losses resulting from offshore wind farming. At the bottom are basic human values and other beliefs and values such as sea values and values associated with nature, which influence the desirability of the changes associated with offshore wind farming. The combination of these factors leads to a decision on whether offshore wind farming is considered desirable or undesirable in the West coast context.

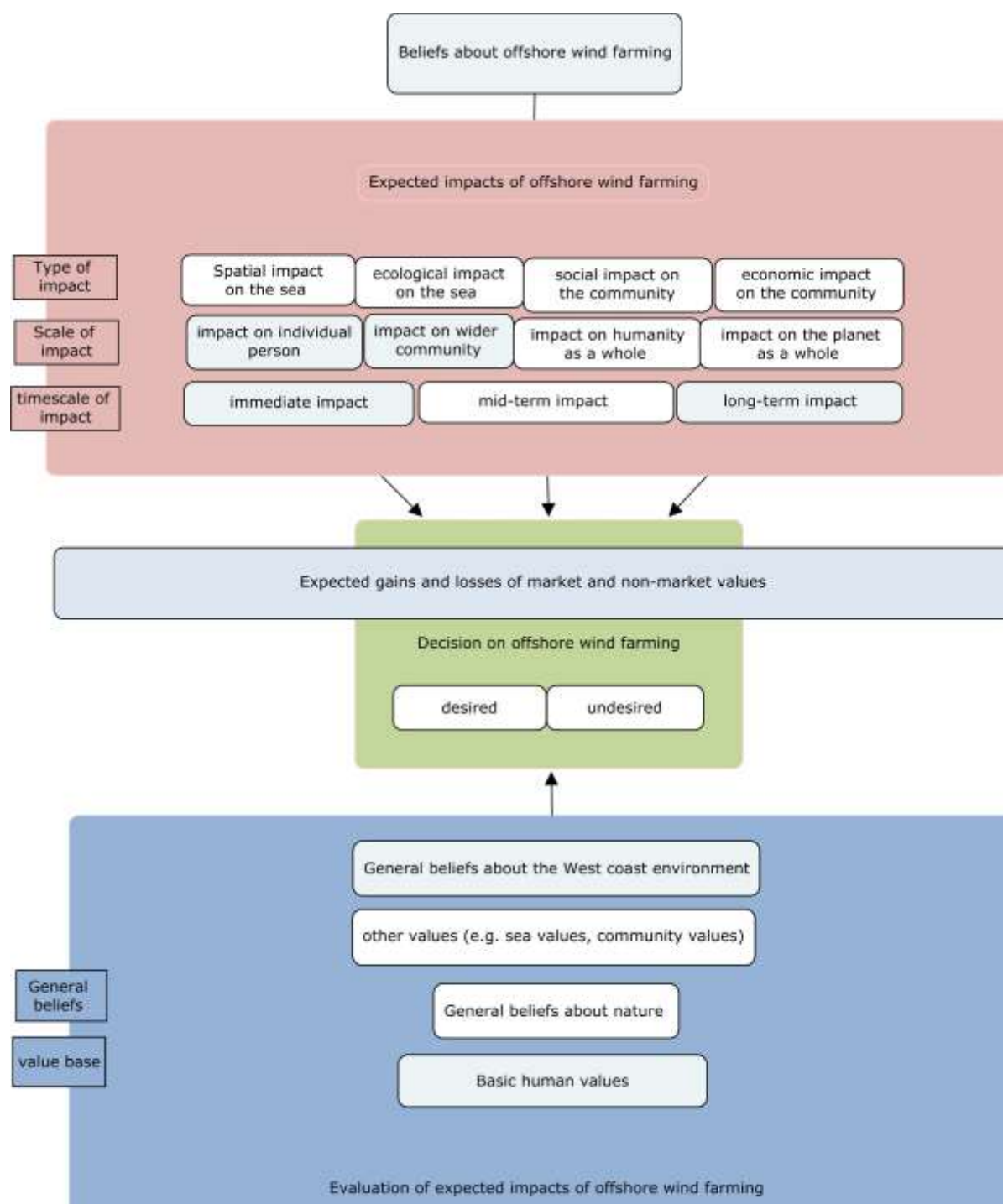


Figure 73: Stages in the formation of an opinion on offshore wind farming

7.3.1 Assessing the expected impacts of offshore wind farming

a) Pre-existing knowledge

The evaluation of expected impacts of offshore wind farming is grounded in the pre-existing knowledge of individuals of offshore wind farming (understood here to mean what people believe to be true about offshore wind farming). Knowledge can be obtained from various sources. Residents may have factual knowledge (e.g. knowledge on where the proposed wind farms will be located), anecdotal information (e.g. an article read in the local newspaper), or information put forward by a particular group (e.g. a nature conservation organisation, a local politician, a wind energy company). Apart from general affinity to a particular group – e.g. membership in a nature conservation organisation - trust in the various sources of information plays an important role in the acquisition of information. The study has shown that different sources of information are of varying trustworthiness to the local residents (chapter 6), with nature conservation organisations enjoying a particularly high relative level of trust and local politicians enjoying comparatively little. Lack of trust may go some way towards explaining the fact that local residents do not seem to place great faith in the potential of offshore wind farming to generate local employment, which is often promoted as an advantage by local politicians and other group stakeholders (Table 35). All those surveyed do seem to arrive at an opinion on offshore wind farming, indicating they have made up their minds about the technology, its likely impacts and not least its desirability based on personal circumstances and value sets.

b) Types of expected impacts

Responses obtained in the survey make clear that expected impacts of offshore wind farming are of various types, including spatial (seascape), ecological (the marine environment), social and economic impacts (Figure 73). Results also make clear that impacts are conceived of at the level of the individual, the local community, humanity as a whole or the planet at large. Irrespective of the scale at which they are considered, these can be driven by altruistic or material thinking, conceiving of offshore wind farming as a necessary contribution to solving global problems (such as climate change) or contributing to more local concerns and problems (such as generating employment in the region). Last not least, expected impacts range from immediate impacts that directly manifest themselves (such as visual aesthetic impacts) to mid- and long-term impacts. The latter are believed to only manifest themselves a long way into the future, possibly not even in the lifetime of one's children. Long-term impacts can thus be described as the belief in an investment in the future (such as expecting offshore wind farming to mitigate climate change). The other side of the coin would be the uncertainty associated with long-term impacts which may raise doubts about the desirability of offshore wind farming (such as expectations of unforeseeable long-term changes in the marine environment).

c) Beliefs influencing the perception of expected impacts

The following beliefs were shown shape assumptions about the impacts of offshore wind farming:

- Experiences of wind farming on land and beliefs about the landscape,
- Beliefs concerning the socio-economic potential of offshore wind farming, i.e. its potential to contribute to the economic development of the case study region.
- Beliefs about the marine environment (e.g. regarding it as resilient or vulnerable),

Experiences of wind farming on land matter comparatively little, with only few respondents explicitly arguing in favour of offshore wind farming as an alternative to onshore wind. Beliefs about the socio-economic potential of offshore wind farming also matter surprisingly little in terms of shaping opinions on offshore wind farming, as indicated by the low number of responses received in this category. Overall, it is beliefs about the marine environment which are clearly the strongest influencing factor with respect to offshore wind farming. If the marine environment is considered fragile and sensitive, and considered unable to cope with the assumed impacts of offshore wind farming, a negative attitude is likely to result.

d) Expected gains and losses in the context of values

A key aspect in evaluating the likely impacts of offshore wind farming are the expected gains and losses associated with it (Figure 73). Figure 74 is a more detailed classification of the expected gains and losses, which include gains and losses of market and non-market values. The following were shown to play a role:

- Expectations of *immediate* personal loss or gain to be obtained from offshore wind farming. These include expectations of a direct tangible loss or benefit (such as employment) or an intangible loss or benefit (such as the loss of a beautiful sea view).
- Expectations of more *long-term* losses and gains, such as the desire that one's children should find work in the region or continue to enjoy certain qualities of the local environment.

Altruistic values and moral imperatives, such as the view that nature should not be disturbed any further, or offshore wind farming as a means of addressing climate change, act as a driving force of beliefs and influence the evaluation of gains and losses.

Figure 74 shows that both market and non-market gains and losses play a role. On the gains side, expected market value gains comprise all those expectations that are related to the direct use values generated by offshore wind farming. Personal profit is the most obvious category here, which would include direct monetary benefits (such as return on investment in offshore wind farms) or indirect monetary benefits such as those arising from new career opportunities (with gains in personal welfare). But direct use values also include expected societal benefits, such as wider community gains (e.g. increases in business tax which would lead to more prosperous communities) or the generation of option value, such as the possibility of later-stage spin-offs

from offshore wind farming (e.g. co-use). Expected gains in non-market values comprise the intangible, indirect use values of offshore wind farming, for example the moral satisfaction that results from knowing that clean electricity is being generated. In the long term, offshore wind farming is expected to help mitigate climate change, which also makes this a form of bequest value (passing on an intact planet to the next generations).

On the other side of the equation, loss of market values includes the potential immediate loss of other means of earning a living (e.g. tourism, fishing), as well as the long-term loss of these options for the future (a loss of option value). Loss of non-market values includes the loss of marine wildlife as a loss of existence value, the loss of the seascape as a loss of aesthetic and spiritual value (including the loss of altruism value derived from the satisfaction that others can benefit from experiencing the unspoilt seascape), and the loss of these intangible values for future generations as a loss of bequest value.

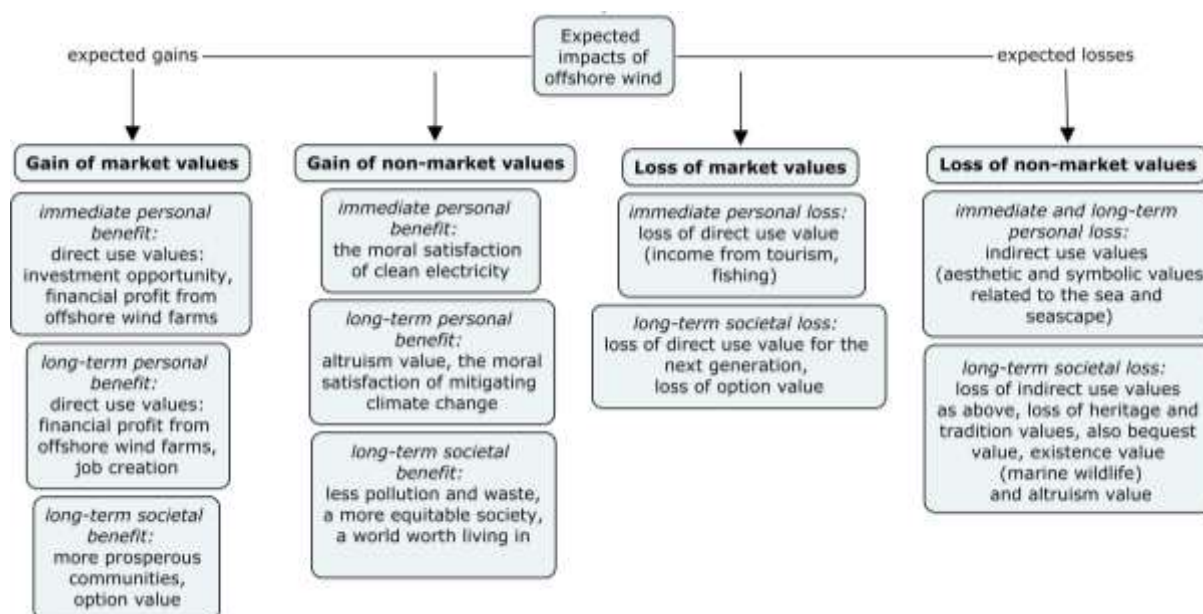


Figure 74: A summary of the expected gains and losses associated with offshore wind farming

e) Comparison to results obtained in the stakeholder analysis

It is interesting at this stage to compare the positions on offshore wind farming held by local residents to those expressed by local, regional and national organisations, municipalities, ministries or other relevant interest groups (see chapter 3.1, Gee & Licht-Eggert 2010). Table 34 is a reminder of absolute positions on offshore wind farming obtained from different analyses carried out in the case study region.

Table 34: Positions on offshore wind farms: results of different elements of the stakeholder analysis (adapted from Gee et al. 2010)

Methodological component	in favour of offshore wind farms	neutral	against offshore wind farms
Content analysis (general published documents), n = 90	83 %	8 %	9 %
Content analysis (planning application statements), n = 52	17 %	58 %	25 %
Questionnaire survey of local residents (random group only, n = 237)	45 %	11 %	44 %

The differences are revealing. As stated in chapter 3.1, a favourable attitude to offshore wind farming is expressed in 83% of all public documents assessed. The consultation documents on specific offshore wind farm proposals in contrast reveal a large percentage of neutral attitudes to specific offshore wind farming proposals which may be due to technical concerns, other concerns or simply lack of knowledge of the specific case.

Group stakeholder results thus confirm a duality which was also noted in the resident survey results: Whilst offshore wind farming draws significant support as an idea, generating clean energy becomes much more contentious when putting it into practice in a particular location. The prospect of a specific offshore wind farm – localized in a particular place rather than in abstract space - focuses attention on competing sea values, turning an abstract thought experiment into a tangible choice. Localisation also brings to the fore other more practical arguments that may not play a role in the more general context of offshore wind, such as the expense of certain sites over others (related to water depth and distance to the shore) or the question of which cable routes are preferable to transport electricity to the mainland. At the same time, localisation does not turn opinions to an outright rejection of offshore wind farming either, with stakeholders evidently more likely to reserve their opinion.

There is broad organizational and institutional consensus on the general desirability of offshore wind farming, potentially driven by the convergence of different lines of argument such as environmental benefits plus incentives to the local economy and the German wind industry in general (Gee & Licht-Eggert 2010). Seen through the lens of group stakeholders, the opportunities associated with offshore wind farms seem to relate primarily to their impact on the local economy and the potential to generate jobs. This is an argument which hardly plays a role at all for local residents who are evidently much more sceptical with respect to the real economic opportunities that would present themselves for the region.

Local residents and group stakeholders agree in their shared concern that offshore wind farming could have a negative impact on the marine environment, but widely diverge in their estimate of the aesthetic impact of offshore wind farming and the significance of this argument. This could be

due to greater knowledge of the group stakeholders with respect to the actual visibility of the planned offshore wind farms, or indicate visibility is not of concern to the groups.

Table 35: Topics used to defend positions on offshore wind farming including statements of the local population. Figures indicate the percentage of use of each argument relative to the total number of arguments used. ☺ = arguments in this category predominantly used in favor of offshore wind farms, ☹ = arguments predominately used in opposition to offshore wind farms ! = condition or demand for lending support to offshore wind farming. n.r. = not relevant (from Gee & Licht-Eggert 2010).

Argument thematic group	public documents (% of total arguments)		statements in public consultation procedure (% of total arguments)		local population (% of total arguments)	
Arguments mainly used to support offshore wind farms						
<i>climate change</i>	3.3	☺	0.2	☺	0.2	☺
<i>energy</i>	7.9	☺	2.1	☺	23.2	☺
<i>port and harbour development</i>	0.6	☺	0.2	☺	n.r.	n.r.
<i>local economy and jobs</i>	9.0	☺	0.2	☺	5.2	☺
Arguments mainly used to object to offshore wind farms						
<i>nature conservation</i>	13.0	☹	20.2	☹	15.1	☹
<i>aesthetic qualities of the landscape</i>	1.5	☹	5.3	☹	21.8	☹
<i>fisheries</i>	0.3	n.r.	6.3	☹	n.r.	n.r.
<i>shipping safety</i>	6.1	!	19.4	☹!	3.6	☹
<i>tourism</i>	2.5	☹!	1.3	☹	n.r.	n.r.
Demands raised to qualify support for offshore wind farms						
<i>legal issues</i>	1.3	!	1.3	!	n.r.	n.r.
<i>planning procedure and process</i>	14.1	!	24.8	!	n.r.	n.r.
<i>feasibility/technology/financing</i>	18.0	!	15.8	!	4.4	☹☺
<i>economic viability</i>	7.5	!	2.1	!	4.6	☹
<i>policy</i>	3.0	!	n.r.	n.r.	0.4	☹
<i>science</i>	7.0	!	0.2	!	n.r.	n.r.
<i>other</i>	4.7	!	0.6	!	0.6	n.r.

7.3.2 Evaluating the likely impacts of offshore wind farming

The second stage in arriving at an opinion on offshore wind farming is to evaluate the presumed impacts of offshore wind farming. How desirable are the imagined impacts of offshore wind farming when weighed against other values and beliefs? Results make clear that the evaluation stage is influenced by general beliefs about the wider West coast environment (including the socio-economic environment), the appreciation of other values (including seascape values), as well as beliefs about nature. These beliefs in turn are linked to basic human values and the moral imperatives that might arise from these in terms of deeply felt moral convictions ('what ought to be') (Figure 73).

This section explores the evaluation stage by describing what leads residents to express the attitudes shown in Table 35. It considers the values considered affected by offshore wind farming, the evaluation of gains and losses, and the conclusions drawn by local residents.

a) Visual impact

As indicated clearly in the survey results, the expected visual impact of offshore wind farms and concurrent loss of seascape values play an important role in shaping attitudes to offshore wind farming. Assumptions with regard to the visibility and intrusiveness of offshore wind farms vary, and there is a trade-off between landscape and seascape values, so that experiences with wind farming on the mainland either represent a deterrent ("avoid the fate of the mainland, do not despoil the seascape") or an inducement ("put wind power out of sight and out of mind"). The present study does not allow any conclusions on how much – if any - visibility of offshore wind farms would be acceptable to local residents. Visibility-oriented limits of acceptance would need to be established using visualizations, as has been done in other studies (Runge & Nommel 2006) or in offshore wind farming planning applications in the UK.

Given the sometimes passionate language used by the respondents, however, visual impact also emerges as an emotional issue, guided less by actual visibility or objective criteria than the idea of human interference with a previously 'natural' place. Taking into account the extent of onshore wind farming in the case study area, it is not surprising that a mental transfer of scale is taking place here. Offshore wind farming is seen as a large-scale industrial practice with the capacity to transform the marine environment in a similar way that onshore wind farming has transformed the coastal landscape ("industrialisation of the sea"). Wind farming carries no romantic or 'traditional' connotations here and is certainly not seen as a home-based enterprise enabling a few to earn some additional cash. An avenue that is sometimes hinted at but merits further exploration is that residents see little room for controlling any of these developments. The feeling that onshore wind farms have been imposed leads to an even stronger feeling that this should not be repeated for the sea.

The above makes clear that the visual impact of offshore wind farms on the seascape is not only a question of aesthetic values. Fears of the visual impact of offshore wind farming and resistance to offshore wind farms must also be understood as resistance to, or at least suspicion of, modern industry and new technology in the sea. Weighing 'natural' seascape values against 'industrial'

seascape values forces a shift in perception of the sea, laying it open as just another space, available for exploitation by human use just like the rest of the coastal environment. This is not to suggest that people still think of the sea as truly untouched. The point is more subtle: The rational efficiency of offshore wind farming threatens a romantic illusion which would have the sea to be special, not quite as amenable to human interference as everywhere else, a place that is somehow apart.

b) Economic benefits of offshore wind farming

The immediate economic needs of a person and the expected economic impacts of offshore wind farming in the region were originally assumed to play a significant role in shaping attitudes to offshore wind farming. A qualified but unemployed person could be expected to take a different attitude to offshore wind farming than for instance a fisherman or hotel owner, depending on the expected economic gains or losses each associates with offshore wind farming. The fisherman might fear a loss of fishing grounds due to the closure of offshore wind farms to boats and the hotel owner a downturn in tourism, whilst the unemployed person may hope that new jobs will be created.

Results do not confirm this original expectation. Possibly due to sampling error, and possibly also due to the age profile of the sample, the immediate economic impacts of offshore wind farming generally featured low on the list of expected gains and losses. Less than 5% of the respondents expected offshore wind to generate any tangible employment benefits in the region, and only a handful seemed concerned about offshore wind farming as a possible negative influence on other sectors. Out of 387 respondents, nine expected offshore wind farming to translate into negative impacts on tourism and recreation, and two (one of these a fisherman) specifically stated offshore wind farms would negatively impact on their work. Even in the active group, which contains stronger opinions and therefore also more pronounced expectations, the economic impact of offshore wind farming is more or less neglected as an argument both on the supporting and opposing side.

Given the predominance of the tourism sector in the case study area and the number of persons employed in it, the apparent lack of concern with respect to tourism is surprising in its clarity. All in all, offshore wind farming is neither regarded as an exciting new economic opportunity for the region nor a major threat to existing sectors. At the time of surveying, political in-fighting and the lack of decisive local initiative may have contributed to a rather pessimistic view of the region's ability to turn offshore wind into an economic opportunity. The tourism angle could be explained by the fact that the region has failed to experience a downturn in tourist numbers on account of onshore wind. Negative expectations with respect to tourism thus seem to be restricted to a few voices in certain island contexts at best.

Whether it is due to the apparent pessimism with regards to offshore wind employment opportunities, direct use values such as financial gain from offshore wind farming or the prospect of a job appear to weigh comparatively little. This leads to the conclusion that offshore wind farming is not primarily regarded a means to an end. Attitudes to offshore wind farming can thus

be said to be driven by internal value constellations and the trade-offs that occur between them rather than any specific interests associated with offshore wind farming.

This, however, does not mean that residents would not make use of an opportunity to profit from offshore wind if it presented itself: 32% of the random group and 56% of the active group could envisage some direct monetary profit from offshore wind, either as a shareholder in an offshore wind farm or indirectly through wider community benefits. Rather than a value-driven attitude, this seems to be an opportunistic attitude that also arises in people that primarily oppose offshore wind farming. In the latter, this opportunism seems driven by the desire to make the most of a bad deal: If offshore wind is inevitable, and if it really comes at the expense of other (predominantly intangible) values, then why not at least benefit in some other (monetary) way. More research would be needed to establish the exact cash value of this tipping point and also the prevalence of this attitude in the population – in other words, the willingness of people to ‘sell off’ their other values in return for acceptance of offshore wind. Contingent valuation studies could go some way towards establishing the cash value of this financial compensation, although there is always the problem of assigning monetary value to intangible values such as beauty.

c) The specific offshore setting: Views of nature and ethical considerations

The sea as a setting raises a number of concerns about offshore wind farming that are related to the specific nature of the marine environment. One concern is related to nature and the specific qualities of the marine ecosystem, the other to symbolic interpretations of the sea.

At the heart of both concerns is the belief that the marine environment is special. Unlike the terrestrial environment, much of the sea is hidden from view, so that despite the many advances in scientific knowledge, it retains a sense of the unknown and uncharted. As a result, the sea is a less rational place than the mainland and a place of the imagination. The sea is mysterious and unpredictable, epitomizing those elements of nature that resist any human attempts at taming it; yet it is bountiful, life-giving and inspiring. Its beauty, and its capacity to destroy, is captured in song and poetry and imagery, forming an essential part of the self-image of the people living in the case study area. Results have shown perception of the sea to be one of the great intangibles and mysteries, a place that is essentially wild and will ultimately always remain unfathomable. Given the long relationship of the people to the sea, this ambivalent attitude is not surprising. The symbolic values ascribed to the sea are difficult to articulate, but they are hinted at in the wealth of adjectives furnished by the people to describe the sea. There is no question that these symbolic values contribute greatly to personal well-being and are treasured by many, even if they are not stated in any explicit form.

In many ways, the sea is equated to nature itself, with the sea a mirror of the beliefs people hold about nature. Two beliefs predominate: the view of the sea as resilient, quite able to absorb human interference, or the view of the sea as vulnerable, responding to interference in an unpredictable way but mostly with degradation. There is widespread belief that consequences of human interference cannot be controlled, which is what causes many people to take a rather cautious attitude to offshore wind farming. This is less for fear of negative consequences for humans (although the loss of marine ecosystem services also plays a role) but for fear for the sea

itself. Apart from the pleasure of experiencing the sea, or the entities it contains, there is little mention of any direct utility of the sea in this context, suggesting that the value base is mostly existence value and indirect use value. Existence value is particularly significant in case of marine mammals, which are well-loved in the region and deemed particularly vulnerable to disturbance, but also in the case of sea birds which migrate to the region annually in vast numbers or the marine ecosystem more generally. Existence values are linked to a strong moral imperative that the sea, and its flora and fauna, must be protected from any (further) harm. In the case of indirect use values, the driving force is the desire to preserve certain experiences and sources of pleasure and satisfaction.

Offshore wind farming is clearly considered a threat to these values, mostly on account of its scale and its uncertain impacts on the marine environment. Despite much recent research, these uncertainties continue to exist, so this belief is not necessarily down to lack of (scientific) knowledge. In the survey responses, there is often a particular urgency when talking about the sea as an environment, possibly borne from the understanding that the sea is already under considerable pressure from pollution and other forms of use. There is also the belief that the mistakes made on the land – such as loss of biodiversity – must be avoided here at all costs. Possibly, marine wildlife is deemed particularly vulnerable precisely because so little is known about it, becoming visible only in rare moments or when injured or dead. But the sea is also a carrier of spiritual values, evident in its description as ‘creation’ and the feeling that the sea touches places of the soul that nothing else can quite match. A key long-term interest is thus to protect the existence value of the sea and also the bequest value it embodies, protecting it for its own sake irrespective of any human benefit and also for the sake of passing it on to future generations.

d) Long-term interests and ideals: The role of altruistic values and moral imperatives

Long-term interests and ideals also come into play at various points and in various forms. A key long-term concern on the supporting side of offshore wind farming is the idea that climate change should be prevented or at least mitigated. This is coupled to the belief that renewables must play a key role in this. Offshore wind farming is just one of many options but a sensible one (there is plenty of wind at sea), and one that is certainly preferred over nuclear energy. Conceivably, the location of the case study area on a vulnerable coast contributes to particular local awareness of climate change, as the low-lying coast is believed to be threatened by sea level rise and increased frequency of storm events.

Despite the possibility of self-interest (such as protecting material values), survey results show this to be an essentially altruistic concern which is driven by altruistic values (the belief in social justice for all and a world at peace), biospheric values (respecting the earth), and universalism as a form of moral imperative (the conviction that humans should protect nature). The expected benefit is not only for oneself (expressed as the satisfaction of having acted correctly and in line with one’s core values), but also for coming generations and the planet at large.

Another, opposing long-term concern is that residents want their environment to stay as it is for as long as possible. The long-term interest in this case is “heritage value”, perhaps best

described as people's desire to pass on to their children similar values and qualities of the environment that they have experienced themselves. These values encompass all manner of tangible and intangible values, including traditions, rootedness, belonging, a healthy social and economic environment, as well as a certain quality of the landscape and the natural environment ("a region worth living in"). The future vision of the case study region as a desirable place to live and work can be considered a form of option value, which may or may not be utilized by the generations to come.

Offshore wind farming does not fit this long-term interest easily, as it can enhance and threaten these values. The desire that one's children should find work in the region may well be at odds with the desire that they should also continue to enjoy certain qualities of the local environment. Trade-offs thus occur between different long-term interests, which in turn are driven by competing value constellations.

e) NIMBYism

NIMBYism ("Not in my backyard") has been much debated in the context of wind farming, and drawn criticism for being brandished about too readily in attempts to explain the lack of acceptance of change (Wolsink 2006). There is some evidence that a small group of local residents is taking a NIMBY attitude to offshore wind farming in this particular case study. This is mostly based on the fact that residents apparently do differentiate between the more general beliefs about offshore wind farming and the more specific beliefs they hold about offshore wind farming off the West coast of Schleswig-Holstein. 17% of the random group and 10% of the active group deem offshore wind farming worthy of general support (or at least have nothing against it), but reject offshore wind as a local option. Accepting offshore wind farming in principle but not for the West coast can be interpreted as a NIMBY attitude in the sense that local values, such as the seascape, are considered more important than general values such as renewable energy. Judging by the comments made in the survey, local values matter more because they carry an emotional connotation, such as a relationship to remembered events ("we always went swimming there"), or a particular experience ("peace and tranquillity") or desired state ("relaxation, happiness"). General values such as renewable energy still count as important and may also carry strong emotional connotations, but do not have the same link to a particular place. The sea is vast, and there are many suitable areas for wind farms, but there is only one particular view and only one particular favourite place. A NIMBY attitude in this sense is one that seeks to avoid a bad trade: A trade of irreplaceable local values (mostly intangibles) against a potential future benefit which may not even materialise and which does not critically depend on this particular location. Acceptance of offshore wind farming is thus also a case of weighing general values against local values, with the two not necessarily coinciding.

f) Mistrusts

It is interesting to relate the above to the mistrust expressed in institutions and technology, participation and power relations. Looking at different sources of information, the greatest level of mistrust was levelled at politicians, followed by wind farm operators and wind turbine

manufacturers. Although there was no direct follow-up question asking people to explain their opinion, mistrust of politicians can be regarded as a general concern which is not restricted to offshore wind farming. A potential link can be suggested to the general dislike in the region of authority and the preference for managing one's own affairs without imposition from "above", which in turn fits the value profile of the residents drawn up in chapter 4. In the past, this dislike of authority has found expression in resistance to the National Park Authority and its proposed management plan for the Wadden Sea, as well as resistance to the designation of areas under the EU Birds Directive. There may also be a suspicion that politician's promises will not be kept (such as investment in jobs) and a certain frustration with the lack of perspectives for the region and the perceived neglect of the West coast by the state government compared to its East coast counterpart on the Baltic Sea. Wind farm operators and turbine manufacturers may score badly because they are perceived to act in their own interest only. At the time of surveying, planning applications for offshore wind farms were almost exclusively put forward by large external operators, with little accompanying investment in the region. There is a sense that the local communities would be left to contend with all the disadvantages offshore wind farming while wind farm operators take all the profit. This is confirmed by the fact that some turbine manufacturers pulled out of the region altogether, investing in production sites elsewhere instead. The implication is that local values may lose out against the might of the renewable energy consensus, and that local people will have no say in the development of an energy system that is promoted as benefiting society as a whole. Research on onshore wind farming has already established close connections between acceptance and local control and ownership (Devine-Wright 2007); a similar mechanism may be at play here which would need to be explored further. In a (then still ongoing) dispute over cable connections to the mainland, which was highly contentious because the Wadden Sea National Park and local islands had to be crossed, the islander's "no" was only turned into a "yes" when concessions were made to the local community, such as investment in schools and infrastructure.

7.4 The cognitive belief framework revisited

Although the above go some way towards explaining attitudes to offshore wind farming, the real driving force is the trade-offs that are taking place between the various values perceived. This is essentially a weighing process, for example weighing the expected market gains against the conceivable loss of non-market values associated with offshore wind farming and determining which is more important. Trade-offs between different values, in turn, are influenced by the inherent value profile of a person, in other words, which basic human values and beliefs act as the main motivational force when it comes to making choices in life.

Chapter 4 presented a cognitive belief framework drawn up to explore the links between different types of value in a qualitative way. The advantage of a cognitive belief framework is first of all that it allows all relevant beliefs and values to be captured and brought together in a single model. The more important advantage, however, is that it allows the assessment of bifurcation points, in other words those points within the cognitive belief framework where a switch may take place between different options, influencing the route a person travels from one order of belief to the next and with this the outcome.

Conceptually, the cognitive belief framework developed for this case study focuses on two interpretations of value. The first is the concept of objects of value, which essentially are the conceptual entities that are perceived. Objects of value can be all manner of things, such as the wide, open horizon, or migratory birds, or renewable energy, a particular beach, a sound, an experience. Objects of value are carriers of assigned value, in other words, of the relative importance assigned to them compared to other objects. Objects of value in the sea, together with the assigned value they carry, can be termed “sea values”, comprising for example a particular beach as the object of value (the actual ‘thing’) and the experience of that beach as a beautiful setting as a form of assigned value (in this case, non-market value). The same can be said for objects of value on the coast and the assigned value they carry, which have been termed “West coast values”. The second interpretation of values regards values as deeply held convictions, which act like an internal compass in helping a person determine which assets, or beliefs, or actions should be valued above others. Moral values play an important role in this context, including terminal moral values (seeking a particular ideal state for society) and instrumental moral values (seeking to behave in a certain way because not to do so would cause pangs of conscience). These are characterised by their so-called ‘ought’ character or ‘oughtness’, and are driven by both selfish and altruistic reasons, seeking to benefit a wider entity than the self (e.g. society, nature, the planet, although there has been some debate on whether truly altruistic behaviour actually exists).

A key assumption for this study was that the sea and offshore wind farming are valued independently of one another as separate conceptual entities. Mental constructs of the sea can be conceived of as an expression of the specific values people ascribe to the sea, just as mental constructs of offshore wind farming are an expression of the beliefs a person holds about offshore wind farming. In arriving at an attitude to offshore wind farming – an evaluation of the prospect of offshore wind farming on the West coast of Schleswig-Holstein – trade-offs are made between the values assigned to the sea and those assigned to offshore wind farming.

Overall, the cognitive belief framework developed for this case study brings together the following:

1. The specific values ascribed to the sea in the case study region and the beliefs associated with the sea,
2. The specific values and beliefs associated with offshore wind farming,
3. The importance of these respective values relative to one another – which is more important when and why?

Figure 75 revisits the cognitive belief framework that was drawn up to represent this case.

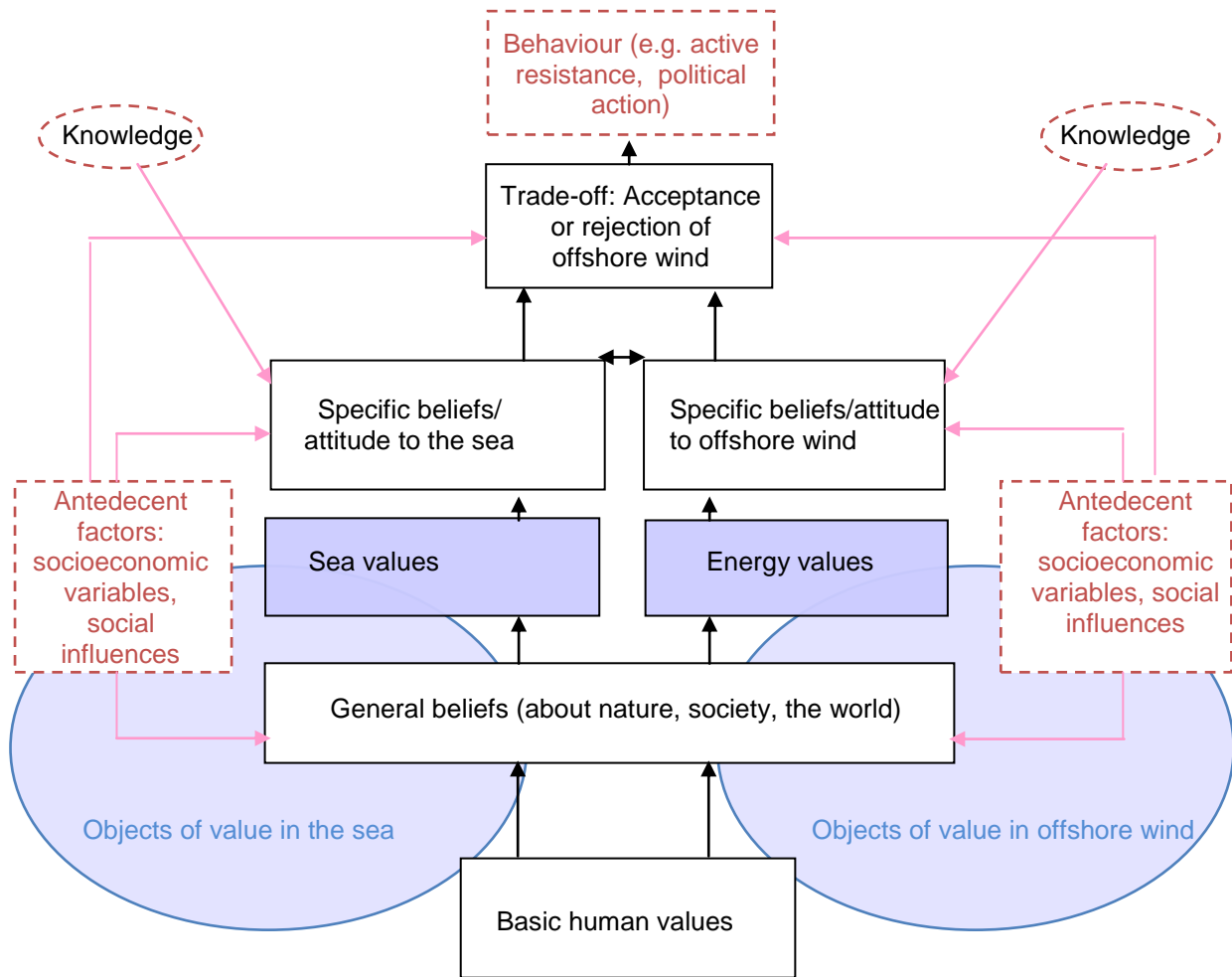


Figure 75: The conceptual model used to investigate the role of basic values and sea and offshore wind values in shaping attitudes to offshore wind farming (adapted from McFarlane and Boxall 2000)

The detailed understanding of sea values and beliefs about offshore wind farming forms the basis for understanding the trade-offs that occur between them, as well as the links that exist to basic human values and general beliefs about nature. This section aligns the results of the study with the cognitive belief framework, with particular focus on the bifurcation points within it.

7.4.1 A profile of basic human value orientations

One of the starting points of this enquiry was to ask what mindsets the development of offshore wind farming on the West coast of Schleswig-Holstein actually encounters at this particular time. What is important to the people living on the West coast at a fundamental level, and is there anything that could be described as a 'group character' or way of thinking that sets them apart?

Answer to this question was obtained at the level of basic human values. Although the sample was not entirely representative, results can be brought together in a descriptive, qualitative value

profile for the case study region. Since results were mostly consistent within and between the random and active groups, it can be assumed that a similar values profile will apply to most local residents in the case study region, at least for those aged 45+ (bearing in mind that only few younger residents were represented in the sample). As stated in chapter 4, basic human values represent a fundamental orientor or motivational force whose relevance is primarily through its influence on higher order beliefs. The value profile thus resembles a baseline which can act to calibrate the subsequent enquiry.

Biospheric universalism emerges as the most relevant basic human value orientation, indicating strong awareness of, and willingness to care for, nature and the surrounding landscape. There is a link here to moral values, such as terminal moral values (seeking a particular ideal state for society) and instrumental moral values (seeking to behave in a certain way). As stated in chapter 4, the so-called 'ought' character, the sense that we ought to behave in a certain way because it feels right, is the greater the more widely shared a value is in society and the greater societal insistence that we behave in a certain way or achieve a certain state. In this survey, the 'oughtness' associated with nature conservation is widely shared and often finds expression as bequest value and altruism (the sense that wider society, or one's children, should also be able to enjoy nature as we do, and that we should pass on nature in a good state). This in turn is linked to clear recognition and appreciation of existence values in nature, acknowledging that nature is there for its own sake irrespective of human observation and experience. Affinity with nature, and a high level of 'oughtness' in the context of nature conservation can therefore be taken to underscore all other beliefs and attitudes, like a subtle background noise that is always carried along.

This strong affinity for nature is linked to a low overall preference for risk and adventure in the sample. This is confirmed by ambivalence in the category of stimulation, where about half of the respondents were somewhat open to surprises but just as many hesitant. Residents also feel torn between the importance of correct behaviour, which would indicate a strong sense of duty, and the importance of independence. Evidently, people on the West coast do believe that rules are important, but this is tempered by the strong value orientation of freedom of choice. This sense of independence is certainly also culturally conditioned, arising from the specific history of the region. Judging by the basic value profile, residents thus seem to strike a careful balance between modesty and the adherence to rules on the one hand, and openness to new things and freedom of choice on the other. The overall value profile for the people in the region also suggests openness to new ideas in principle, but no automatic enthusiasm about anything that is proposed. Given the strength of biospheric universalism, new ideas will probably be more acceptable if they conform to this value base or at least do not directly contradict it. They will also be more acceptable if they can be linked to the moral value base that finds expression here, which is to do 'good' for society at large or if people can be convinced they will be 'doing the right thing' for their own social circle or a more abstract social entity such as the next generation.

A lesson to be drawn from the 'freedom of choice' value base is that direct involvement in decision-making is important if acceptance and support of new developments is to be secured. As there is some hesitation towards new developments, it will pay to explain new ideas carefully and give people time to consider them. Acceptance will also depend on how information is

communicated and whether the communicator is trusted or not. The general openness to the opinions of others should give scope for discussion and mediation in the region, allowing even contentious developments to be tackled as long as the value bases of “freedom of choice” and “biospheric universalism” are not compromised. This value base certainly seems compatible with local responses to previous changes in the region, for instance the contentious introduction of the new National Park management plan in 1999.

7.4.2 General beliefs about nature

In the cognitive belief framework, general beliefs about nature take up an intermediary position between basic human values and the specific beliefs about defined objects such as the North Sea or offshore wind turbines.

Four general typologies of ‘nature values’ or ‘nature ideologies’ were identified based on two orientors: firstly, the sense of responsibility a person feels towards nature (linking back to the moral values expressed beforehand and the sense of ‘oughtness’), and secondly, the strength of the utilitarian perspective in their images of nature. A strong sense of ‘oughtness’ plus a strong biospheric value orientation (predominantly immaterial, non-utilitarian values assigned to nature) result in a biocentric ideology, which is driven by the idea of unity with nature and placing the needs of nature first. An anthropocentric ideology places stronger emphasis on utilitarian values and human needs and has a weaker sense of responsibility towards nature (see chapter 4). The first typology that emerges based on these two orientors is that of “responsible users” of nature, which have a utilitarian view of nature coupled with a reasonably strong sense of responsibility towards it. The second typology is the “conservationists”, which have the most biocentric ideology out of the four, arising from a strong biospheric value orientation coupled with a strong moral conviction that nature must be protected. Third are the “fatalists”, which have a non-utilitarian view of nature in the sense that nature acts as a corrective to man’s actions; the sense of responsibility is weak in this typology because their view is that nature cannot be controlled anyway. “Happy go lucky” is the fourth typology, which views nature as a force that can look out for itself irrespective of man’s actions and therefore does not need any special protection (see chapter 4).

A qualitative link can be established between these four ideologies and the basic value orientations established above (Figure 76). Since no major differences were identified at the level of basic human values, the first bifurcation point comes with general beliefs about nature. The strongest link exists between biospheric universalism as a basic human value orientation, the view that nature is ephemeral and the “conservationist” ideology with respect to nature which calls for nature to be protected (marked dark blue). This implies that in the West coast sample, a person with strong affinity for nature, and convinced that nature is fragile, is more likely to also hold a conservationist attitude than a person believing nature to be tolerant. This conservation-oriented mindset is also linked to terminal moral value, expressed here as the desire to achieve harmony with nature

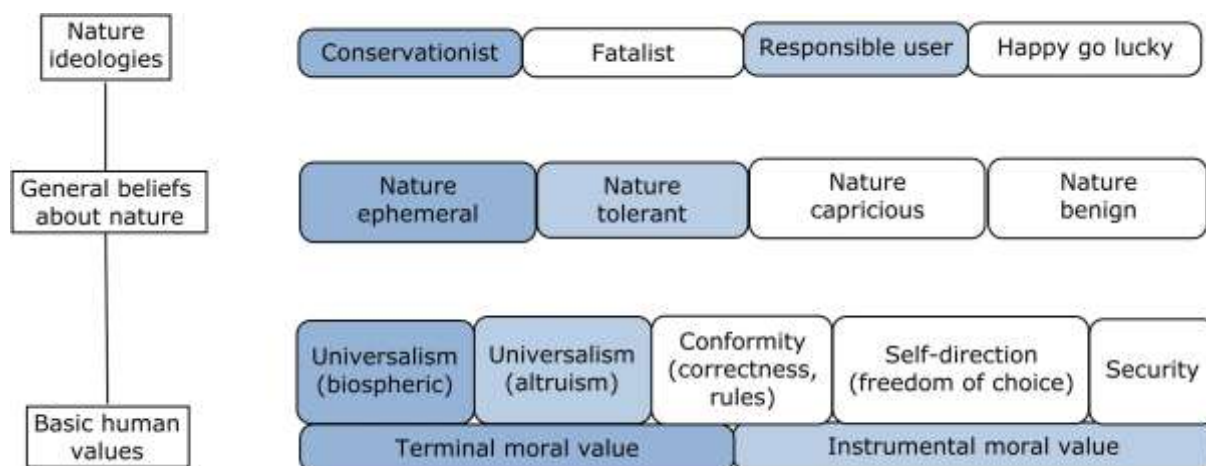


Figure 76: The relationship between basic human values, general beliefs about nature and nature ideologies. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships.

Instead of considering nature ephemeral, however, many residents also consider nature to be tolerant. Whilst this may still lead to the conservationist mindset described above, it is shown to also lead to an alternative ideology, described here as ‘responsible user’. The terminal moral value base still holds, so ‘responsible use’ is more prominent in the sample than ‘Happy go lucky’, which is a less responsible mindset with respect to utilizing nature.

Moral value comes to the fore as a motivational force in its own right. Moral value is not only linked to nature, and it is equally possible to feel a moral sense of responsibility towards other people or society, for example. Moral value is also not exclusively expressed in the conservationist mindset, as those who subscribe to a more anthropocentric view of nature can still have a similar sense that nature ought to be protected, for example. The difference lies in the general beliefs about nature, which acts to temper the expression of moral value. ‘Oughtness’ is expressed the more strongly the less a person believes that nature can cope with disturbance. General beliefs about nature thus emerge as a first ‘switch’ in the flow of cognition described here, leading a person to make certain assumptions about human uses of nature and the need to protect nature from interference. This lays the foundation for the next stage of the cognitive belief framework, which is the general beliefs a person holds about the sea.

7.4.3 General beliefs about the sea and sea values

A direct transfer appears to take place between the general beliefs a person holds about nature and their general beliefs about the sea. Those that have a biospheric view of nature are more likely to transfer this belief to the sea, regarding the sea as a natural space where the needs of nature should take precedence over human use. If nature is regarded from a more anthropocentric perspective, the sea too is more likely to be regarded as a utilitarian space, where human intervention is acceptable as long as a certain threshold is not crossed. A similar transfer takes place with respect to the fragility of nature: A person believing that nature is fragile is more likely to believe the sea environment is also fragile.

Nature ideologies also translate into similar ideologies with respect to the sea. 'Oughtness' plays a similar role as in the case of nature, leading to the belief that the sea should be protected and kept safe from undue human influence just like it did for nature generally. Again, this is independent of whether a person's nature ideology is that of a conservationist or responsible user. General beliefs about nature and nature ideologies can therefore be used as indicators for the beliefs that a person is likely to hold about the sea.

In addition to "in need of protection" and "not in need of protection", general beliefs about the sea also reflect different types of value assigned to objects in the sea. These include existence value, direct use values, indirect use values, altruism value and bequest value. A bifurcation point becomes apparent at this stage in the interpretation of these values. A more conservative attitude reinforcing the view that the sea requires protection is likely to arise from the combination of a biocentric view of nature plus high importance assigned to intrinsic sea values, where existence values of the sea are placed up and above any human needs. This mindset would resist the idea that inherent sea values (existence values, altruism values, bequest values) should be traded against material, use-related sea values such as offshore wind farming. On the other hand, the belief that nature is tolerant, plus an anthropocentric orientation towards the sea could lead to the belief that the sea is easily able to cope with the introduction of offshore wind farming. If this is coupled with the view that direct use values should take precedence over existence values in any case, a different attitude to offshore wind farming is likely to result.

Indirect links also become apparent to energy, although this is at a rather general level (e.g. the general level of renewable versus conventional sources of energy). An interesting aspect is that the belief that nature is fragile can also lead to the conclusion that climate protection is paramount, which would lead to the belief that renewable energies are an essential tool in reducing climate change irrespective perhaps of the beliefs the person holds of the sea.

Figure 77 shows the relationships between basic human values, general beliefs about nature, general beliefs about the sea and types of sea values. The strongest connections (dark blue) can be established between biospheric universalism, the view of nature as ephemeral, a conservationist nature ideology and the view of the sea as in need of protection. This is linked to the view of the sea as an object high in existence and indirect use value which are also thought to require protection, albeit for personal or indirect gains rather than a general sense of 'oughtness'.

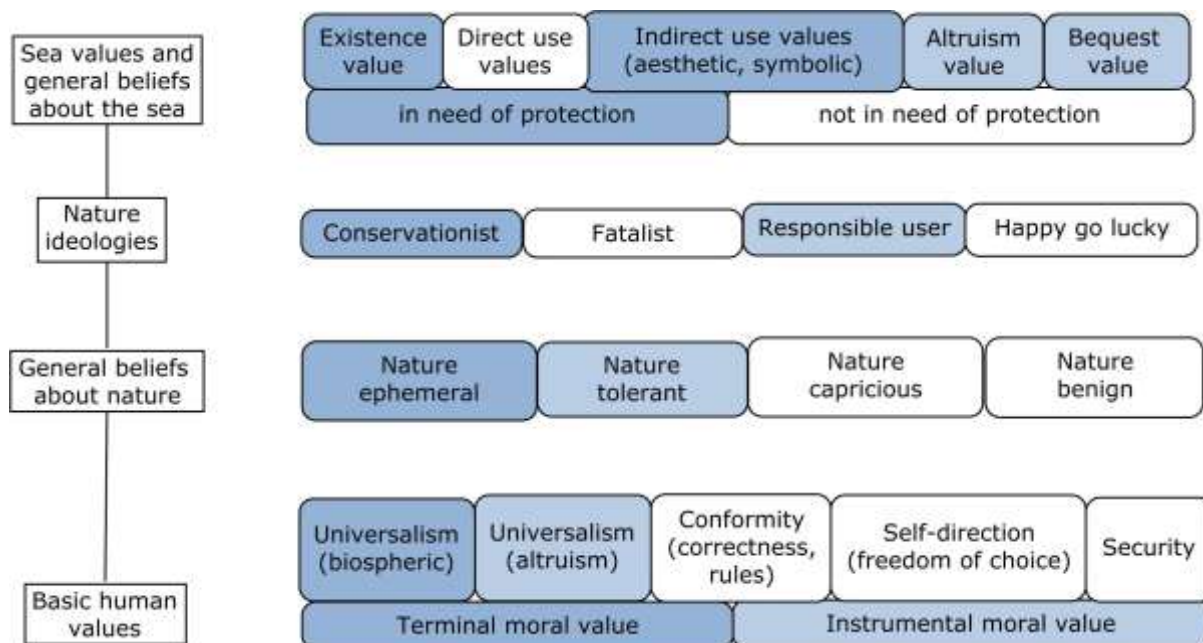


Figure 77: The relationship between basic human values, general beliefs about nature, nature ideologies and sea values (general beliefs about the sea). Blue indicates strong relationships between the respective elements, lighter blue indicates less strong relationships.

7.4.4 West coast values

The next step is to look at the more specific West coast values, establishing not only what types of values are assigned to the sea and West coast, but also *how much* these aspects are valued relative to one another. Results show near-universal agreement on the importance of clean air, water, soil and the Wadden Sea, followed by “a healthy flora and fauna rich in biodiversity”, “respecting the rights of future generations”, “an attractive landscape”, “the rights of animals and plants to live in their natural habitat” and “the wide open sea” (Table 15). Values related to the natural environment thus clearly emerge as very important. With the exception of “the rights of animals and plants to live in their natural habitat”, which is indicative of existence value, this time it is the benefits of the natural environment that are appreciated and valued here. West coast values, as well as seascape values and certain sea values, are therefore utilitarian in nature, although the nature of the West coast values specified implies careful use. There are evident links back to existence and indirect use values which are difficult to monetarise. Healthy flora, fauna and biodiversity, respecting the rights of future generations and the acknowledging the rights of plants and animals are indicative of a value base composed of existence, altruism and bequest value (Figure 78, indicated pink).

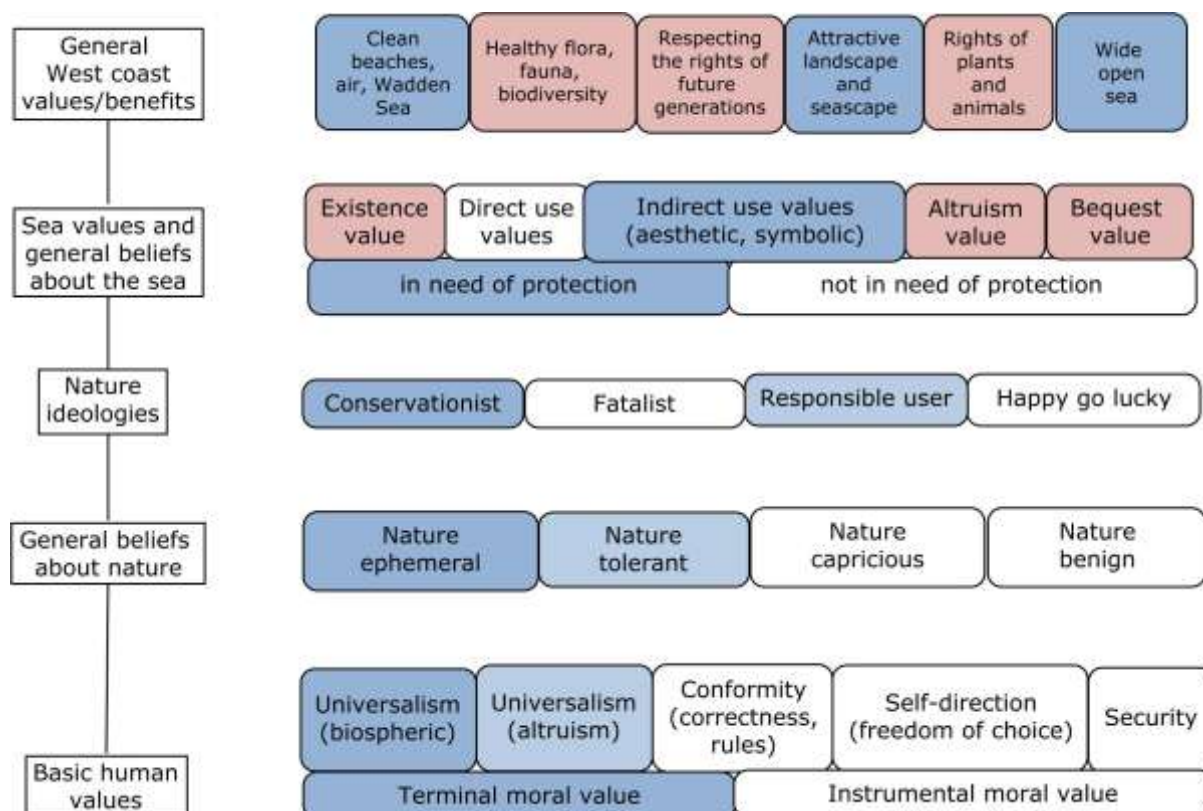


Figure 78: The relationship between basic human values, general beliefs about nature and nature ideologies, sea values and West coast values. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships. Pink indicates a strong relationship between the elements in question.

7.5.5 Offshore wind values

The last stage is to add general beliefs about offshore wind farming, leading on to the last step of forming an attitude to offshore wind farming. Given that most respondents in the survey had chosen to express an attitude, only rejection and acceptance are shown here although the 'neutral' position obviously also exists.

Apart from the negative connotations and fears about the potentially negative impacts of offshore wind farming, the survey established a variety of positive offshore wind farm values and connotations. The deciding factor and key bifurcation point at this stage of the cognitive belief framework is whether offshore wind farming is regarded as an important provider of clean energy. If offshore wind is understood to provide clean energy, and if clean energy is a strong value in its own right, this argument can override many other values and lead straight to acceptance of offshore wind energy (Figure 79).

Belief in the importance of clean energy links back to several aspects of the cognitive belief framework, with climate change acting as a direct or indirect mediating issue. Although climate change was rarely mentioned as a direct reason for supporting offshore wind farming, mental links are made between conventional energy sources, air pollution and climate change and the idea that conventional energy sources are unsustainable. An added factor is the common resistance to nuclear energy, which is not regarded as an alternative to conventional energy sources.

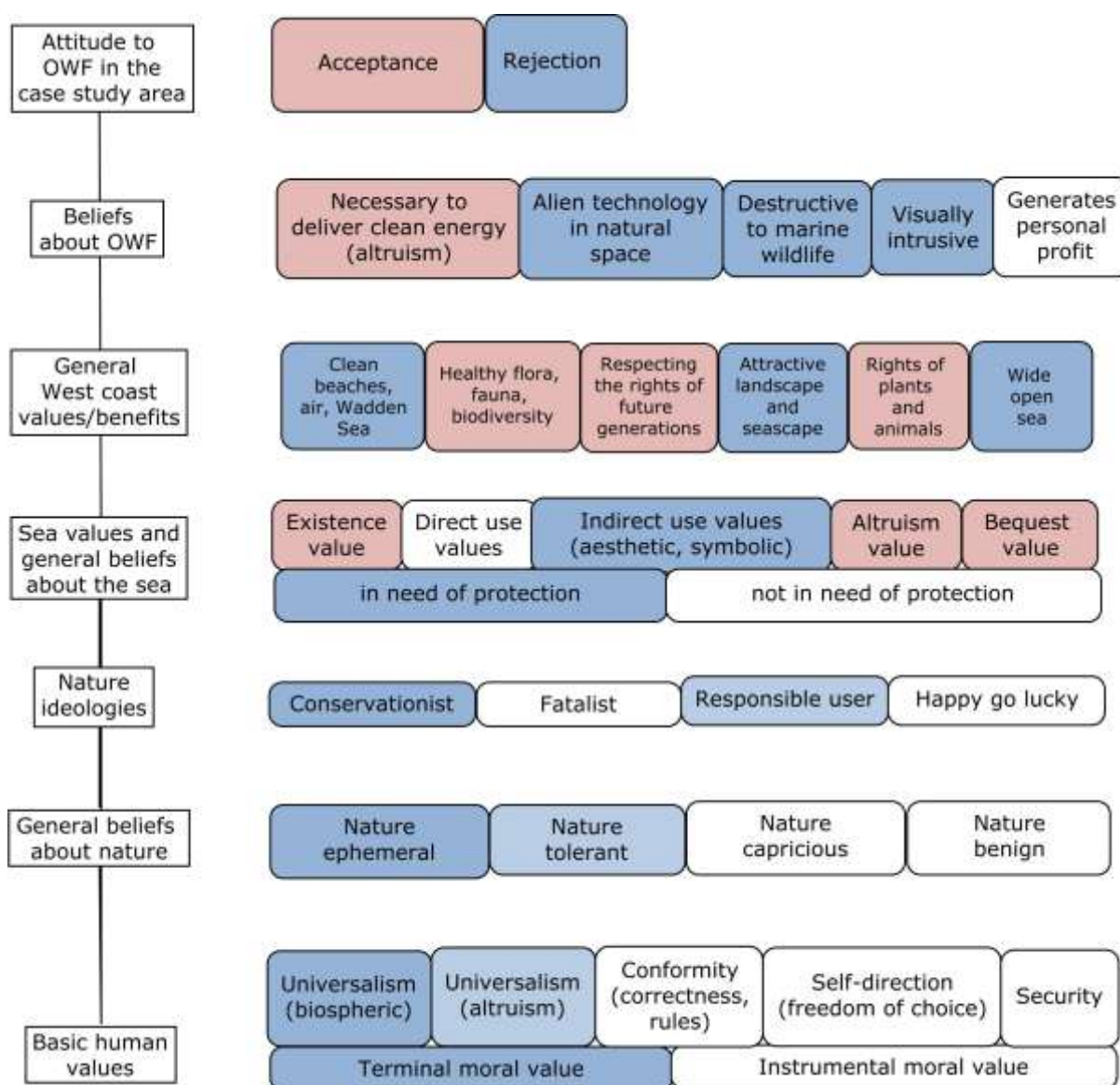


Figure 79: The relationship between all layers of the cognitive belief framework. Blue indicates strong relationships between the respective elements; lighter blue indicates less strong relationships. Pink indicates a strong relationship between the elements in question.

The belief that offshore wind farming is a clean source of energy worthy of support links back to biospheric universalism at the level of basic human values, where the thought is that air pollution and its consequences should be prevented if a healthy planet is to be maintained. Another is to

altruistic universalism, where the concern is to other people rather than nature. A third link is to security as a basic human value, which may be linked to the desire to prevent the potential consequences of climate change to the region, such as sea level rise and the potential loss of islands and parts of the coastline. This directly links to another level of the cognitive belief framework, which is the idea that the rights of future generations should be respected – in this case, the right to a clean and healthy planet and environment. Close links can therefore be established between the notion that clean energy is important, the belief that offshore wind farming can deliver this, and acceptance of offshore wind farming.

The other side of the coin are the negative beliefs about offshore wind farming (Figure 79), which lead to its rejection as an option for the West coast.

7.4.6 A closer look at bifurcation points and trade-offs

The cognitive belief framework reveals the existence of turning and bifurcation points. Some of these are crucial for the formation of attitudes to offshore wind farming since this is where trade-offs occur. It therefore pays to take a closer look at the most important bifurcation points identified.

a) General beliefs about nature and general beliefs about the sea

The first bifurcation point occurs at the level of general beliefs about nature. As indicated above, beliefs about nature are transferred to the sea, which in turn influences the attitudes taken to human use of the sea. If nature is considered ephemeral, so is the sea; the same applies to a general belief that nature is tolerant. Nature ideologies represent an interim step which may or may not influence the view of the sea. A conservationist and responsible user ideology may both lead to the view that the sea is in need of protection. Nature ideologies, however, do influence beliefs about the impacts of offshore wind farming: the ideology of responsible use, for example, may consider offshore wind farming acceptable as long as certain rules are adhered to (such as minimising the impact on the marine environment).

b) Sea values/general beliefs about the sea and general West coast values

Another bifurcation point is between sea values and general beliefs about the sea, and general West coast values. This is due to the fact that altruism and bequest value can take on two meanings. One is concerned with passing on a healthy landscape and marine environment while the other is concerned with passing on a healthy planet. Although both are representative of the West coast value of “respecting the rights of future generations”, they lead to rather different outcomes. Interpreted as “healthy planet”, this West coast value then lays the foundation for a positive attitude to offshore wind farming. If this value is strong enough it can even override expected negative impacts of offshore wind farming. Interpreted as “healthy marine environment”, the opposite is the case, especially if the person also believes offshore wind farming to negatively impact on the marine environment.

c) Beliefs about offshore wind farming

A true turning point that is capable of overriding other values, however, occurs at the next level when beliefs about offshore wind farming come into play. The belief that renewable and clean energy generation is important, coupled with the belief that offshore wind farms are capable of delivering this, can override other concerns entirely.

The choices that are made at each stage of the cognitive belief framework, and the bifurcation points that occur, explain why attitudes to offshore wind farming cannot be understood by looking at any one element of the framework in isolation. Although they can be considered a certain predisposition towards particular beliefs, and although patterns do emerge in how attitudes are formed, basic human values or specific expectations about the impacts of offshore wind farming alone are no predictors of a specific attitude to offshore wind farming. Trade-offs take place at different layers of the cognitive belief framework, sometimes unexpectedly so. Trade-offs can take place within a category, for example where different general beliefs about offshore wind farming compete with one another, or between categories, for example where general beliefs about offshore wind farming compete with general beliefs about the sea. The outcomes of these trade-offs are not always predictable as trade-offs serve to qualify values that may seem absolute at first glance. A person may believe, for example, that offshore wind farming is an inefficient means of generating power. Taken in isolation, this could easily lead to the conclusion that this person must be negatively disposed towards offshore wind farming. However, that person may still accept offshore wind as a new development for the West coast because their belief in the principle of renewable energies is even stronger. The general belief in this case would outweigh the more specific belief about offshore wind farming.

The trade-off becomes even more complex when adding in beliefs about nature or the seascape. A person may hold the exact same beliefs about offshore wind farming and renewables as just described, but still end up rejecting offshore wind farming because they believe that offshore wind farms, irrespective of how desirable they may be as a renewable, would destroy the seascape. In this case, the seascape (in this example considered a local and above all finite value) is valued more highly than the principle of renewables (which could perhaps be sited anywhere). The complex (subconscious) processes of trade-off that occur across the various levels of the cognitive belief framework therefore only become visible when regarding the entire cognitive belief framework.

Although no trade-off can be predicted with absolute certainty, the empirical chapters have shown that certain outcomes of trade-offs, or links between elements of the cognitive belief framework, are more likely for certain groups of people than others. It is possible, therefore, to conceive of 'value types', indicating groups of people travelling through the cognitive belief framework along a similar route, arriving at similar trade-offs each step of the way. Figures 80-83 show four examples of such 'value types' and the specific trade-offs associated with them.

Figure 80 is the example of the **'conservationist type'**. This type believes that nature and the sea are fragile and in need of protection. They value the existence value of nature and the sea, as well as assigning them bequest value in the sense of wishing to pass them on in a good state to the next generation. Key to this type is the belief that offshore wind farming will negatively impact on the marine environment. This conflicts with the value assigned to healthy flora and fauna and the belief that plants and animals have a right to exist in their natural environment. A negative attitude to offshore wind farming is the result.

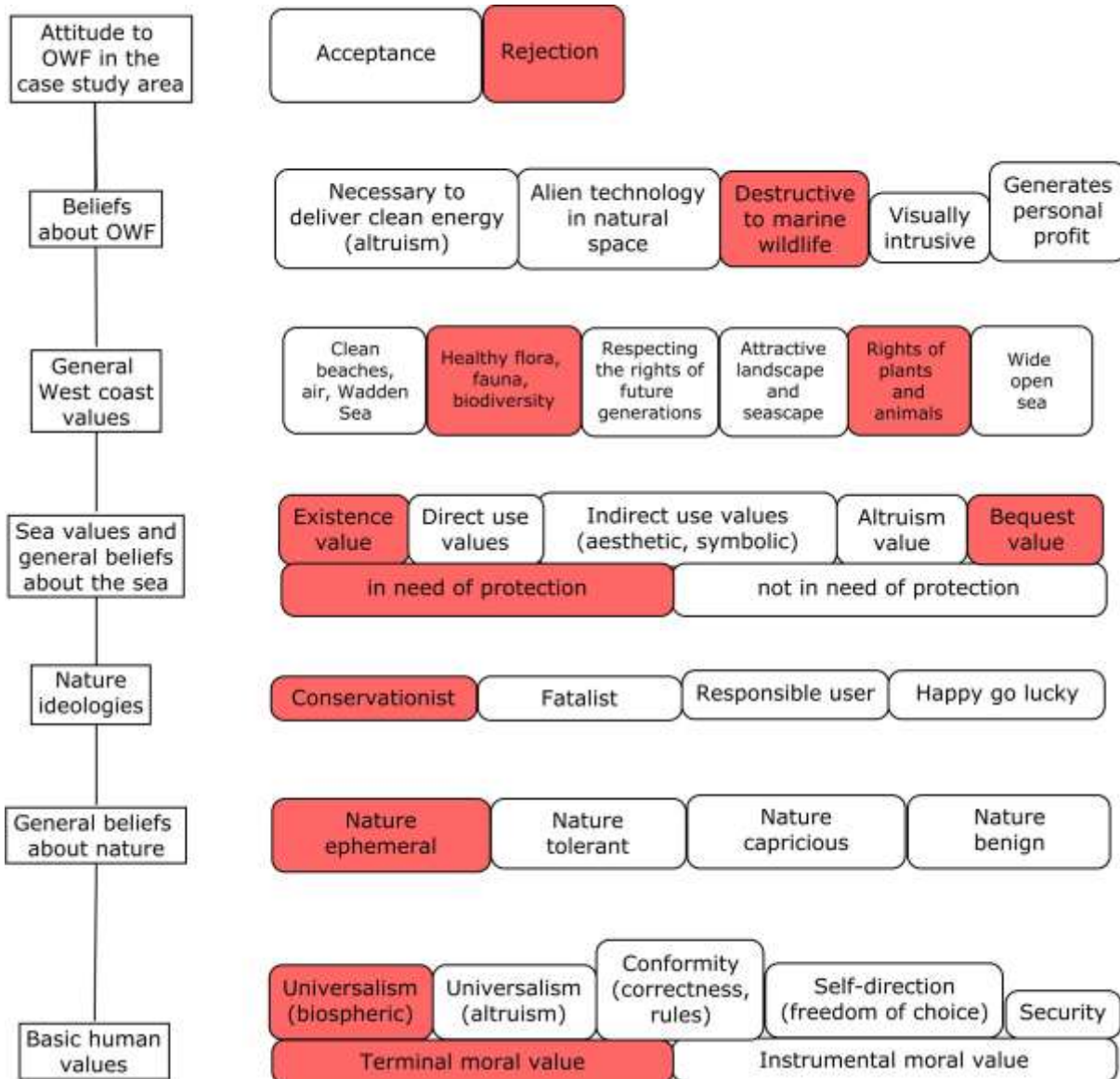


Figure 80: Trade-offs made by a 'conservationist type' leading to the rejection of offshore wind farming

Figure 81 is the example of the 'aesthetic type'. This type considers nature, and by implication of the sea, to be essentially tolerant of human use and not necessarily in need of special protection. It is less the lower levels of the cognitive belief framework that matter, however, and other constellations are equally conceivable. The key here is the importance of aesthetic and symbolic sea values and of the wide open sea, coupled with the belief that offshore wind farms are visually intrusive. The belief that offshore wind farms represent alien technology in an essentially natural space would also be relevant here. Again, the result is rejection of offshore wind farming, but for different reasons than those in the first example.

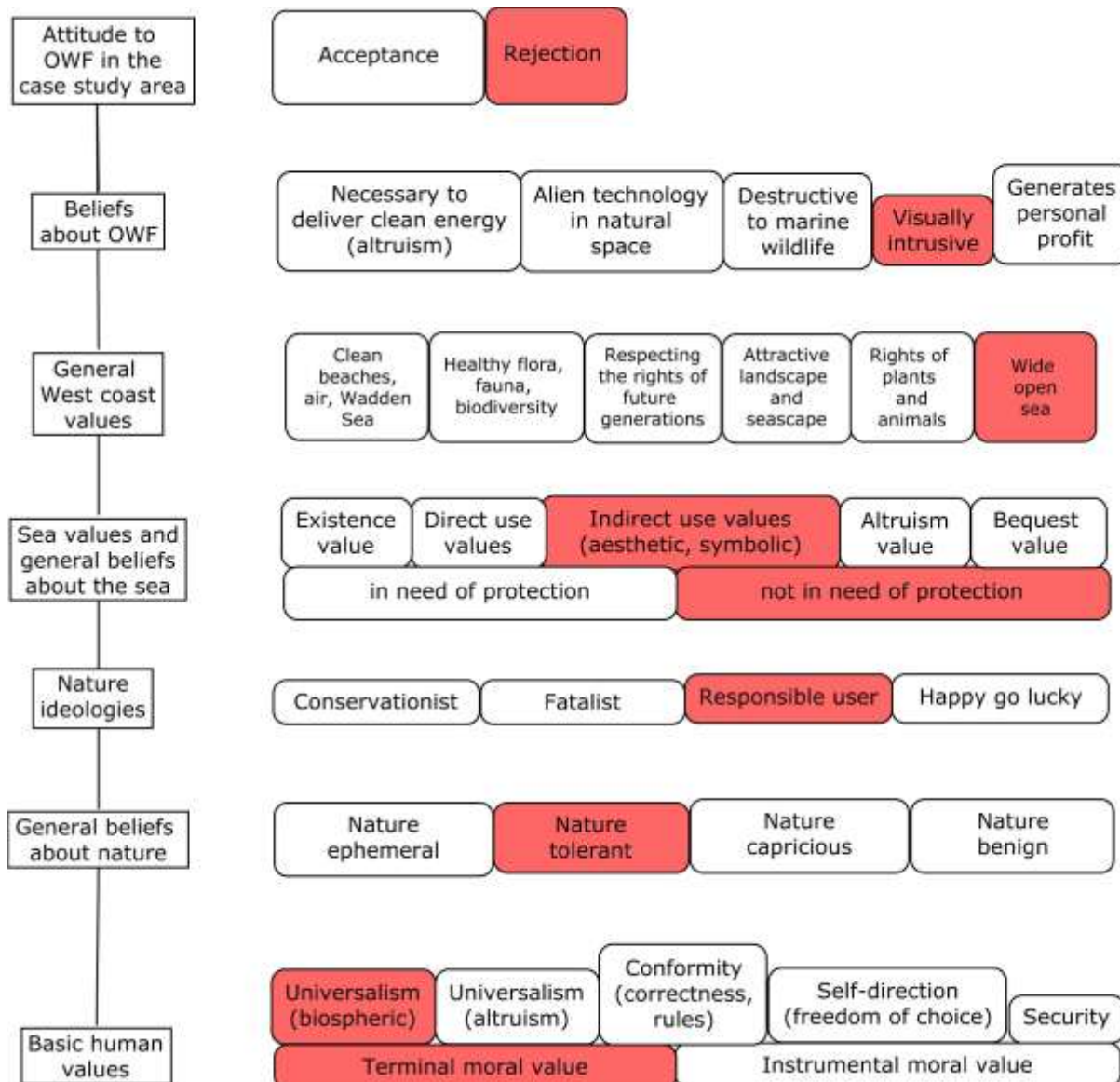


Figure 81: Trade-offs made by the 'aesthetic type' leading to the rejection of offshore wind farming

Figure 82 is the case of the ‘**clean energy proponent**’. This type accepts offshore wind farming irrespective of the other beliefs and values they may hold. Figure 82 is therefore only indicative of possible value constellations; those elements indicated red could equally be a different constellation. The important point here is that the clean energy argument is the one and only reason to support offshore wind farming, even if this means giving up other values that are also considered important (such as healthy flora and fauna and the visual qualities of the seascape, as indicated here).

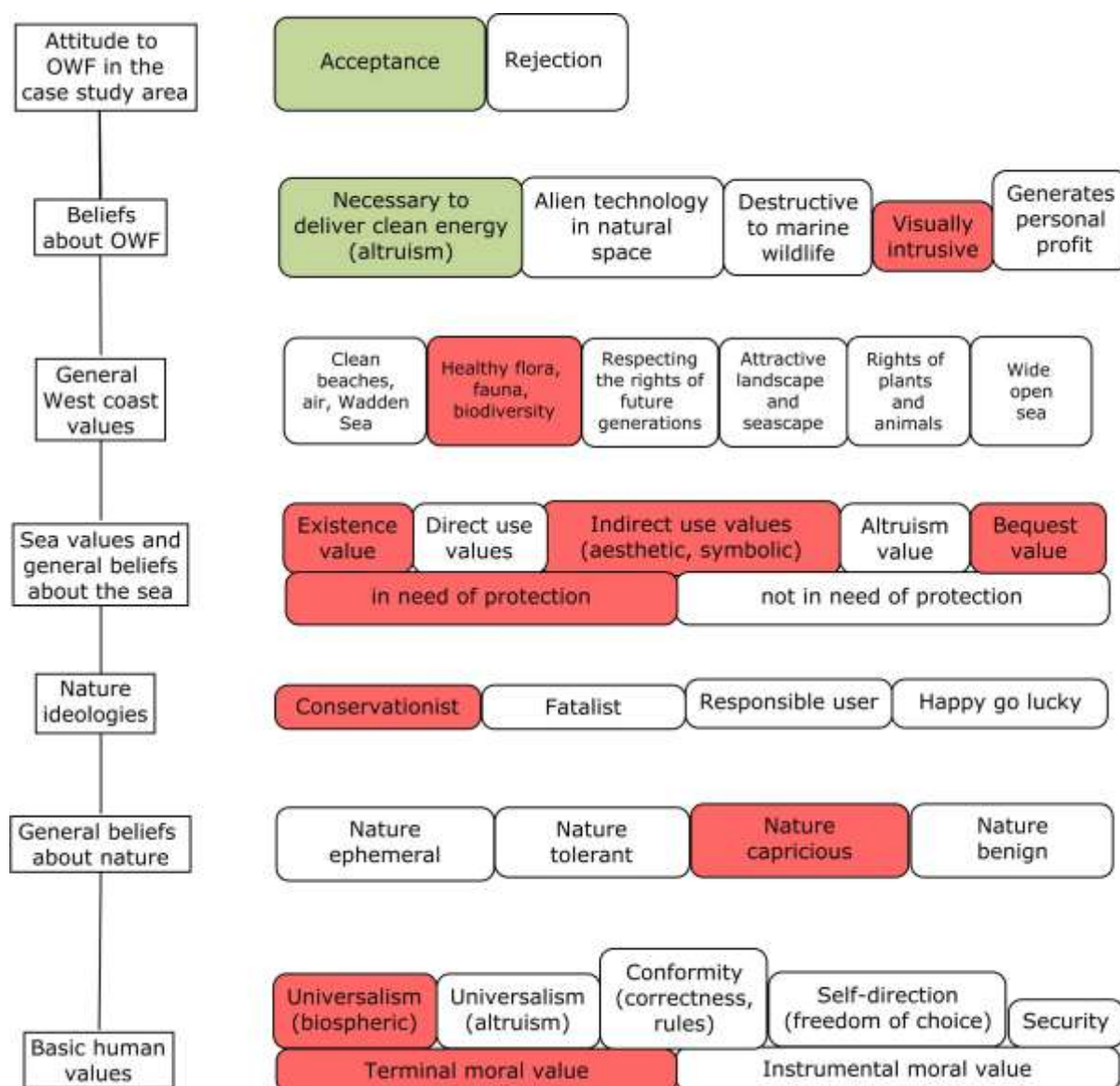


Figure 82: Trade-offs made by the ‘clean energy proponent type’ leading to the acceptance of offshore wind farming

Lastly, Figure 83 shows the example of the **'utilitarian type'**, where personal profit and gain from offshore wind farming plays a role. The example shown is a consistent one all the way through, although more cautious constellations are also conceivable, such as the belief that nature is fragile and that offshore wind farming is essentially destructive to the seascape. Nevertheless, if the motivation is to derive some immediate or later stage profit, this could conceivably override other concerns.

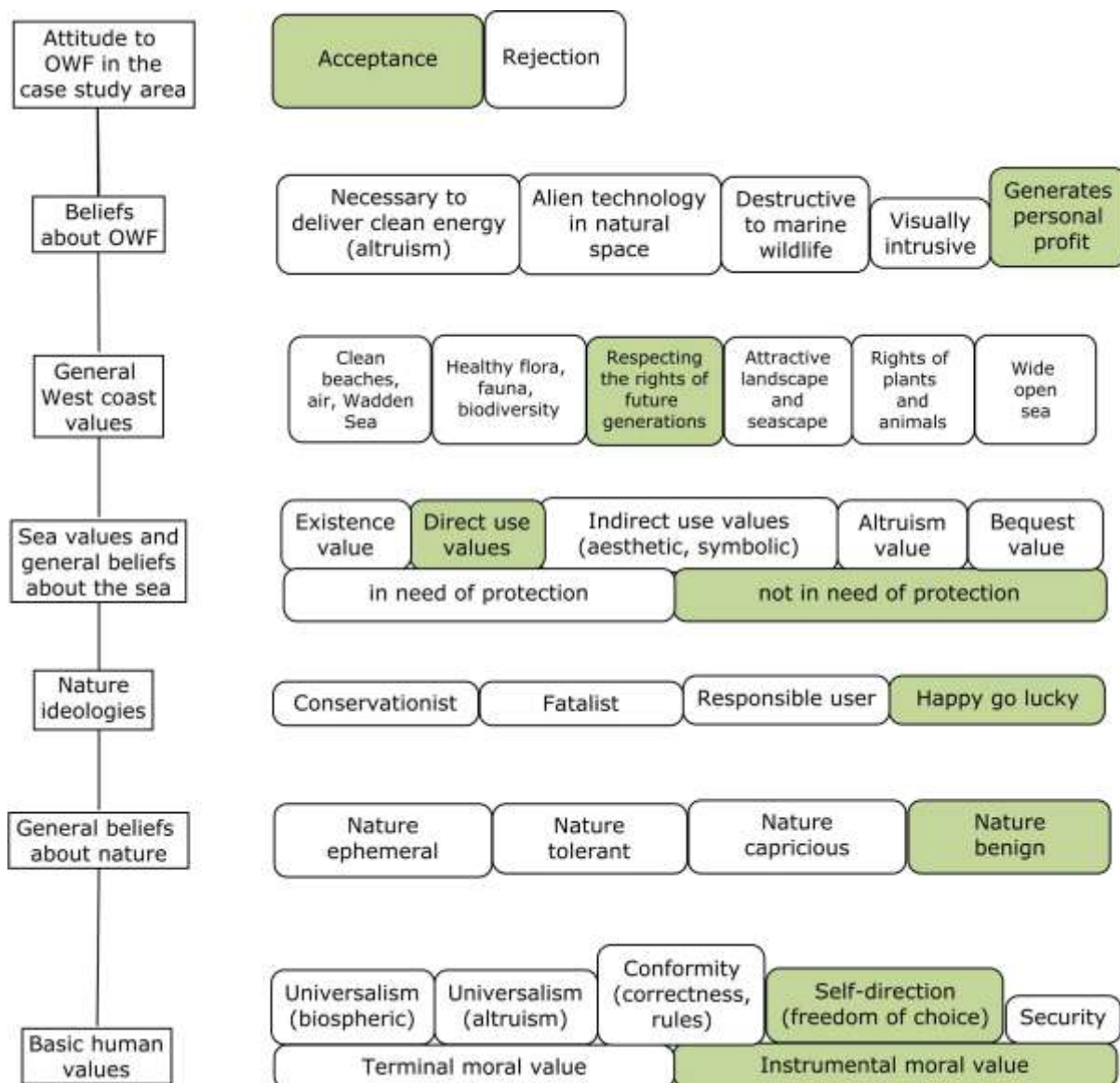


Figure 83: Trade-offs made by the 'utilitarian type' leading to the acceptance of offshore wind farming

8 Conclusion

This study has shown the complexity of factors that leads to the formation of individual attitudes to offshore wind farming. Work was done in a case study region where dependence on, and identification with traditional sea values is high. An added factor is the structural weakness of the region and its need of a strong wind energy sector to support the local economy. Expectations of strong and conflicting attitudes to offshore wind were confirmed, with opponents and supporters of offshore wind farming more or less equally distributed across the sample population. The study is based on a non-representative questionnaire survey of local residents in selected municipalities; this was coupled with a (separately published) document-based assessment of group attitudes to offshore wind farming. The study is explorative and qualitative, owing to the fact that no offshore wind farms have yet been constructed in the case study region and that the overall sample was small.

Cognitive belief frameworks are a useful for examining basic human values and their relationships to higher forms of cognition. They reflect several layers of cognition and evidence that basic human values influence general beliefs, which impact on attitudes, which in turn influence behaviour. In this case, a cognitive belief framework was used to assess the varying values and beliefs that lead to attitudes to offshore wind farming, choosing not to consider the last (behavioural) stage of cognition.

The study has shown the importance of constructing a cognitive belief framework specific to the case under consideration. The cognitive belief framework constructed here is based on different values and beliefs specific to the case of offshore wind farming, although they have been arranged in acknowledged orders of cognition. The cognitive belief framework recognises independent values for the sea and offshore wind farming, using the expected impacts of offshore wind farming and the evaluation of these impacts as key stages in forming an attitude to offshore wind farming. It also recognises the fundamental layers of basic human beliefs and in this specific case, beliefs about nature.

Once constructed, the advantage of a cognitive belief framework is that it allows the tracing of the specific factors and bifurcation points which are instrumental in forming an attitude to offshore wind farming. It can therefore be used as a template to identify particular 'value types' indicative of different value constellations.

An important aspect is that cognitive belief frameworks need to be grounded in a thorough assessment of objects of value. Because of the lack of existing data for the specific case of the sea, the study first had to establish what objects of value exist in the sea and whether the sea is a carrier of values in its own right as distinct from the mainland. For this purpose, the concept of landscape was applied to the specific setting of the sea. Building on the many qualitative responses obtained in the survey, existing definitions of 'seascape' as a predominantly visual-aesthetic concept were shown to be inadequate for capturing the whole range of values that make up the seascape. A new definition of 'seascape' was thus developed as a full equivalent of landscape, encompassing physical properties (forms), visual-aesthetic elements as well as the

'sea of the mind'. The empirical part revealed that non-use values play a particular role in assigning value to the seascape, expressed in particular in the visual aesthetic qualities of the seascape and the symbolic values assigned to it.

The main outcome of fitting the values thus identified into the context of the cognitive belief framework is that a supposedly simple 'yes' or 'no' to offshore wind farming is not simple at all. One of the main lessons of the study is thus that it would be quite wrong, for example, to brand all opponents of offshore wind farming as hardened nature conservationists or to label them as inflexible minds that would simply resist progress. Results show that many reasons exist for arriving at a particular attitude to offshore wind farming, although groups could be identified that are typical for certain value constellations. Values associated with offshore wind farming (such as the belief that renewable energies are relevant and important) and estimates of the likely impacts of offshore wind farming are key factors in determining acceptance, but again, the cognitive belief framework shows that concerns over potential impacts do not always translate into rejection of offshore wind farming for the case study region. Equally, the fact that an individual does not seem concerned about the impacts of offshore wind farming does not imply they will automatically develop a positive attitude. This is due to trade-offs that occur between offshore wind values and the differing underlying value base, expressed in general beliefs about nature, nature ideologies and general beliefs about the sea.

The key message of the cognitive belief framework is that focusing on any one aspect in isolation will not explain the *why* of a particular attitude to offshore wind farming. Unless the underlying value base is very strong and consistent, support or rejection of offshore wind farming is always the result of a complex internal process driven by subjective rationalities, which weighs beliefs and "values values". The fact that the same attitude to offshore wind farming can arise from very different value constellations implies that a person may come to support or reject offshore wind farms for reasons not at all linked to offshore wind farming per se. Rather than sea values or offshore wind values per se, it is thus the trade-offs that act as the essential determinants of attitudes to offshore wind farming. The cognitive belief framework is able to trace the decision flow, not only establishing value sets, but also the logics employed by each person in working from one order of belief to the next. This process does not necessarily conform to rational logic, but can be partly or entirely built on emotional aspects (see also Weichhardt 2008:268). If true understanding is sought of what drives attitudes to offshore wind farming, it is therefore worth exploring the flow of preferences and mental trade-offs at the different stages of the process for each respective case.

Although they are not action-centered themselves, the results obtained from the cognitive belief framework can be considered a precursor to action. This may become relevant in highly contentious cases where resistance to offshore wind farming is much more pronounced than in the case study area. In such cases, the cognitive belief framework can be used to trace readiness and willingness to take action against offshore wind farming, such as leading protest.

Since circumstances change, the results described in this study must be interpreted as a snapshot in time, reflecting a particular situation in the case study area and also the particular situation of each respondent at the time of questioning. The advantage of the cognitive belief

framework is that it allows the tracing of shifting trade-offs, reflecting possible changes in the local population of how offshore wind farming is weighed against other values. It also allows for comparative studies in other regions as it is easily transferrable to other contexts, testing the hypothesis that similar value constellations apply irrespective of the cultural setting. One such comparative study is currently being conceptualized for Spain.

So what are the implications of these results for the case study region, and what can they offer to the future debate on offshore wind farming generally?

Since the field work was carried out, little progress has been made in terms of constructing offshore wind farms in the North Sea. At present, one offshore wind farm is operational in the North Sea (Alpha Ventus consisting of 12 turbines), and several others are in the construction phase. None are situated in the direct vicinity of the case study region as originally feared by the local residents. On the West coast, the contention surrounding offshore wind farming has therefore abated, although it could easily arise again once plans for offshore wind farms become more specific. As other regions were better equipped to reap the benefits of ancillary offshore wind services (such as providing port facilities for assembly and shipping of offshore wind turbines), the West coast of Schleswig-Holstein has accepted that it will not become a hub of offshore wind farming activity. This implies a loss of opportunity with respect to generating new employment and income in the region. This too may be a reason why the debate has gone quiet, in particular where political stakeholders are concerned.

The jury is also still out over the actual ecological impacts of offshore wind farms. Burkhard & Gee (2012) state that offshore wind farming introduces hard structures into the sea, leading to direct impacts on marine ecosystems. Petersen and Malm (2006) conclude that in marine areas with little or no hard substrates, offshore wind farms have the potential to completely alter the characteristics of local species composition, leading to the creation of new habitats (artificial reefs) at a local scale. Punt et al. (2009) demonstrated possible spatial spill-over effects of artificial reefs and no-take zones for fish using a numerical model example for the Dutch part of the North Sea. Gill (2005) expects even larger scale cumulative impacts for the whole North Sea due to several larger OWF projects adjacent to each other. Several studies (Nilsson and Green 2011, Vattenfall 2010, Peterson and Malm 2006) assume minor or no negative effects on the marine environment whereas others expect major problems for birds (Exo et al. 2003) and marine mammals (Skeate et al. 2012). In contrast, several authors also list positive environmental effects related to OWF installations, such as increase in (local) biodiversity, artificial reef emergence, no-take fishery zones as well as negative effects, which are mainly avian collisions, underwater noise and electromagnetic fields (Punt et al. 2009, Inger et al. 2009, Gill 2005). Coastal Futures used various ecological models to assess the likely impact of OWF installation on the marine ecosystem in the case study area (Lenhart et al. 2010, Burkhard et al. 2011). Whether the concerns expected by the local residents over the marine environment would really manifest themselves is thus far from certain, in particular given the cumulative impacts that may arise from offshore wind farming and other uses such as shipping (Busch et al. 2012).

What has become clear, however, is that nature-based and seascape values matter greatly, and that the significance of these values may be underestimated in current planning processes. There

is a strong image of the marine environment as largely untouched, yet also fragile and in need of protection, expressed both as a nature and a seascape value. The view that the sea requires protection arises both from intrinsic value assigned to the sea and from the fact that residents draw particular benefits from encountering the sea. The difficulty is that this 'natural' mental image of the sea and its interpretation as a last 'wilderness sanctuary' outside of human control is incompatible with the perceived industrialisation of the sea epitomized by offshore wind farming. This is an aspect largely uncredited in the debate on offshore wind farming. There is also an indication that the sea is considered a natural part of the local living environment, rendering it much more place-based than commonly assumed. Sense of place and attachment to place are co-determined by the specific character of the North Sea; the sense of ownership of the sea is also largely neglected in current debates.

In order to allow for a meaningful and inclusive debate, decision-making processes need to cover the entire range of values that can be identified in a particular place. Current planning processes in the marine environment have a tendency to be spatial only, using a rational approach to the exclusion of more meaning-related and emotional views of place. This particularly includes intangible sea values such as those expressed by local residents. In order to increase local participation in planning processes and transparency, local intangible values should be taken into account in order to allow for negotiation at a level playing field. Comparison of results obtained from the residents' survey and the group stakeholder assessment demonstrate the need to align the respective value bases. There is a particular need to incorporate views not already expressed by any stakeholder group. Although they are not commonly available in a format amenable to planning. Initiatives to map such values by means of participative processes are now beginning to address this problem.

In cases where contention has already led to entrenched positions, use of the cognitive belief framework could help identify values and rationales employed by stakeholders, opening the door to better understanding opinions and finding solutions out of the box.

References

- Adler, F. 1956. The value concept in sociology. *The American Journal of Sociology* 62, 272-279.
- Ajzen, I., Fishbein, M. 1977. Attitude–behavior relations: a theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888–918.
- Appleton, j. 1996. The experience of landscape (revised edition). Wiley & Sons.
- Arzt, I., Weinhold, N. 2007. Wer zuerst kommt. neue energien 12/07, <http://www.neueenergie.net/index.php?id=1599> (last accessed 29 November 2009)
- Audi, R. (ed). 1999 The Cambridge dictionary of philosophy. Cambridge University Press, Cambridge.
- Bähr, J. 1982. Nordfrieslands Küste im Wandel. In: Bähr, J. & Kortum, G.: Schleswig-Holstein. Eine landeskundliche Einführung. Sammlung Geographische Führer 15, Gebr. Bornträger, Berlin & Stuttgart, 85-112
- Bähr, J. & Kortum, G. 1987. Schleswig-Holstein. Eine landeskundliche Einführung. In: Bähr, J. & Kortum, G. Schleswig-Holstein. Sammlung Geographische Führer 15, Gebr. Bornträger, Berlin & Stuttgart, 1-54.
- Barrell, J. 1972. The Idea of Landscape and the Sense of Place 1730-1840. Cambridge University Press, Cambridge.
- Bell, D., Gray, T., Haggett, C. 2005. The social gap in wind farm siting decisions: Explanations and policy responses. *Environmental Politics* 14 (4), 460-477.
- Benkenstein, M., Yavas, U., Forberger, D. 2003. Emotional and Cognitive Antecedents of Customer Satisfaction in Leisure Services: The Case of the Rostock Zoo. *Journal of Hospitality & Leisure Marketing* 10 (3/4), 173-184.
- Bengston, D.N. 1994. Changing Forest Values and Ecosystem Management. *Society and Natural Resources* 7, 515-533.
- Berleant, A. 1992. The Aesthetics of Environment. Philadelphia, Temple University Press.
- Berlin Institut für Bevölkerung und Entwicklung (Ed.). 2004. Deutschland 2020. Die demografische Zukunft der Nation. Köln. www.berlin-institut.org/index1.html, accessed 15 February 2006.
- Bilsky, W. & Schwartz, S.H. 1994. Values and personality. *European Journal of Personality* 8, 163-181.
- Bishop, I.D., Miller, D.R. 2007. Visual assessment of offshore wind turbines: the influence of distance, contrast, movement and social variables. *Renewable Energy* 32, 814-831.

- Boehnke, K., Schwartz, S.H. 1997: Fear of war. Relations to values, gender, and mental health in Germany and Israel. *Peace and Conflict: Journal of Peace Psychology* 3, 149-165.
- Bormann, B. 1993. Is there a social basis for biological measures of ecosystem sustainability? *Natural Resource News* 3, 1-2.
- Bourassa, S.C. 1991. *Aesthetics of Landscape*. Belhaven Press, London.
- Bourke, L., Luloff, A.E. 1994. Attitudes toward the management of nonindustrial private forest land. *Society and Natural Resources* 7, 445-457.
- Brady, E., 2003. *Aesthetics of the Natural Environment*. Edinburgh University Press, Edinburgh.
- Braunholtz, S., 2003. *Public Attitudes to Wind farms—A Survey of Local Residents in Scotland*. MORI Scotland, Edinburgh.
- Brown, L. 1993. (ed). *The New Shorter Oxford English Dictionary on Historical Principles*. Oxford, Clarendon.
- Brown, T. and Peterson, G. 1993. A political-economic perspective on sustained ecosystem management. Paper presented at the Conference on Sustainable Ecological Systems, Flagstaff, AZ, 12-15 July 1993.
- Bruns A, Gee K. 2010. Der Küsten- und Meeresraum zwischen traditionellen Küstenbildern und neuen Steuerungsformen für eine nachhaltige Entwicklung. *Berichte zur Deutschen Landeskunde* 84(1), 41–58.
- Bruns, A., Gee, K. 2009. From state-centered decision-making to participatory governance: planning for offshore wind farms and implementation of the Water Framework Directive in Northern Germany. *GAIA* 18 (2), 150–157.
- Bruns, A. 2009. Partizipative Planungsprozesse im Küstenraum - Ein Beitrag zur geographischen Bildung für nachhaltige Entwicklung. In: Ratter, B. (Ed.): *Küste und Klima*. Hamburger Symposium Geographie, Hamburg, Band 1, 61-77.
- Brown, T.C. 1984. The concept of value in resource allocation. *Land Economics* 60 (3), 231-246.
- Bundesamt für Bauwesen und Raumordnung. 2005. *Raumordnungsbericht 2005*. Berichte, Band 21, Bonn.
- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. 2007. *Offshore wind power deployment in Germany*. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and Offshore Wind Energy Foundation. Brochure, January 2007.
- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. 2005. *Erneuerbare Energien in Zahlen –nationale und internationale Entwicklung, Stand Dezember 2005*, http://www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/erneuerbare_energien_zahlen_dezember.pdf

- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. 2001. Windenergienutzung auf See. Positionspapier des Bundesministeriums für Umwelt, Naturschutz und Reaktorsicherheit zur Windenergienutzung im Offshore-Bereich, Berlin, Mai 2001
- Bunkse, E. 2010. Poetics of the Latvian Landscape. Plenary address to the PECSRL conference, Riga, 24 August 2010.
- Bunkse, E. 2007. Feeling is believing, or landscapes as a way of being in the world. *Geografisker Annaler* 89b (3), 219-231.
- Burgess, J., Limb, M., Harrison, C. 1998a. Exploring environmental values through the medium of focus groups. 1. Theory and practice. *Environment and Planning A* 20(3), 309-26.
- Burgess, J., Limb, M., Harrison, C. 1998b. Exploring environmental values through the medium of focus groups. 2. Illustrations of a group at work. *Environment and Planning A* 20(4), 457-76.
- Burgess, S.M. 1992. Personal values and consumer research: An historical perspective. In: Sheth, J.N. (Ed.): *Research in Marketing* 11, 35-79, Greenwich, CT: JAI.
- Burkhard, B., Opitz, S., Lenhart, H-J. Ahrendt, K., Garthe, S., Mendel, B., Windhorst, W. 2011a. Ecosystem based modeling and indication of ecological integrity in the German North Sea – Case study offshore wind farms. *Ecological Indicators* 11: 168-174.
- Burkhard, B., Gee, K. 2012. Establishing the Resilience of a Coastal-marine Social-ecological System to the Installation of Offshore Wind Farms. *Ecology and Society* 17 (4): 32. [online] URL: <http://www.ecologyandsociety.org/vol17/iss4/art32/>
- Busch M, Kannen A, Garthe S, Jessopp M. 2012. Consequences of a cumulative perspective on marine environmental impacts: offshore wind farming and seabirds at North Sea scale in context of the EU Marine Strategy Framework Directive. *Ocean and Coastal Management*, doi: 10.1016/j.ocecoaman.2012.10.016.
- Byzio, A., Mautz, R., Rosenbaum, W. 2005. *Energiewende in schwerer See? Konflikte um die Offshore-Windkraftnutzung*. Oekom-Verlag, München, 180 pp.
- Caldao, H., Ng, K., Johnson, D., Sousa, L., Phillips, M., Alves, F. 2010. Marine spatial planning: Lessons learned from the Portuguese debate. *Marine Policy* 34, 1341-1349.
- Callicott, J.B. 1992. Rolston on Intrinsic Value. *Environmental Ethics* 14 (2), 129-143.
- Cantrill, J., Senecah, S. 2001. Using the 'Sense of Self-in-Place' Construct in the Context of Environmental Policy-Making and Landscape Planning. *Environmental Science and Policy* 4, 185-203.
- Carlson, A. 1979. Appreciation and the natural environment. *Journal of Aesthetics and Art Criticism* 37 (3), 267-275.
- Commission of the European Communities. 2007a. Communication from the Commission to the European Council and the European Parliament: An Energy Policy for Europe. Brussels, 10.1.2007, COM(2007) 1 final.

- Commission of the European Communities. 2007b. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Region. An Integrated Maritime Policy for the European Union. Brussels, 10.10.2007, COM(2007) 575 final.
- Coones, P. 1992. Landscape geography. In: Rogers, A., Viles, H. and Goudie, A. (eds), *The Student's Companion to Geography*. Blackwell, Oxford.
- Corbin, A. 1994. *Meereslust. Das Abendland und die Entdeckung der Küste*. Frankfurt am Main, Fischer Taschenbuch.
- Corral-Verdugo, V. 1997. Dual realities of conservation behaviour: self-reports vs observations of re-use and recycling behaviour. *Journal of Environmental Psychology* 17, 135-45.
- Cosgrove, D., Daniels, S. (eds) 1988. *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*. Cambridge: Cambridge University Press.
- Cosgrove, D.E. 1984. *Social formation and symbolic landscape*. Croom Helm, London & Sydney.
- Council of Europe. 2000. *European Landscape Convention*. CE European Treaty Series 176. From: Treaty Office on <http://conventions.coe.int> (accessed 15 October 2007)
- Creighton, J. L. 1983. The use of values: Public participation in the planning process. In G. A. Daneke, M. W. Garcia, and J. Delli Priscolli (eds.), *Public Involvement and Social Impact Assessment*. Boulder: Westview Press, 143-160.
- Crumley, C., Marquardt, W.H. 1990. Landscape: A Unifying Concept in Regional Analysis. In *Interpreting Space: GIS and Archaeology*. edited by Kathleen Allen, Stanton Green and Ezra Zubrow, Taylor and Francis, London, 73-79.
- Daily, C.D., Polasky, S., Goldstein, J., Kareiva, P.M., Mooney, H.A., Pejchar, L., Ricketts, T.H., Salzman, J., Shallenberger, R., 2009. Ecosystem services in decisionmaking: time to deliver. *Frontiers in Ecology and the Environment* 7 (1), 21–28.
- Daniels, S. 1991. The Making of Constable Country, 1880-1940. *Landscape Research* 16, 9-17.
- Danish Energy Authority, 2006. *Offshore Wind Farms and the Environment. Danish Experiences from Horns Rev and Nysted*.
- Davies, A. 2001. What Silence Knows – Planning, Public Participation and Environmental Values. *Environmental Values* 10, 77-102
- Department of Trade and Industry (UK)(2005): *Guidance on the assessment of the impact of offshore wind farms: Seascape and Visual Impact Report*. November 2005.
- Deutscher Bundestag 2000. *Gesetz für den Vorrang Erneuerbarer Energien (Erneuerbare-Energien-Gesetz - EEG) vom 25.02.2000, in Kraft getreten am 01.04.2000*.
- Devine-Wright, P. 2007. *Reconsidering public attitudes and public acceptance of renewable energy technologies: a critical review*. Working Paper 1.4 of the research project "Beyond

- Nimbyism: a multidisciplinary investigation of public engagement with renewable energy technologies" funded by the ESRC under the 'Towards a Sustainable Energy Economy' Programme. Published by the School of Environment and Development, University of Manchester, Oxford Road, Manchester M13 9PL, UK, http://www.sed.manchester.ac.uk/research/beyond_nimbyism/
- Devine-Wright, P. 2005a. Beyond NIMBYISM: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy* 8, 125-139.
- Devine-Wright, P. 2005b. Local aspects of UK renewable energy development: exploring public beliefs and policy implications. *Local Environment* 10 (1), 57-69.
- Devine-Wright, P., Devine-Wright, H. 2006. 'Social representations of intermittency and the shaping of public support for wind energy in the UK'. *International Journal of Global Energy Issues: Special issue on Intermittency*, 25 (3/4), 243-256.
- Die Bundesregierung 2004. Perspektiven für Deutschland. Unsere Strategie für eine nachhaltige Entwicklung. Fortschrittsbericht 2004. http://www.bundesregierung.de/Content/DE/Anlagen/2006-2007/fortschrittsbericht-2004.pdf?__blob=publicationFile (last accessed February 2007)
- Diekmann, A. 2005. Empirische Sozialforschung. Grundlagen, Methoden, Anwendungen. Rowohlt's Enzyklopädie im Rowohlt Taschenbuchverlag, 13. Auflage 2005.
- Dietz, T., Fitzgerald, A., Shwom, R. 2005. Environmental values. *Annual Review of Environment and Resources* 30, 335-72.
- Driver, B., R. Nash, and G. Haas. 1987. Wilderness benefits: A state-of-knowledge review. In *Proceedings—National Wilderness Research Conference Issues, State-of-Knowledge, Future Directions*. R.C. Lucas, ed. U.S. Department of Agriculture—Forest Service General Technical Report INT-220. Ogden, Ut.:USDA—Forest Service Intermountain Research Station, 294-319.
- Douvere, F., Ehler, C. 2009. New perspectives on sea use management: Initial findings from European experience with marine spatial planning. *Journal of Environmental Management* 90, 77-88.
- dsn Projekte-Studien-Publikationen 2005. Schleswig-Holstein 2020. Demographie-Report regional. <http://www.dsn-projekte.de/de/themen/demographie/index.php>, last accessed 01.03.2006.
- Dwyer, J.F., Schroeder, H.W., Gobster, P.H. (1991): The significance of urban trees and forests: Toward a deeper understanding of values. *Journal of Arboriculture* 17(10), 276-284.
- Eagly, A.H., Chaiken, S. 1993. *The Psychology of Attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Earle, T.C., Cvetkovich, G.T. 1995. *Social Trust: Toward a Cosmopolitan Society*. Westport, CT: Praeger.
- Eftec, 2006. Valuing our natural environment. Final report to the Department for Environment, Food and Rural Affairs, 20 March 2006.

- Eisenhauer, B.W., Krannich, R.S., Blahna, D.J., 2000. Attachments to special places on public lands: an analysis of activities, reason for attachments, and community connections. *Society and Natural Resources* 13 (5), 421–441.
- Ek, K. 2005. Public and private attitudes towards “green” electricity: the case of Swedish wind power. *Energy Policy* 33 (13), 1677-1689
- Ellis, G., Barry, J. & Robinson, C. 2007. Many ways to say 'no', different ways to say 'yes': Applying Q-Methodology to understand public acceptance of wind farm proposals. *Journal of Environmental Planning and Management* 50 (4), 517 – 551.
- European Communities 2006. Energy Technologies. Knowledge – Perception – Measures. Directorate-General for Research, Sustainable Energy Systems, EUR 22396.
- European Parliament and Council. 2008. Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). Official Journal of the European Union L 164/19, EN 25.6.2008.
- EWEA. 2008. Wind map 2007, www.ewea.org/statistics (last accessed 08.03.2008)
- EWEA. 2007. Delivering offshore wind power in Europe. Policy recommendations for large-scale deployment of offshore wind power in Europe by 2020.
- EWEA. 2004. Wind energy – the facts. An analysis of wind energy in the EU-25. Download from www.ewea.org
- EWEA. 2003. A summary of opinion surveys on offshore wind power. *Wind Directions*, September/October issue, pp. 16-31.
- Ewert, A.W. 1995. Getting Alice through the door: Social science research and natural resource management. USDA Forest Service Gen. Tech. Rep. PSW-156, 111-115.
- Exo, K.-M., O. Hüppop, S. Garthe. 2003. Birds and offshore wind farms: a hot topic in marine ecology. *Wader Study Group Bulletin* 100, 50–53.
- Fairbrother, N. 1970. *New lives, new landscapes*. London, Architectural Press.
- Fan, D. P. 1988. *Predictions of public opinion from the mass media: Computer content analysis and mathematical modeling*. New York: Greenwood Press.
- Firestone, J., Kempton, W. 2007. Public opinion about large offshore wind power: underlying factors. *Energy Policy* 35 (3), 1584–1598.
- Fischer, L., Hasse, J. 2001. Historical and Current Perceptions of the Landscapes in the Wadden Sea Region. In: *Wadden Sea Ecosystem* 12, 72-97
- Fischer, L. 2007. Cultural landscape and a natural landscape – notes with regard to the Wadden Sea region. Presentation at the LanceWadPlan Final Conference, Wilhelmshaven, 19 June 2007 (Source: <http://www.lancewad.org>)

- Fish, R.D., Haines-Young, R., Rubiano, J. 2003. Stakeholder landscapes and GIS: Institutional Visions of Landscape and Sustainability in the Management of the Sherwood Natural Area, UK. In: H. Palang and G.Fry. (Eds.) *Landscape Interfaces: Cultural Heritage in Changing Landscapes*, Kluwer: London, 147-163
- Fishbein, M. 1967. Attitude and the prediction of behavior. In: M. Fishbein, *Readings in attitude theory and measurement* (pp. 477–492). New York: Wiley
- Fishbein, M., & Ajzen, I. 1975. *Belief, attitude, intention, and behavior*. Reading, MA: Addison–Wesley
- Friends of the Earth Cymru 2002. Public attitudes to wind energy in Wales. August 2002 Telephone Omnibus and Report of September 2002. Prepared for Friends of the Earth Cymru by Market Research Wales Ltd.
- Fuchs, S. 2006. Medienanalyse - Das Thema Offshore Windkraft in der lokalen Presse an der Westküste Schleswig-Holsteins. Coastal Futures Arbeitspapier 11, Oktober 2006.
- Fulton, D. C., Manfredo, M. J., Lipscomb, J. 1996. Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife*, 1(2), 24–47.
- Gailing, L. & Leibenath, M. 2012. Von der Schwierigkeit, „Landschaft“ oder „Kulturlandschaft“ allgemeingültig zu definieren. *Raumforschung und Raumordnung* 70, 95–106
- Gätje, C. 2007. Das sozio-ökonomische Monitoring im Nationalpark Schleswig-Holsteinisches Wattenmeer. In: Biosphärenreservat Vessertal-Thüringer Wald, Verwaltung (ed): *Besuchermonitoring und ökonomische Effekte in Nationalen Naturlandschaften*. – Tagungsband 2006, 44-49.
- Gätje, C. 2003. Socio-economic Targets for the Wadden Sea. In: Wolff, W. J., K. Essink, A. Kellermann & M. A. van Leeuwe (eds.): *Challenges to the Wadden Sea*. Proceedings of the 10th International Scientific Wadden Sea Symposium, Groningen, The Netherlands, 31 October–3 November 2000.– Ministry of Agriculture, Nature Management and Fisheries/Dept. of Marine Biology, University of Groningen, S. 221-229.
- Gee, K. 2010a. Sea Use and Offshore Wind Farming. In: Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. 2010: *Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study*. *Zukunft Küste - Coastal Futures* Synthesis Report. LOICZ Research & Studies No. 36. GKSS Research Centre, Geesthacht, 13-20.
- Gee, K. 2010b. Landschaftswandel und Wahrnehmung - Das Beispiel Offshore-Windkraft. In: Pörtge, K.-H. & Reeh, T. (eds) *ZELTForum - Göttinger Schriften zu Landschaftsinterpretation und Tourismus*, Vol. 5. Universitätsverlag Göttingen, Göttingen, 90-106.
- Gee, K. 2010c. Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy* 27: 185-194.

- Gee, K., Burkhard, B. 2010. Cultural ecosystem services in the context of offshore wind farming: A case study from the west coast of Schleswig-Holstein. *Ecological Complexity* 7 (3), 349-358.
- Gee, K. & Licht-Eggert, K. 2010. Stakeholder analysis in Coastal Futures. In: Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. 2010: Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study. *Zukunft Küste - Coastal Futures Synthesis Report*. LOICZ Research & Studies No. 36. GKSS Research Centre, Geesthacht, 97-108.
- Gee, K. 2007a. Nicht vor meiner Küste. *WZB Mitteilungen* 116, 36-38.
- Gee, K. 2007b. The relationship between ICZM and marine spatial planning. *CoastLine Magazine* 16, 4.
- Gee, K., Kannen, A., Licht-Eggert, K., Glaeser, B., Sterr, H. (2006): Raumordnerische Bestandsaufnahme für die deutschen Küsten- und Meeresbereiche. Berichte aus dem Forschungs- und Technologiezentrum Westküste der Universität Kiel Nr. 38, Büsum 2006.
- Gegenwind Sylt, no date. URL: http://www.gegenwind-sylt.de/index.php?option=com_frontpage&Itemid=1). Last accessed 20 January 2008.
- GEO Magazin (2008): Wie es uns gefällt. Umfrage Körper, Heimat, Dinge. *GEO* 10/2008, 146-150.
- Gill, A.B. 2005. Offshore renewable energy: ecological implications of generating electricity in the coastal zone. *Journal of Applied Ecology* 42 (4): 605–615.
- Gilliland, P., Laffoley, D. 2008. Key elements and steps in the process of developing ecosystem-based marine spatial planning. *Marine Policy* 32, 787-96.
- Golding, N., Vincent, M.A., & Connor, D.W. 2004. Irish Sea Pilot – a Marine Landscape Classification for the Irish Sea. JNCC Report 346.
- Gravelle, H., Rees, R. 2004. *Microeconomics*. Essex, England: Prentice Hall, 314–346.
- Graves, P. 2003. Valuing public goods. <http://spot.colorado.edu/~gravesp/GravesRevtext.htm>, last accessed 10 May 2012.
- Haggett, C., Smith, J.L. 2004. Tilting at windmills? Using Discourse Analysis to Understand the Attitude-Behaviour Gap in Renewable Energy Conflicts. Paper presented at the British Sociological Association Annual Conference, March 22-24, University of York.
- Haines-Young, R., Potschin, M., 2007. The ecosystem concept and the identification of ecosystem goods and services in the English policy context. Review Paper to Defra, Project Code NR0107.
- Hard, G. 1965. Arkadien in Deutschland. Bemerkungen zu einem landschaftlichen Reiz. In: Hard, G. (2002) *Landschaft und Raum. Aufsätze zur Theorie der Geographie Band 1*. Osnabrücker Studien zur Geographie Band 22, 11-34.

- Hard, G. 1970. Der 'Totaleindruck der Landschaft'. *Beihefte zur Geographischen Zeitschrift* 23, 49–73.
- Hard, G. 1985. Die Alltagsperspektive in der Geographie. In: Analyse und Interpretation der Alltagswelt. Lebensweltforschung und ihre Bedeutung für die Geographie. Bamberger Protokolle 45, Thomas-Morus-Akademie Bensberg, Katholische Akademie in der Erzdiözese Köln.
- Hasse, J. 2007. "Nordseeküste" – Die touristische Konstruktion besserer Welten. Zur Codierung einer Landschaft. [in German]. In N. Fischer, S. Müller-Wusterwitz and B. Schmidt-Lauber Inszenierungen der Küste. Reimer-Verlag, Berlin, 239-258.
- Henning, D.H. 1987. Wilderness policies: Public participation and values. *Environmental Management* 11, 283-293.
- Hohmeyer O. 2006. Endbericht zum Teilvorhaben Regionalökonomische Auswirkungen des Offshore Ausbaus der Windenergie in der deutschen Nordsee auf die Region Westküste im Rahmen des Forschungsvorhabens Zukunft Küste – Coastal Futures. Coastal Futures. Working Paper No. 8, Flensburg (Germany): University of Flensburg. Available from: <http://iczm.ecology.uni-kiel.de/servlet/is/6371/>.
- Hohmeyer, O. 2003. Regionalökonomische Auswirkungen des Ausbaus einer Offshore Struktur des Husumer Hafens. Gutachten für die Wirtschaftsförderungsgesellschaft Nordfriesland mbH. Presentation, http://www.nordfriesland.de/PDF/Regional%C3%B6konomische_Auswirkungen_einer_geplanten_Offshorestrukturdes_Husumer_Hafens.PDF?ObjSvrID=29&ObjID=60&ObjLa=1&Ext=PDF&WTR=1&ts=1064245844 (last accessed 29 November 2007)
- Hohmeyer O, Kannen A, Lange M, Köhn J. 2010. Analyzing of impacts of offshore wind farms on regional economic development. In: Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. 2010: Analyzing coastal and marine changes: Offshore wind farming as a case study. Zukunft Küste – Coastal Futures Synthesis Report. LOICZ Research & Studies No. 36. Geesthacht (Germany): GKSS Research Centre, 109 –120.
- Hoppe-Klipper, M. and Steinhäuser, U. 2002. Wind landscapes in the German Milieu. In: Pasqualetti, M., Gipe, P., Richter, R.W. (eds): Wind power in view: Energy landscapes in a crowded world. San Diego: Academic Press, 83-99.
- Hoskins, W.G. 1955. The Making of the English Landscape. Hodder & Stoughton, London.
- Hull, R.B., Stewart, W.P. 1995. The landscape encountered and experienced while hiking. *Environment and Behaviour* 27 (3), 404-426.
- Inger, R., M.J. Attrill, S. Bearhop, A.C. Broderick, W.K. Grecian, D.J. Hodgson, C. Mills, E. Sheehan, S.C. Votier, J. Witt and B.J. Godley, B.J. 2009. Marine Renewable Energy: potential benefits to biodiversity? An urgent call for research. *Journal of Applied Ecology* 46 (6): 1145–1153.

- Ingold, T., 2000. *The Perception of the Environment. Essays on Livelihood, Dwelling and Skill.* Routledge, London and New York.
- Inglehardt R. 1989. *Kultureller Umbruch. Wertewandel in der westlichen Welt.* Frankfurt am Main, Campus Verlag.
- Institut für Tourismus- und Bäderforschung in Nordeuropa. 2000. *Touristische Effekte von On- und Offshore-Windkraftanlagen in Schleswig-Holstein: Integration der Ergebnisse.* September 2000.
- Ipsen, D. 2002. *Landschaftsbewußtsein in der Niederlausitz. Ergebnisse der Umfrage Band III.* Landschaftskonferenz Niederlausitzer Bogen. Kassel, Universität Kassel, Fachbereich Stadt- und Landschaftsplanung 3:27.
- Ittelson, W.H., Franck, K.A., O'Hanlon, T.J. 1976. *The nature of environmental experience.* In: S. Wapner, S.B. Cohen & B. Kaplan (eds): *Experiencing the environment.* New York: Plenum, 187-206.
- Jackson, J.B. 1986. *Discovering the vernacular landscape.* Yale University Press.
- Jepson, P., Canney, S. 2003. *Values-led conservation.* *Global Ecology & Biogeography* 12: 271-274.
- Jorgensen, B.S., Stedman, R., 2001. *Sense of place as an attitude: lakeshore property owners' attitudes toward their properties.* *Journal of Environmental Psychology* 21, 233–248.
- Kannen, A. 2004. *Holistic Systems Analysis for ICZM: The Coastal Futures Approach.* In: Schernewski G. & T. Dolch (Eds.): *Geographie der Meere und Küsten, AMK 2004 Conference Proceedings, Coastline Reports 1 (2004), 177-181.*
- Kannen, A, Gee. K., Licht, K. 2005. *Managing changes in sea use across scales: North Sea and North Sea coast of Schleswig-Holstein.* In: *ICZM – The Global Challenge.* Edited by Krishnamurthy, R., Kannen, A., Alagappan, R. Glavovic, B., Green, D., Han, Z., Tinti, S., Tundi, A. Research Publishing, India, 93-108.
- Kannen, A., Gee, K., Bruns, A. 2010. *Governance aspects of offshore wind energy and maritime development.* In: Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. 2010. *Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study.* *Zukunft Küste - Coastal Futures Synthesis Report.* LOICZ Research & Studies No. 36. GKSS Research Centre, Geesthacht, 170-190.
- Kaschuba, W. 1985. *Alltagsweltanalyse in der regionalen Ethnographie: Kulturanthropologische Gemeindeforschung.* In: *Analyse und Interpretation der Alltagswelt. Lebensweltforschung und ihre Bedeutung für die Geographie.* Bamberger Protokolle 45, Thomas-Morus-Akademie Bensberg, Katholische Akademie in der Erzdiözese Köln.
- Katsanevakis, S., Stelzenmüller, V., South, A., Sorensen, T.K., Jones, P.J.S., Kerr, S., Baldamenti, F., Agagnostou, C., Breen, P., Chust, G., D'Anna, G., Duijn, M., Filatova, T., Fiorentino, F., Hulsman, H., Johnson, K., Karageorgis, A., Kröncke, I., Mirto, S., Pipitone, C.,

- Portelli, S., Qiu, W., Reiss, H., Sakellariou, D., Salomidi, M., van Hoof, L., Vassilopoulou, V., Vega Fernandez, T., Vöge, S., Weber, A., Zenetos, A., ter Hofstede, R. 2011. Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues. *Ocean and Coastal Management* 54, 807-820.
- Kempton, W., Firestone, J., Lilley, J., Rouleau, T., Whitaker, P. 2005. The offshore wind power debate: views from Cape Cod. *Coastal Management* 33, 119-149.
- Kirchhoff, T., Trepl, L. 1997. Landschaft, Wildnis, Ökosystem: Zur kulturbedingten Vieldeutigkeit ästhetischer, moralischer und theoretischer Naturauffassungen. In: Kirchhoff, T., Trepl, L. (Eds): *Vieldeutige Natur. Landschaft, Wildnis und Ökosystem als kulturgeschichtliche Phänomene*. Transkript Verlag, 13-68.
- Klein-Hitpaß, A., Bruns, A. 2006. Der demographische Wandel an der Westküste Schleswig-Holsteins. *Coastal Futures Arbeitsbericht* 10, September 2006
- Klüter, H. 2000. Räumliche Aspekte von Transformationsproblemen aus systemtheoretischer Perspektive. *Europa Regional* 3-4, 35-51.
- Knoppen, D., Saris, W. 2009. Evaluation of the Portrait Values Questionnaire using SEM: A New ESS Proposal. Paper prepared for the QMSS2 seminar at Bolzano (Bozen), Italy, June 11-12, 2009. http://ccsr.ac.uk/qmss/seminars/2009-06-10/documents/Desiree_Knoppen_Willem_Saris.pdf (accessed June 2011)
- Kreis Nordfriesland 2005. *Zahlenspiegel 2005/2006*. Download from www.nordfriesland.de, accessed October 2005
- Kreisel, W., Reeh, T. 2004. Landschaftsbewertung im Tourismus. In: Brittner-Widmann, A., Quack, H.-D., Wachowiak, H. (Hrsg.): *Von Erholungsräumen und Tourismusdestinationen. Facetten der Fremdenverkehrsgeographie*. Trierer Geographische Studien, S. 75-93, Trier.
- Krömker, D. 2003. Climate change from International Perspective: Images of nature as cultural background for the acceptance of protection measures. Paper prepared for presentation at the Open Meeting of the Global Environmental Change Research Community, Montreal, Canada, 16-18 October 2003.
- Küster, H. 2007. Die Entwicklung der Küstenlandschaft an der Nordsee. In: Fischer N, Müller-Wusterwitz S, Schmidt-Lauber B (eds) *Inszenierungen der Küste*. Schriftenreihe der Isa Lohmann-Siems Stiftung 1. Reimer Verlag, Berlin, 17-32.
- Ladenburg, J. 2008. Attitudes towards on-land and offshore wind power development in Denmark: Choice of development strategy. *Renewable Energy* 33, 111-118.
- Lange, M., Burkhard, B., Garthe, S., Gee, K., Kannen, A., Lenhart, H. & Windhorst, W. 2010. Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study. *Zukunft Küste - Coastal Futures Synthesis Report*. LOICZ Research & Studies No. 36. GKSS Research Centre, Geesthacht.

- Larkin, R. P., & Peters, G. L. 1983. Landscape. In Dictionary of concepts in human geography (pp. 139-144). Westport, CT: Greenwood.
- Lenhart, H., K. Ahrendt, B. Burkhard, S. Garthe, D. Gloe, W. Kühn, B. Mendel, P. Nerge, S. Opitz and A. Schmidt. 2010. Ecological Impact Assessment. Pages 52-96. In M. Lange, B. Burkhard, S. Garthe, K. Gee, A. Kannen, H. Lenhart. and W. Windhorst, *Analyzing Coastal and Marine Changes: Offshore Wind Farming as a Case Study*. LOICZ Research & Studies No. 36. GKSS Research Center, Geesthacht.
- Leopold, A., 1966. A Sand County Almanac: With other Essays on Conservation from Round River. Oxford University Press, New York, NY.
- Licht-Eggert, K., Gee, K., Kannen, A., Grimm, B. & Fuchs, S. 2008. The human dimension in ICZM: Addressing peoples perceptions and values in integrative assessments. In: ICZM – The Global Challenge. Edited by Krishnamurthy, R., Kannen, A., Alagappan, R. Glavovic, B., Green, D., Han, Z., Tinti, S., Tundi, A. Research Publishing, India, 241-262.
- Licht-Eggert K, Froh C, Büsch I, Bruns A. 2007. Lebensqualität und soziale Infrastruktur an der Schleswig-Holsteinischen Westküste. Coastal Futures Working Paper No. 16, Geesthacht (Germany): GKSS Research Centre. Available from: <http://iczm.ecology.uni-kiel.de/servlet/is/6371/>
- Licht-Eggert, K., Gee, K. 2006. Akteure und Positionen sowie inhaltliche Stellungnahmen im Genehmigungsverfahren der BSH zu Offshore-Windparks. Ergebnisse der Stakeholderanalyse- Dokumentenanalyse- Bereich Genehmigungsverfahren für Offshore-Windparks. Arbeitspapier I, Teilprojekt 3.2, Verbundprojekt Zukunft Küste – Coastal Futures.
- Lothian A. 1999. Landscape and the philosophy of aesthetics: is landscape quality inherent in the landscape or in the eye of the beholder? *Landscape and Urban Planning* 44(4), 177–198.
- Lowenthal, D. 1978. Finding valued landscapes. *Progress in Human Geography* 2, 373-418.
- Lutz, W. 2007. Vom "Containerraum" zur "entgrenzten" Welt - Raumbilder als sozialwissenschaftliche Leitbilder? *Social Geography* 2 (1), 29-45
- MA (Millennium Ecosystem Assessment), 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. World Resources Institute.
- Mackinnon, I., Brennan, R. 2012. Belonging to the sea. Exploring the cultural roots of maritime conflict on Gaelic speaking islands in Scotland and Ireland. Scottish Crofting Federation and Scottish Association for Marine Science.
- McFarlane, B., Boxall, P. 2003. The role of social psychological and social structural variables in environmental activism: an example of the forest sector. *Journal of Environmental Psychology* 23, 79-87.
- McFarlane, B., Boxall, P. 2000. Factors influencing forest values and attitudes of two stakeholder groups: The case of the Foothills Model Forest, Alberta, Canada. *Society and Natural Resources* 13, 649-661.

- McIntyre, N., Pavolvich, K., Hayes, L. 2002. Coastal values and Quality of life: A New Zealand case study. Proceedings of the Parks Research Forum of Ontario (PRFO) meeting, 25-27 April 2002, Ridgetown, Ontario, eds Lemieux, C.L., Nelson, G. and Beechey, T.J.
- Meier, D., 2003. Das Dithmarscher Küstengebiet im Wandel: Wurten, Deichbau und Sturmfluten. Histour-Dithmarschen, Touristikzentrale Dithmarschen e.V. und Verein für Dithmarscher Landeskunde. Boyens Verlag, 12–17.
- Meining, D.W. 1979. Symbolic landscapes. In: Meining, D.W. (ed): The interpretation of ordinary landscapes. New York, Oxford, Oxford University Press.
- Merchant, C. 1992. Radical Ecology: The Search for a Liveable World. New York: Routledge.
- Meyn, J. 2007. Biographische Küstenlandschaften. Inszenierungen der Küste. N. Fischer, Müller-Wusterwitz, Susan, Schmidt-Lauber, Brigitta (Hrsg.). Berlin, Reimer Verlag: 259-280.
- Mills, S.F. 1997. The American Landscape. Edinburgh: Keele University Press, 1997.
- Mikesell, M. 1968. "Landscape". In: International Encyclopedia of the Social Sciences Vol. 8, 575-580. New York: MacMillan and Free Press.
- Ministerium für Arbeit, Bau und Landesentwicklung des Landes Mecklenburg- Vorpommern) 2005: Landesraumentwicklungsprogramm Mecklenburg- Vorpommern. http://www.am.mv-regierung.de/raumordnung/doku/LEP_2005.pdf.
- Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein 2004. Landesinitiative „Zukunft Meer – Sea our Future“. http://www.schleswig-holstein.de/MWAVT/DE/Technologie/LandesinitiativeZukunftMeer/LandesinitiativeZukunftMeer_node.html, last accessed 25 June 2007.
- Mitchell, W.T.J. 1994. Imperial landscape. In: W.T.J. Mitchell (ed): Landscape and Power. Chicago, University of Chicago Press, 5-34.
- Monbiot, G. 2012. Putting a price on the rivers and rain diminishes us all. The Guardian newspaper, 6 August 2012, download from www.guardian.co.uk on 17 August 2012
- More, T.A., Averill, J.R., Stevens, T.H. 1996. Values and economics in environmental management: A perspective and critique. Journal of Environmental Management 48, 397-409
- Muir, R. 1999. Approaches to landscape. Macmillan Press, London.
- Naudiet, R. (no year): Nordseeküste im Wandel. Hansen & Hansen Verlag, Münsterdorf.
- Nilsson, L., Green, M. 2011. Birds in southern Öresund in relation to the wind farm at Lillgrund Final report of the monitoring program 2001-2011. Commissioned by Vattenfall Vindkraft AB. Lund.
- Nissen, R.N. 1986: Kleine Geschichte Dithmarschens. Westholsteinische Verlagsanstalt Boyens, Heide.
- Nohl, W. 1993. Beeinträchtigung des Landschaftsbildes durch Mastartige Eingriffe. München.

- Olwig, K.R. 1996. Recovering the substantive nature of landscape. *Annals of the Association of American Geographers* 86, 630-53.
- O'Neill, J. 1997. Value pluralism, incommensurability and institutions. In: Foster, J. (ed) *Valuing Nature? Economics, ethics and the environment*. London, Routledge, 75-88.
- Paasi, A. 1986. The institutionalization of regions: A theoretical framework for understanding the emergence of regions and the constitution of regional identity. *Fennia* 46, 105-146.
- Palang, H. & Fry, G. 2003. Landscape interfaces: Introduction. In: H. Palang & G. Fry (eds) *Landscape Interfaces. Cultural Heritage in Changing Landscapes*. Boston: Kluwer Academic Publishers, 2-14.
- Park, D.C. and Coppack, P.M. 1994. The role of rural settlement and vernacular landscapes in contriving sense of place in the city's countryside. *Geografiska Annaler* 76B, 161-72.
- Pasqualetti, M. 2002. Living with wind power in a hostile landscape. In: Pasqualetti, M., Gipe, P., Righter, R.W. *Wind power in view: Energy landscapes in a crowded world*. San Diego: Academic Press, 83-99.
- Pasqualetti, M.J. 2000. Morality, Space, and the Power of Wind-Energy Landscapes. *Geographical Review* 90 (3), 381-394.
- Perspektive Deutschland 2005. Vorläufiger Projektbericht Perspektive Deutschland 2005/2006. http://www.mckinsey.de/downloads/presse/2006/pd_2005/perspektive-deutschland_5_projektbericht.pdf, last accessed 8 August 2008.
- Petersen, J.K., Malm, T. 2006. Offshore Windmill Farms: Threats to or Possibilities for the Marine Environment. *Ambio* 35(2): 75-80.
- Plummer, M.L., 2009. Assessing benefit transfer for the valuation of ecosystem services. *Frontiers in Ecology and the Environment* 7 (1), 38–45.
- Prince, H. 1984. Landscape through painting. *Geography* 69, pp. 3-18.
- Punt, M.J., Groeneveld, R.A., van Ierland, E.C., Stel, J.H. 2009. Spatial planning of offshore wind farms: A windfall to marine environmental protection? *Ecological Economics* 69, 93–103.
- Rackham, O. 1986. *The History of the Countryside*. J.M. Dent, London.
- Ratter B, Lange M, Sobiech C. 2009. Heimat, Umwelt und Risiko an der deutschen Nordseeküste. Die Küstenregion aus Sicht der Bevölkerung. GKSS-Bericht 2009/10. Geesthacht (Germany): GKSS Research Centre.
- Reder, M. 2009. Menschenrechte als ethische Grundlage der Klimapolitik. Ein Beitrag der politischen Philosophie. *GAIA* 18(4), 315-321.
- Relph, E. 1976. *Place and Placelessness*. Pion, London.
- Reusswig, F., Schwarzkopf, J. 2001. Das Wattenmeer vor Augen – Anmerkungen zum Sozio-ökonomischen Monitoring – Einwohnerbefragung Watt 2001.– Potsdam-Institut für

- Klimafolgenforschung. Unveröffentlichter Bericht im Auftrag des Landesamtes für den Nationalpark Schleswig-Holsteinisches Wattenmeer, 16 S.
- Rezsóhazy, R. 2001. Values, sociology of. In: Smelser, N.J. and Baltes, P.B. (Editors-in-chief): International Encyclopedia of the Social & Behavioural Sciences. Elsevier, Vol. 16, pp. 16153-16158.
- Ritov, I., Kahnemann, D. 1997. How people value the environment: Attitudes versus economic values. In: M. Bazerman, D. Messick and A. Tenbrunsel (Eds.), Environment, Ethics and Behaviour, pp. 33-51. San Francisco: New Lexington.
- Rokeach, M. 1968. Beliefs, Attitudes and Values: A Theory of Organization and Change. San Francisco, Jossey-Bass, 207 pp.
- Rokeach, M. 1960. The open and closed mind. Investigations into the nature of belief systems and personality systems. Basic Books Inc., New York.
- Rokeach, M. 1973. The nature of human values. The Free Press, Macmillan Publishing.
- Rolston, H. III. 1999. Environment and the moral life: Towards a new paradigm. *Environmental Ethics* 21 (4), 441-443.
- Rolston, H. III. 1998. Aesthetic Experience in Forests. *Journal of Aesthetics and Art Criticism* 56 (2), 157-166.
- Rolston, H. III. 1988. Environmental Ethics. Philadelphia: Temple University.
- Rolston, H. III, Coufal, J. 1991. A forest ethic and multivalue forest management. *Journal of Forestry* 89, 35-40.
- Rose, G. 1995. Place and identity: a sense of place. In: Massey, D. and Jess, P. A Place in the World. Oxford University Press, Oxford, 87-174.
- Ross, S. 2005. Landscape Perception: Theory-Laden, Emotionally Resonant, Politically Correct. *Environmental Ethics* 27, 245-263.
- Runge K., Nommel, J. 2006. Methodik der Landschaftsbildanalyse bei der Umweltverträglichkeitsprüfung von Offshore-Windenergieparks. In: Storm u. Bunge (Hrsg): Handbuch der Umweltverträglichkeitsprüfung, Lieferung 3/06 2010, 1-20. Erich Schmidt Verlag, Berlin.
- Sabatier, P. 1998. The advocacy coalition framework: revisions and relevance for Europe. *Journal of European Public Policy* 5(1), 93 - 130.
- Sagoff, M. 1991. Zuckermann's dilemma: A plea for environmental ethics. Hastings Center Report 21(5), 32-40.
- Saraiva, M.G. 2008: Landscape planning between research perspectives and policy approaches in Portugal: Passways for integration? Keynote speech, 23rd session of the Permanent European Conference for the Study of the Rural Landscape (PECSRL), 4 September 2008, Obidos, Portugal.

- Satterfield, T. 2001. In Search of Value Literacy: Suggestions for the Elicitation of Environmental Values. *Environmental Values* 10, 331-359.
- Sauer, C. O. 1969. The Morphology of Landscape. In *Land and Life: A Selection from the Writings of Carl Ortwin Sauer*, ed. J. Leighly, 315-350. University of California Press.
- Schama, S. 1995. *Landscape and Memory*. HarperCollins, London.
- Schmidt, P., Bamberg, S., Davidov, E., Herrmann, J., Schwartz, S.H. 2007. Die Messung von Werten mit dem „Portraits Value Questionnaire“. *Zeitschrift für Sozialpsychologie* 38 (4), 261-275.
- Schmidt-Höhne, F. 2006. Die Meere in uns. Eine psychologische Untersuchung über das Meer als Bedeutungsraum. *Münchner Studien zur Kultur- und Sozialpsychologie* 17, Centaurus Verlag.
- Schnell, R. 1991. Wer ist das Volk? Zur faktischen Grundgesamtheit bei „allgemeinen Bevölkerungsumfragen“: Undercoverage, Schwererreichbare und Nichtbefragbare. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 43, 106-137.
- Schroeder, H.W. 1992. The spiritual aspect of nature: A perspective from depth psychology. In proceedings of Northeastern Recreation Research Symposium (p. 25-30), April 7-9, 1991, Saratoga Springs, NY.
- Schultz, P.W. 2001. The structure of environmental concern: concern for self, other people, and the biosphere. *Journal of Environmental Psychology* 21, 327-339.
- Schultz, P.W., Gouveia, V.V., Cameron, L., Tankha, G., Schmuck, P., Franek, M. 2005. Values and their relationship to environmental concern and conservation behavior. *Journal of Cross-Cultural Psychology* 36, 1-19.
- Schultz-Zehden, A., Gee, K., Scibior, K. 2008. *Handbook on Integrated Maritime Spatial Planning*. PlanCoast project, April 2008.
- Schwahn, C. 2002. Landscape and policy in the northern sea. In: Pasqualetti, M., Gipe, P., Righter, R.W. *Wind power in view: Energy landscapes in a crowded world*. San Diego: Academic Press, 83-99.
- Schwartz, S.H. 2007. Value orientations: measurement, antecedents and consequences across nations. In: R. Jowell, C. Roberts, R. Fitzgerald, G. Eva (Eds): *Measuring attitudes cross-nationally: Lessons from the European Social Survey*. London, Sage Publications, 169-203.
- Schwartz, S. H. 2006. Value orientations: Measurement, antecedents and consequences across nations. In R. Jowell, C. Roberts, R. Fitzgerald, & G. Eva (Eds.), *Measuring attitudes cross-nationally - lessons from the European Social Survey*. London: Sage.
- Schwartz, S.H. 2003. Value orientations in Europe. Presentation given at the conference "Measuring attitudes and values in Europe". European Social Survey Launch Conference Brussels 25-26 November 2003. http://cordis.europa.eu/citizens/ess_programme.htm (last accessed 25.07.2008)

- Schwartz, S. H. 1994. Are there universal aspects in the structure and contents of human values? *Journal of Social Issues* 50(4), 19-45.
- Schwartz, S.H. 1992. Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. In: Zanna, M. (Ed.), *Advances in Experimental Social Psychology*, vol. 25. Academic Press, New York, 1–65.
- Schwartz, S., Bilsky, W. 1987. Toward a universal psychological structure of human values. *J. Personal. Soc. Psychol.* 53, 550-62.
- Scott, K.E., Anderson, C., Dunsford, H., Benson, J.F. and MacFarlane, R. 2005. An assessment of the sensitivity and capacity of the Scottish seascape in relation to offshore windfarms. Scottish Natural Heritage Commissioned Report No.103 (ROAME No. F03AA06).
- Short, L. 2002. Wind power and English landscape identity. In: Pasqualetti, M., Gipe, P., Righter, R.W. *Wind power in view: Energy landscapes in a crowded world*. San Diego: Academic Press, 83-99.
- Sell, J.L. & Zube, E.H. 1986. Perception and response to environmental change. *Journal of Architectural and Planning Research* 3, 33-54.
- Sitte, W., Wohlschlägl, H. (Hrsg). 2001. Beiträge zur Didaktik des „Geographie und Wirtschaftskunde“-Unterrichts. Wien.
- Skeate, E.R., Perrow, M.R., Gilroy, J.J. 2012. Likely effects of construction of Scroby Sands offshore wind farm on a mixed population of harbour *Phoca vitulina* and grey *Halichoerus grypus* seals. *Marine Pollution Bulletin* 64, 872–881.
- Smuda, M. (Ed). 1986. Landschaft. Suhrkamp, Frankfurt/M.
- Sober, E., Wilson, D.S. 1998. *Unto Others: The Evolution and Psychology of Unselfish Behavior*. Cambridge, MA, Harvard University Press.
- Soini, K. 2001. Exploring human dimensions of multifunctional landscapes through mapping and map-making. *Landscape and Urban Planning* 57, 225-239.
- Spirn, A.W. 1998. *The language of landscape*. New Haven and London: Yale University Press.
- Stadelbauer J. 2004. Landschaft – zur Wiederentdeckung eines tot geglaubten Begriffs für Freizeit und Tourismus . In: Faust H, Reeh T, Gee K (Hrsg): *Freizeit und Tourismus. Konzeptionelle und regionale Studien aus kulturgeographischer Perspektive*. Göttingen, 2004/2, 31-46.
- Statistisches Amt für Hamburg und Schleswig-Holstein 2005. *Statistischer Bericht A. I. 1S, Bevölkerungsentwicklung in den Gemeinden Schleswig-Holsteins*.
- Stedman, R. 2003. Is it really just a social construction? The contribution of the physical environment to sense of place. *Society and Natural Resources* 16, 671-685.
- Steel, B., List, P., Shindler, B. 1994. Conflicting values about federal forests: A comparison of National and Oregon publics. *Society and Natural Resources* 7, 137-153.

- Stemler, S. 2001. An overview of content analysis. *Practical Assessment, Research and Evaluation* 7(17), retrieved October 2008 from <http://pareonline.net/getvn.asp?v?7&n=17>.
- Stephenson, J., 2008. The cultural values model: an integrated approach to values in landscapes. *Landscape and Urban Planning* 84, 127–139.
- Stephenson, J. 2007. Many Perceptions, One Landscape. *Landscape Review* 11(2), 9-30.
- Stern, Nicholas. 2006. *Stern Review on the Economics of Climate Change*. Cambridge University Press: Cambridge, United Kingdom, October 30.
- Stern, P.C., Dietz, T. 1994. The value basis of environmental concern. *Journal of Social Issues* 50, 65-84.
- Stern, P.C., Dietz, T., Guagnano, G.A. 1998. A brief inventory of values. *Educational and Psychological Measurement* 58, 884-1001.
- Stern, P.C., Kalof, L., Dietz, T., Guagnano, G.A. 1995. Values, beliefs and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology* 25 (18), 1611-1636.
- Stewig, R. 1982. *Landeskunde von Schleswig-Holstein*. Geokolleg 5, 2. Auflage, Gebr. Bornträger, Berlin/Stuttgart.
- Sunnus, M. 1998. *Öland. Lebenswelt und Konstruktion kultureller Identität auf einer schwedischen Ostseeinsel*. Institut für Kulturanthropologie und Europäische Ethnologie der Universität Frankfurt in Frankfurt am Main.
- Szarka, J. 2004. Wind power, discourse coalitions and climate change: Breaking the stalemate? *European Environment* 14, 317-330.
- Tarrant, M. A., Cordell, H.K., Green, G.T. 2003. PVF: A Scale to Measure Public Values of Forests. *Journal of Forestry*, September 2003, 24-30.
- Terkenli, T. 2001. Towards a theory of the landscape: The Aegean landscape as a cultural image. *Landscape and Urban Planning* 57, 197-208.
- Thompson, M., Ellis, R., Wildavsky, A. 1990. *Cultural Theory*. Boulder Colorado, Westview Press.
- Thøgersen, J., & Grunert-Beckmann, S. C. 1997. Values and attitude formation towards emerging attitude objects: from recycling to general, waste minimizing behavior. In D. MacInnis, & M. Brucks, *Advances in consumer research*, vol. XXIV (pp. 182–189). Provo: Association for Consumer Research.
- Thompson, S.C.G., Barton, M.A. 1994. Ecocentric and anthropocentric attitudes to the environment. *Journal of Environmental Psychology* 14, 149-57.
- Tindall, D.B. 2003. Social values and the contingent nature of public opinion and attitudes about forests. *The Forestry Chronicle* 79 (3), 692-705.

- Trepl, L. 1996. Die Landschaft und die Wissenschaft. In: Konold, W. (Hrsg) Naturlandschaft Kulturlandschaft. Die Veränderung der Landschaften nach der Nutzbarmachung durch den Menschen. Ecomed-Verlag, Landsberg, 13-26.
- Tress, B., Tress, G. 2001. Capitalising on multiplicity: a transdisciplinary systems approach to landscape research. *Landscape and Urban Planning* 57, 143-157.
- Tuan, Y-F. 1975. Place: An experiential perspective. *Geographical Review* 65, pp. 151-165.
- Tyler, E., Vining, J., Dorsey, D., Larson, M. 1995. Values, emotions and desired outcomes reflected in public responses to forest management plans. Draft report submitted to USDA Forest Service, North Central Forest Experiment Station. Institute for Environmental Studies, University of Illinois, Urbana.
- UBA 2007. Development of an Ecological Strategy for Onshore and Offshore Wind Power Use. Summary: Results and Recommendations for Action. Commissioned by the German Federal Environmental Agency (Umweltbundesamt - UBA), Part of the UBA Environmental Research Plan, No. UBA FKZ 203 41 144, March 2007.
- Vattenfall AB. 2009. Lillgrund Offshore Wind Farm. Environmental Monitoring of Marine Flora & Fauna. Report 019-10. Landskrona.
- Vejre, H., Søndergaard Jensen, F., Jellesmark Thorsen, B. 2010. Demonstrating the importance of intangible ecosystem services from peri-urban landscapes. *Ecological Complexity* 7(3), 338-348.
- Vining J., Tyler, E. 1999. Values, emotions and desired outcomes reflected in public responses to forest management plans. *Human Ecology Review* 6(1):21–34.
- Vining, J. & Ebreo, A. 1991. Are you thinking what I think you are? A study of actual and estimated goal priorities and decision preferences of resource managers, environmentalists, and the public. *Society and Natural Resources* 4, 177-196.
- Vittes, M. E., Pollock III, P.H. and Lilie, S.A. 1993. Factors contributing to NIMBY attitudes. *Waste Management* 13, 125-129.
- Vogel, M. 2005. Akzeptanz von Windparks in touristisch bedeutsamen Gemeinden der deutschen Nordseeküstenregion. Eine empirische Untersuchung, durchgeführt vom Studiengang Cruise Industry Management unter der Leitung von Prof. Dr. Michael Vogel. Hochschule Bremerhaven, Institut für Maritimen Tourismus, 8. Dezember 2005.
- Volmari, M. 2002. Positionspapier zur Windkraftbranche in Nordfriesland. Wirtschaftsförderungsgesellschaft Nordfriesland mbH, 12 pp. (http://www.offshore-wind.de/page/fileadmin/offshore/documents/Positionspapier_zur_Windkraftbranche_in_Nordfriesland.pdf, last accessed 21 July 2011)
- Wardenga, U. 2002. Räume der Geographie – zu Raumbegriffen im Geographieunterricht. *Geographie heute*, Themenheft „Geographiedidaktik aktuell“, 23. Jg., H. 200, Mai 2002, S.8-11.

- Weichhart, P. 2008. Entwicklungslinien der Sozialgeographie. Steiner, Stuttgart 2008
- Weichhart, P. 1990. Raumbezogene Identität. Bausteine zu einer Theorie räumlich-sozialer Kognition und Identifikation. Erdkundliches Wissen, Heft 102, Stuttgart.
- Weixlbaumer, N. 2009. Umweltwahrnehmung – die Welt in unseren Köpfen. *GW-Unterricht* 34, 1-12.
- Werlen, B. 2000. Sozialgeographie. Eine Einführung. Bern, Stuttgart, Wien 2000.
- Widgren, M. 2004. Can landscapes be read? In H. Palang, H. Sooväli, M. Antrop (eds): European rural landscapes: persistence and change in a globalising environment. Boston: Kluwer Academic Publishers, 2004, 455-465.
- Wizelius, T. 2007. Developing Wind Power Projects: Theory and Practice. Earthscan.
- Wolsink, M. 2006. Invalid theory impedes our understanding: a critique on the persistence of the language of NIMBY. *Transactions of the Institute of British Geographers (New Series)* 31, 85-91.
- Wolsink, M. 2000. Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support. *Renewable Energy* 21, 49-64.
- Wood, J.S. 1991. Build, therefore you own the world: The New England village as settlement ideal. *Annals of the Association of American Geographers* 81, 32-50.
- Woods, M. 2003. Deconstructing rural protest: the emergence of a new social movement. *Journal of Rural Studies* 19, 309-325.
- Xu, Z., Bengston, D.N. 1997. Trends in National Forest Values among Forestry Professionals, Environmentalists and the News Media 1982-1993. *Society and Natural Resources* 10, 43-59.
- Ziesemer, K., Zahl, B. 2005. Akteursnetzwerke an der Westküste Schleswig-Holsteins - Darstellung ausgewählter sozioökonomischer Voraussetzungen der Region. Coastal Futures Working Paper No. 2.

Appendix: Questionnaire survey in German and English



Forschungs- und Technologiezentrum Westküste
Zentrale Einrichtung der Christian-Albrechts-
Universität Kiel
Hafentörn, D-25761 Büsum
Tel.: +49 (0)4834 604-0 (Vermittlung)



Kira Gee M.Sc
Forschungs- und
Technologiezentrum,
Durchwahl: (04834)-604-215
Telefax: (04834)-604-299
email: gee@wz-berlin.de
www.coastal-futures.de

Fragebogen zum Thema Küste, Meer und Offshore-Windkraft

Seit Mai 2004 befassen wir uns am Forschungs- und Technologiezentrum Westküste (FTZ) mit der Frage, wie sich eine nachhaltige Nutzung der Küsten und Meere an der Westküste in Zukunft gestalten könnte. Für unser Projekt „Zukunft Küste – Coastal Futures“ ist dabei die Offshore-Windkraft ein zentrales Thema. Was bedeutet ein Ausbau der Offshore-Windkraft für die Westküste? Wird ein Ausbau überhaupt gewünscht?

Ihre Meinung ist uns wichtig. Wir möchten herausfinden, wie Sie „Ihre“ Küste und das Meer sehen. Was ist Ihnen an Küste und Meer wichtig? Woran freuen Sie sich besonders, wenn Sie an Küste und Meer hier an der Westküste denken? Wie nutzen Sie Küste und Meer? Insbesondere erheben wir auch Ihre Einstellung zur Offshore-Windkraft.

Der Fragebogen wird an 1000 Haushalte in zehn Gemeinden an der Westküste verschickt. Die Auswertung erfolgt am Wissenschaftszentrum Berlin für Sozialforschung. Wir möchten Sie sehr herzlich darum bitten, den beiliegenden Fragebogen **möglichst bis zum 24.10.2005**, auszufüllen und an unsere Berliner Adresse zurückzuschicken. Ein frankierter Rückumschlag liegt bei.

Die Ergebnisse der Studie werden als Arbeitsbericht des Projekts „Coastal Futures“ veröffentlicht. Erste Daten werden voraussichtlich im Winter dieses Jahres vorliegen. Wenn Sie sich für den Arbeitsbericht interessieren, senden wir Ihnen gerne eine Zusammenfassung zu. In diesem Fall bitten wir Sie, uns Ihren Namen und Adresse mitzuteilen.

Im Namen des Projekts „Coastal Futures“ danke ich Ihnen sehr herzlich für Ihre Bereitschaft, an der Studie mitzuwirken. Näheres zum Projekt erfahren Sie auf unserer Homepage, www.coastal-futures.de.

Bei Fragen können Sie sich selbstverständlich jederzeit persönlich bei mir melden:

Coastal Futures
Kira Gee
Forschungs- und Technologiezentrum Westküste/Wissenschaftszentrum Berlin für Sozialforschung
Hafentörn
25761 Büsum
Tel. 04834-604 215
e-mail: gee@wz-berlin.de
www.coastal-futures.de

Mit freundlichen Grüßen





Die Bearbeitung dieses Fragebogens ist freiwillig. Die erfassten Daten werden vertraulich behandelt und bleiben anonym.

Gemeinde:

1. Im Folgenden finden Sie einige kurze Personenbeschreibungen. Bitte lesen Sie die einzelnen Beschreibungen aufmerksam durch. Überlegen Sie dann, ob die Beschreibung für Sie persönlich so zutrifft oder nicht und tragen Sie dann rechts eine der folgenden Ziffern ein:

	<i>trifft überhaupt nicht zu</i>	<i>trifft nicht zu</i>	<i>trifft eher nicht zu</i>	<i>trifft eher zu</i>	<i>trifft zu</i>	<i>trifft ganz genau zu</i>
	1	2	3	4	5	6
1.	Es ist mir wichtig, auch solchen Menschen zuzuhören, die ganz anders denken und fühlen als ich selbst. Ich möchte andere Menschen verstehen, auch wenn ich deren Ansichten nicht teile.					●
2.	Ich bin davon überzeugt, dass die Menschen die Natur erhalten sollten. Umweltschutz ist für mich eine wichtige Sache.					●
3.	Es ist mir wichtig, neue Ideen zu haben und kreativ zu sein. Ich mag es, die Dinge auf meine eigene Art anzugehen.					●
4.	Es ist mir wichtig, über Aktivitäten selbst zu entscheiden. Ich möchte frei sein, diejenigen Dinge auszuwählen und zu tun, die ich selbst für richtig halte.					●
5.	Ich mag Überraschungen und suche immer nach neuen Dingen, die ich ausprobieren kann. Ich halte es für wichtig, viele verschiedene Dinge in meinem Leben zu tun.					●
6.	Ich suche das Abenteuer und das Risiko. Ich möchte ein aufregendes Leben führen.					●
7.	Ich nutze jede Gelegenheit, um Spaß zu haben. Es ist mir wichtig, das Leben voll zu genießen.					●
8.	Es ist mir wichtig, Sicherheit im Leben zu haben. Ich vermeide alles, was meine Sicherheit gefährden könnte.					●
9.	Ich glaube, dass Menschen tun sollten, was von ihnen verlangt wird. Ich bin davon überzeugt, dass Regeln dazu da sind, eingehalten zu werden und zwar unabhängig davon, ob das kontrolliert wird oder nicht.					●
10.	Es ist mir wichtig, sich korrekt zu benehmen. Ich vermeide es, Dinge zu tun, die andere Menschen als abstoßend empfinden.					●
11.	Ich bin davon überzeugt, dass es wichtig ist, bescheiden zu bleiben. Ich glaube, dass man mit dem zufrieden sein sollte, was man bereits hat.					●

- 2a. Bitte sehen Sie sich nun folgende Skizzen an und lesen Sie die dazugehörigen Beschreibungen. Bitte entscheiden Sie sich dann für die Beschreibung, die Ihrem Verständnis von Natur am nächsten kommt, und kreuzen Sie die zugehörige Ziffer an!

1		<p>Die „strapazierfähige Natur“</p> <p>Im Grunde ist die Natur so eingerichtet, dass sie immer wieder ins Lot kommt. Gleichgültig was man macht, der Ball kehrt immer wieder in die Ausgangslage zurück.</p>
2		<p>Die „empfindliche Natur“</p> <p>Die Natur ist sehr empfindlich gegenüber jeder Art von Eingriff. Schon kleine Eingriffe können dazu führen, dass der Ball außer Kontrolle gerät.</p>
3		<p>Die „in Grenzen tolerante Natur“</p> <p>In gewissem Maße können Eingriffe in die Natur erfolgen. Erst wenn ein gewisser Punkt überschritten wird, gerät der Ball außer Kontrolle.</p>
4		<p>Die „unberechenbare Natur“</p> <p>Wenn man Eingriffe in die Natur vornimmt, weiß man nicht, ob das gute oder schlechte Folgen haben wird. Es ist nicht vorhersehbar, wie sich der Ball bewegen wird.</p>

- 2b. Bitte erklären Sie kurz, was genau Sie unter dem gewählten Begriff verstehen. Sollten Ihnen die Wahl zwischen den verschiedenen Naturbeschreibungen sehr schwer gefallen sein, haben Sie hier die Möglichkeit uns mitzuteilen, warum. Kreuzen Sie aber auf jeden Fall genau eine der obigen Beschreibungen an – die, die Ihrer Vorstellung am nächsten kommt.

3. Bitte geben Sie anhand der Skala an, wie wichtig Ihnen Folgende in Ihrem Leben an der Westküste Schleswig-Holsteins sind.

	sehr wichtig	eher wichtig	weder noch	eher unwichtig	absolut unwichtig
	+2	+1	0	-1	-2
Attraktive Landschaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eine gesunde und artenreiche Tier- und Pflanzenwelt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sauberes Wasser, Luft, Boden, Strand und Watt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freizeit an Küste und Meer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Viele soziale Kontakte im nahen Umfeld	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weites, offenes Meer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anerkennung des Rechtes von Tieren und Pflanzen auf ihren natürlichen Lebensraum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anspruchsvolle Arbeit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anerkennung der Rechte zukünftiger Generationen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natur Natur sein lassen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gerechtigkeit unter den Anwohnern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Balance zwischen den Bedürfnissen der Touristen und der Anwohner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Existenzsicherung der Bürger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ökonomisches Wachstum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ansiedlung profitabler Firmen und Industrie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neue Industrien und Technologien	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teilhabe an politischen Entscheidungsprozessen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4a. Ganz spontan: Woran denken Sie, wenn Sie „Meer“ hören?

4b. Woran denken Sie, wenn Sie „Nordsee“ hören?

4c. Was verbinden Sie mit „schleswig-holsteinische Westküste“ ?

5a. Die Nordsee an der schleswig-holsteinischen Westküste empfinde ich ...

	gar nicht	ein wenig	moderat	ziemlich stark	sehr stark
.. als Teil meiner Heimat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Naturraum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Wirtschaftsraum (auch touristisch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Erholungsraum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als... _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5b. Die schleswig-holsteinische Westküste empfinde ich...

	gar nicht	ein wenig	moderat	ziemlich stark	sehr stark
.. als Teil meiner Heimat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Naturraum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Wirtschaftsraum (auch touristisch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als Erholungsraum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. als ... _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6 Wie nutzen Sie das Meer an der schleswig-holsteinischen Westküste?
(denken Sie dabei an Freizeit, Erholung, Arbeit usw.)

7a. Wie nutzen Sie die Küste hauptsächlich? (z.B. Freizeit, Arbeit, Erholung usw.)

7b. Wann haben Sie zuletzt einen Spaziergang am Meer gemacht?

8. Auf den Punkt gebracht: Was schätzen Sie an Meer und Westküste insgesamt am allermeisten?

9. Was verbinden Sie mit „Offshore Windkraft“?

10a. Wie stehen Sie zum Bau von Offshore-Windkraftanlagen an der schleswig-holsteinischen Westküste?

- sehr dafür eher dafür keine Meinung eher dagegen stark dagegen

10b. Begründung:

11a. Fühlen Sie sich direkt von möglichen Windenergieanlagen im Meer betroffen?

- ja nein

11b. Wenn ja, in welcher Weise?

12a. Können Sie sich vorstellen, von Offshore-Windkraftanlagen persönlich zu profitieren?

- ja nein

12b. Wenn ja, in welcher Form?

13a. Wie stehen Sie zur Windkraft an Land?

- sehr dafür eher dafür keine Meinung eher dagegen stark dagegen

13b. Leben Sie selbst in der Nähe eines Windparks?

- ja

Wenn ja, geben Sie bitte die ungefähre Entfernung in km an: _____

- nein

14. Wenn Sie wählen müssten, welche der folgenden Möglichkeiten würden Sie bevorzugen? Bitte numerieren Sie die vorgegebenen Optionen mit den Zahlen 1 bis 4, wobei 1 die attraktivste und 4 die unattraktivste Variante ist.

- Windkraftanlagen nur an Land
 Windkraftanlagen nur Offshore
 Windkraftanlagen sowohl an Land als auch Offshore
 gar keine Windkraft

15. Bitte lesen sie die folgenden Aussagen jeweils aufmerksam und kreuzen Sie an, wie sehr Sie diesen jeweils zustimmen und für wie wichtig Sie diese persönlich halten.

Offshore-Windkraftanlagen ..

	+2	+1	0	-1	-2
.. zerstören den besonderen Reiz der Küstenlandschaft.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Eine attraktive Landschaft an der Westküste ist mir... ..	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	Unwichtig <input type="checkbox"/>
.. zerstören das Landschaftsbild.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Dass das Landschaftsbild erhalten bleibt, ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	Unwichtig <input type="checkbox"/>
.. sind Verschwendung von Steuergeldern und Subventionen.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Der sinnvolle Einsatz von Steuergeldern und Subventionen ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
.. erzeugen unstetig Energie und Netzeinspeisungen.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Stetige Energieeinspeisung ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
..haben eine schlechte Energiebilanz.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Eine gute Energiebilanz ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
..sind eine unwirtschaftliche Methode der Energieerzeugung.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Wirtschaftliche Energieerzeugung ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
..sorgen für einen Wertverlust von Immobilien.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Dass Immobilien nicht im Wert fallen, ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
.. senken den Erholungswert der Region.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Ein hoher Erholungswert der Region ist mir.....	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>
.. provozieren sozialen Unfrieden.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Sozialer Frieden ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

Offshore-Windkraftanlagen...

.. bringen nur wenigen Personen Vorteile.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Gleiche Vorteile aus der Offshore-Windkraft für alle sind mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. erzeugen relativ teuren Strom.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Billiger Strom ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. schaffen keine neuen Arbeitsplätze in der Region.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Neue Arbeitsplätze in der Region sind mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

... lassen sich nicht mit anderen Nutzungen kombinieren.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Eine Mehrfachnutzung von Offshore-Windenergieanlagen ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

symbolisieren (technischen) Fortschritt.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
(Technischer) Fortschritt ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. führen zu Schiffsunfällen.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Die Vermeidung von Schiffsunfällen ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. sind keine umweltfreundliche Methode der Energieerzeugung.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Umweltfreundliche Energieerzeugung ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. sind mit dem Naturschutz unvereinbar.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Vereinbarkeit der Offshore-Windenergienutzung mit dem Naturschutz ist mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

.. wirkt sich negativ auf den Tourismus an der Westküste aus.	stimme zu <input type="checkbox"/>	stimme eher zu <input type="checkbox"/>	weder noch <input type="checkbox"/>	stimme eher nicht zu <input type="checkbox"/>	stimme nicht zu <input type="checkbox"/>
Steigende Tourismuszahlen an der Westküste sind mir...	sehr wichtig <input type="checkbox"/>	wichtig <input type="checkbox"/>	teilweise wichtig <input type="checkbox"/>	fast unwichtig <input type="checkbox"/>	unwichtig <input type="checkbox"/>

16. Haben Sie die eben getroffenen Einschätzungen auf Basis von konkretem Wissen getroffen oder mehr „aus Gefühl“?
- mehr auf Basis konkreter Informationen
 - mehr aus dem Bauch heraus
17. Waren Sie schon einmal auf einer Informationsveranstaltung zur Windkraft?
- ja nein
18. Wie sehr vertrauen Sie folgenden Informationsquellen? Bitte numerieren Sie die vorgegebenen Optionen mit den Zahlen 1 bis 8, wobei 1 die Quelle ist, der Sie am meisten vertrauen und 8 die Quelle, der Sie am skeptischsten gegenüberstehen würden.
- Politiker
 - Windkraftbetreiber
 - Herstellerfirmen
 - Bürgerinitiativen
 - Naturschutzorganisationen
 - Wissenschaftler
 - Bundesumweltministerium
 - Kreisverwaltung
- 19a. Sehen Sie technische Alternativen zur Offshore-Windkraft?
- ja nein
- 19b. Wenn ja, nennen Sie diese bitte: _____
20. Haben Sie sich schon einmal aktiv gegen Windkraftanlagen eingesetzt?
- ja nein
- 20b. Wenn ja, in welcher Form? _____

Zum Schluß noch einige Fragen zu Ihrer Person:

Geschlecht: weiblich männlich

Alter: _____ Jahre

Schulbildung: kein Abschluss
 Hauptschulabschluss
 Mittlere Reife
 Fachhochschulreife/Abitur
 Fach-/Hochschulabschluss

Beruf: Was sind Sie von Beruf? _____

In welchem Beruf sind Sie derzeit tätig? _____

Einkommen: Wie hoch schätzen Sie Ihr verfügbares Einkommen?

unterdurchschnittlich durchschnittlich überdurchschnittlich

Familie: Keine Kinder

Kinder: _____ (Anzahl) _____ (Alter)

Herkunft: Ich bin an der Nordseeküste geboren

Ich bin im Alter von ____ Jahren zugezogen.

Bitte kreuzen Sie an, mit welchem Gebiet Sie sich am stärksten verbunden fühlen.

- Inseln
 Kreis Nordfriesland
 Kreis Dithmarschen
 Gemeinde _____
 andere: _____

Identität: Fühlen Sie sich an Ihrem Wohnort als ja nein
Einheimischer?

Mitgliedschaften: Sind Sie derzeit Mitglied in einer ja nein
Umweltorganisation, z.B. WWF,
Greenpeace, BUND o.ä.?


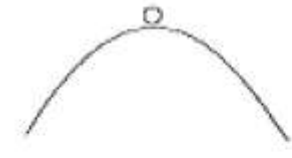


Wenn nächsten Sonntag Bundestagswahl wäre, welche Partei würden Sie wählen? _____

Vielen Dank für Ihre Teilnahme! Am besten jetzt gleich in den Umschlag stecken...

1. In the following you will find a few brief personal portraits. Please read them carefully. Then indicate whether these descriptions apply to you using the numbers provided.

	does not apply to me at all	does not apply to me	does not really apply to me	somewhat applies to me	applies to me	totally applies to me
	1	2	3	4	5	6
1.	It is important to me to listen to people who think and feel very differently to me. I want to understand other people, even if I don't share their views.					●
2.	I am convinced that humans should protect nature. Environmental protection is an important cause to me.					●
3.	New ideas and creativity are important to me. I like to tackle things my way.					●
4.	It is important to me to decide on my own actions. I like the freedom of choice to do what I consider to be right.					●
5.	I like surprises and always look for new things to try. It is important to me to do many different things in life.					●
6.	I seek out adventure and risk. I want life to be exciting.					●
7.	I look for every opportunity to have fun. It is important to me to enjoy life to the full.					●
8.	Security is important to me. I avoid anything that could threaten my safety.					●
9.	I think people should do what is asked of them. I am convinced that rules should be adhered to, independently of whether this is checked or not.					●
10.	It is important to behave correctly. I avoid doing things others could find wrong.					●
11.	I am convinced that modesty is important. I think we should be happy with what we have.					●

2. Please take a look at the following sketches and read the accompanying descriptions. Then select the description that is **closest to your understanding of nature** and circle the corresponding number.

1		<p>“Nature is benign” Basically, nature will always regain its balance. No matter what man does, the ball will always return to the original position.</p>
2		<p>“Nature is ephemeral” Nature is very sensitive to any type of intervention. Even very small interventions can make the ball get out of control.</p>
3		<p>“Nature is tolerant” Nature is tolerant to a certain degree of intervention. Only when a certain threshold is crossed does the ball get out of control.</p>
4		<p>“Nature is capricious” When intervening in nature, one can never be sure whether this will have positive or negative consequences. There is no way of knowing how the ball will move.</p>

Could you briefly explain how you understand the term you selected. If you found it difficult to choose between the options, you can also let us know why. In any case, do make sure you circle one of the descriptions, the one that comes closest to your understanding of nature.

3. Using the scale provided, please indicate how important the following are to your life on the West Coast of Schleswig-Holstein

	very important	important	neither	not very important	not at all important
	+2	+1	0	-1	-2
An attractive landscape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A healthy flora and fauna rich in biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clean water, air, soil, and beaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leisure time spent on the coast and sea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
many social contacts living close by	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wide, open sea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The rights of animals and plants to live their natural habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Holding an interesting and challenging job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting the rights of future generations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let nature be nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Justice and fairness in the region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Striking a balance between the needs of tourists and those of local residents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A secure livelihood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attracting profitable companies and industry to the region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investing in new industries and technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
participation in political decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4a. What do you spontaneously think of when you hear 'sea'?

4b. What do you spontaneously think of when you hear 'North Sea'?

4c. What do you spontaneously associate with 'West coast of Schleswig-Holstein'?

5a. I consider this part of the North Sea ...

	not at all	a little	moderately	quite strongly	very strongly
.. an essential part of my home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for economic activities (including tourism)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. other... _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5b. I consider the West coast of Schleswig-Holstein...

	not at all	a little	moderately	quite strongly	very strongly
.. an essential part of my home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for economic activities (including tourism)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. space for recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.. other... _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. What active use do you make of the sea on the West coast of Schleswig-Holstein? (Think about recreation, work etc)

7a. What active use do you make of the coast on the West coast of Schleswig-Holstein?

7b. When did you last take a walk along the seashore?

8. What do you appreciate most of all about the sea and the West coast?

9. What do you spontaneously associate with "**offshore wind farming**"?

10. What is your attitude to offshore wind farming off the West coast of Schleswig-Holstein?

strongly in favour in favour no opinion against strongly against

10b. Please state the reasons for your attitude: _____

11. Do you feel directly affected by (potential) offshore wind turbines?

yes no

11b. If yes, in what way? _____

12. Could you imagine to personally profit from offshore wind farms?

yes no

12b. If yes, in what way? _____

13. What is your attitude to wind farming on land?

strongly in favour in favour no opinion against strongly against

13b. Do you live close to a wind farm yourself?

yes

no If yes, can you give an estimate how close you are to the wind farm: _____

no

14. If you had to choose for your area/region, which of the following options would you pick? Please rank the options below from 1 to 4, using 1 for the most attractive and 4 for the least attractive option.

- onshore wind farming only
- offshore wind farming only
- both onshore and offshore wind farming
- no wind farming at all

15. Please read the following statements carefully. Then tick how much you agree with each and how important you consider each to be.

Offshore wind farms...

	1	2	3	4	5
.. destroys the particular attraction of the coastal landscape	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
An attractive coastal landscape is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. destroys the characteristic look of the landscape.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
The characteristic look of the landscape is...to me.	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. is a waste of taxpayer's money and subsidies.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Using taxpayer's money and subsidies sensibly is...to me.	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. creates intermittent energy only.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Steady energy generation and feed-in is...to me.	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. has a bad energy balance.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
A good energy balance is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. is an uneconomical way of generating electricity	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Generating electricity economically is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. causes property to lose value.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Stable property prices are ...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>
.. lowers the recreational value of the region.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
The high recreational value of the region is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

Offshore wind farming...

.. provokes social unrest	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Social peace is	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. only brings advantages to a few people	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Equal advantages from offshore wind farming to all is ...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. generates expensive electricity.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Cheap electricity is ...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. does not create new jobs in the region.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
New jobs in the region are...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

... cannot be combined with other uses.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Co-use of offshore wind farms is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

symbolise (technological) progress.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
(Technological) progress is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. leads to shipping accidents.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Avoiding shipping accidents is....	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. is not an environmentally friendly way of energy generation.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Environmentally friendly energy generation is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

Offshore wind farming...

.. is incompatible with nature conservation.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Compatibility of offshore wind farming with nature conservation is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

.. has negative impacts on tourism in the region.	agree <input type="checkbox"/>	somewhat agree <input type="checkbox"/>	neither <input type="checkbox"/>	don't really agree <input type="checkbox"/>	disagree <input type="checkbox"/>
Growing tourism in the region is...	very important <input type="checkbox"/>	important <input type="checkbox"/>	somewhat important <input type="checkbox"/>	not very important <input type="checkbox"/>	not important <input type="checkbox"/>

16. Did you make the above choices based on actual information or more of a gut feeling?

- more based on knowledge
 more of a gut feeling

17. Have you ever attended an information event on offshore wind farming?

- yes no

18. How much do you trust the following sources of information? Please rank the options listed from 1 to 8, using 1 for the source you trust most and 8 for the source you trust least.

- Politicians
 Wind farm operators
 Manufacturers of wind turbines
 Citizen's initiatives
 Nature conservation organisations
 Scientists
 Ministry of the Environment
 Municipal administration

19. Do you see technological alternatives to offshore wind farming?

- yes no

19b. If yes, please state which: _____

20. Have you ever actively opposed offshore wind farming?

- yes no

20b. If yes, in what form?

To finish, a few questions about yourself:

Are you: female male

Your age: _____ years

Education: no school leaving certificate
 GCSE equivalent
 A-level equivalent
 University/college degree

Profession: What is your professional training? _____

What job do you currently hold? _____

Income: How would you rate your available household income?

below average average above average

Family status: no children

children

Origin: I was born in this area/region

I moved here in _____ (year)

Do you have a place you feel particularly attached to in this area/region? If so, please state: _____

Identity: Would you consider the place where you live your home? yes no

Memberships: Are you a member of an environmental organisation (WWF, Greenpeace, local organisation)? yes no

If there were a general election next Sunday, what party would you vote for? _____

Thank you very much for participating in our survey! We appreciate your contribution.