final report

Acceptance of offshore wind energy use

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1 Initial situation and project structure

When the project started in 2009, the federal government aimed to increase the share of renewable energies in the gross electricity supply to 20% by 2020 and to continuously increase it (Federal Ministry for the Environment & Foundation Offshore Wind Energy, 2007). The expansion of the use of wind energy should be the central pillar of an energy supply that is increasingly based on renewable energies in the future. In addition to onshore expansion, there were also ambitious goals for offshore expansion: in addition to onshore use, offshore capacity of up to 25 GW should be available by 2030. The focus of offshore development should be outside the 12 nm zone, in the Exclusive Economic Zone (EEZ). The federal government hoped that this would defuse conflicts that arose from the limited number of environmentally and nature-friendly locations for onshore wind energy.

While the planning and approval work progressed, the realization of the offshore wind farms (OWPs) was delayed, and the expansion targets set for 2010 were not achieved. in energy
The federal government's energy concept from 2010 finally made it clear that substantial investments (€75 billion) were required to implement the offshore expansion plans, with the financing and the sharing of costs and risks between OWF operators and grid operators being disputed (Federal Government, 2010).

After the change of government in 2013, the original offshore expansion target of 25 GW by 2030 was reduced to 6.5 GW by 2020 (coalition agreement between the CDU, CSU and SPD, 2013). For further expansion up to 2030, an average of two OWPs per year, each with an output of around 400 MW, is now assumed, in order to achieve a total output of 15 GW by 2030. These expansion goals can only be achieved in the medium and long term if the use of offshore wind energy is supported locally and nationwide by the population.

The results so far show that wind energy is fundamentally supported by society (e.g. Forsa, 2012). With regard to individual projects, there was - especially on land - but also strong resistance on site. To the planned one

In order to be able to design the expansion of wind energy use with as little conflict as possible, strategies and recommendations for action to avoid and solve conflicts and to increase acceptance are necessary. The aim of this interdisciplinary project is to contribute to the low-conflict expansion and acceptance of offshore wind energy use. The following are analysed: 1. the
acceptance of OWFs and acceptance factors, 2. advantages and disadvantages expected by coastal residents
to you,
3. possible effects on tourism and 4. approaches to dealing with conflicts of interest.

In order to derive recommendations for action on how conflicts of interest between residents, operators and authorities can be avoided or resolved as far as possible, planning and approval experts as well as affected coastal residents were involved. A quasi-experimental study design was chosen to enable causal statements about the regional effects of OWFs: The analyzes were not only carried out in the regions in which OWFs were approved or were already under construction, but also, for comparison, in regions in which this was not the case was the case.

In order to be able to record changes in the regions, these were also monitored over a period of three years, from summer 2009 to summer 2012. The East Frisian islands of Borkum and Norderney were determined as the OWF region in the North Sea, and the North Frisian island of Föhr as the comparison region . In the Baltic Sea, the Fischland-Darss-Zingst peninsula was selected as the offshore wind farm region, and the Usedom peninsula served as the comparison regior

The complexity of the project required the cooperation of various specialist disciplines.

Planning science: Analysis of the lines of conflict at the approval, planning and local level of offshore wind energy (Elke Bruns, TU Berlin; Bruns, 2014) and the influence of the design of OWPs on acceptance (Sören Schöbel-Rutschmann and team, TU Munich; Schöbel -Rutschmann, 2011).

Economy: Influence of OWFs on tourism and the local economy (Michael Vogel, HS Bremerhaven; Vogel, 2013a, b).

Environmental and social psychology: local acceptance of OWFs and information design (Gundula

Hübner, Johannes Pohl and team, Martin Luther University of Halle-Wittenberg),

Design: The communication designers Adler & Schmidt and the photographer Eric-Jan Overkerk designed a brochure (Hübner & Pohl, 2012).

Questions and analyzes were dealt with in an interdisciplinary manner, workshops were held with experts in the approval and planning process and with local residents (Bruns, 2012; Hübner, Bruns & Pohl, 2011). In this way, the acceptance of offshore wind energy could be comprehensively recorded from a planning and social science perspective. For the first time, both nationally and internationally, changes over time in regions with OWFs (before vs. after the start of operations) were analyzed comparatively between regions in which neither OWFs were planned nor built. As an associated RAVE project, the present project is part of the accompanying research for the OWF Alpha Ventus.

Chapter 4 of this report offers an interdisciplinary synopsis of the central project results. The other chapters of this report contain the environmental and social psychological research results. The planning and economic results and the presentation of the workshops are presented in detail in individual reports (see above). All reports are freely available as a PDF version at: http://www.akzeptanz-windenergie.de

2 Status of acceptance research

The acceptance of wind turbines (WTG) can be viewed on three levels: socio-political, market and local acceptance (Wüstenhagen, Wolsink & Bürer, 2007). The focus of this project is local acceptance by residents. In addition to individual attitudes and beliefs, it is recorded how these are influenced by the planning and approval processes at the local level.

First, the status of empirical research on the local acceptance of offshore wind energy is summarized. An analysis of possible areas of conflict follows. The present study builds on the current state of research, which was also incorporated into the construction of the questionnaire (see Chapter 3).

We define local acceptance by residents as a three-component model based on social and environmental psychological theories of the relationship between attitudes and behavior (Figure 2/1; Hübner, 2012; Schuitema & Bergstad, 2012).

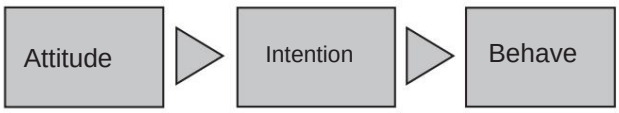


Figure 2/1:
Three component model of acceptance

The setting describes the extent to which the wind turbines are evaluated as positive or negative; attitude includes cognitions as well as feelings. The attitude leads to the intention to support or prevent wind turbines and this finally to
the actual behavior. The setting, for its part, is based on the expected advantages and disadvantages that are associated with the wind turbines, e.g. B. a contribution to climate protection or an impairment of the landscape. A positive or neutral attitude and possibly supportive behavior as well as passive endorsement are referred to here as acceptance. Tolerance, on the other hand, describes a negative attitude that remains passive and does not result in active behavior. Resistance
on the other hand, requires a negative attitude that leads to active behavior (objections, protest, complaints). This understanding is descriptive and in no way judges the legitimacy of acceptance, toleration, or resistance.

While accompanying ecological research on the use of offshore wind energy has been established in Germany for a number of years (e.g. Forschungszentrum Jülich, 2002), effects on people have been largely ignored - they are only indirectly considered in planning processes when weighing up user interests (living, recreation, jobs, tourism) included. In contrast to other countries such as Denmark (eg, Ladenburg, 2008; Larsen et al., 2005), Great Britain (eg, Bayes, 2002, Bishop & Miller, 2007; Haggett, 2008) and USA (eg, Firestone & Kempton, 2007; Firestone, Kempton & Krueger, 2009; Firestone, Kempton, Lilley, & Samoteskul, 2012; Lilley, Firestone, & Kempton, 2010) there have been no differentiated studies on the acceptance of OWFs in Germany to date. Gee (2010) presented the results of a survey of 387 residents from 15 island and mainland communities on the west coast of Schleswig-Holstein, according to which only 18% of those questioned were clearly in favor of using offshore wind energy. However, an inadequate survey method was used to record the acceptance factors, which limits the meaningfulness of the study. On the other hand, a survey conducted as part of the BMU project “Pilot study on the acceptance of vertical wind turbines” (Hübner et al., 2010) indicated a high degree of offshore acceptance. The majority (70%) of the 120 homeowners and farmers surveyed were generally positive about the use of wind energy, with more than half (61%) clearly agreeing with OWFs in particular.

The previous national and international studies were based almost exclusively on surveys on fictitious or planned offshore wind farms (see list of references). Only studies on Dutch (Egmont aan Zee; Intomart GfK, 2005, 2006, 2007, 2008) and Danish OWFs (Ladenburg, 2009, 2010) have been available for OWFs that have already been constructed.

In summary, the following four trends can be derived from previous research:

a) Fictitious as well as OWFs that have already been constructed tend to be judged positively, while planned ones tend to be judged negatively. There is a clear preference for OWPs far from the coast compared to those close to the coast. *Far from shore* means within the EEZ, approx. 40 km offshore. *Coastal* means within the 12 nm zone.

b) No or rather positive effects on local jobs are expected, rather negative effects on the sea view. There was no clear trend regarding the expected impact on birds and the image of the coastal landscape.

Coastal residents of planned offshore wind farms expect no or negative effects on tourism and fisheries as well as negative effects on the marine environment and shipping. On the other hand, there will be no effects of an OWP on the climate expected.

c) It is striking that, with only three exceptions, there have been no studies with surveys at several points in time for either onshore or offshore wind energy that allow reliable conclusions to be drawn about longer-term changes in local residents' acceptance. Accordingly, the present project is only the fourth study of this kind - also internationally. In two regions, the attitude towards onshore wind turbines was recorded before information was provided about the planned construction there, during the planning phase and after the erection of the wind turbines: During the Although the attitude at the starting point was clearly positive, it decreased significantly during the planning phase - and leveled off again at the high starting level after completion (in summary, Wolsink, 1994, 2007).

d) Data was collected on the acceptance of the coastal Dutch OWP Egmond aan Zee before construction, during construction and in the first two years of operation (Intomart-GfK, 2008). Over the years, there has been a steady increase in acceptance among residents and tourists, as well as consistently low expectations of the negative impact of the OWP on shipping and the marine environment.

Negative assessments of the sea view decreased and were only minor after 2 years of operation. There was no effect on beach visits. It should be noted that no variables influencing acceptance (moderator variables) were controlled in this study and there was no comparison region without OWP.

The findings clearly show contrasts between the expectations for planned offshore wind farms and experiences after commissioning. This underlines the importance of follow-up studies covering the period from the planning/construction phase to the operational phase in OWP regions. Because only with reliable data can questions of An

residents in planning areas are answered in a credible way - in the best case to contribute to the resolution of conflicts of interest between the actors involved. The aim of the present study is therefore to examine the expected positive and negative consequences before and actually experienced after the construction of an offshore wind farm for the resident coastal population. In order to be able to derive recommendations for other projects, their wishes for a project development are also recorded, e.g. B. with regard to participation. Since the German coastal regions are mainly developed for tourism - and represent a significant economic factor - it seems essential to clarify whether offshore wind farms also offer potential for tourism. If corresponding effects can be proven, a double benefit for wind energy would be possible: 1. Image enhancement through tourists, who act as multipliers in their home towns and 2. Support for local small and medium-sized businesses.

3 Procedure and methods

A longitudinal approach was chosen to record the impact of the construction of OWFs on affected coastal residents and their region: Residents, tourists and local experts were surveyed three times at intervals of 1 to 2 years (2009, 2011, 2012); the first survey wave was before or during the construction of OWFs. the marriage

Exercises took place in four regions on the German North Sea and Baltic Sea coasts. On the one hand, two regions were taken into account, off the coast of which OWFs were already planned within and outside the 12 nm zone and were at least partially built in a timely manner (OWP regions). The fourth cover page offered an overview of OWFs in the Baltic and North Seas. In order to be able to check whether any changes that may occur can actually be traced back to the OWPs, two comparison regions were included, off the coast of which neither short nor long-term OWPs were or are planned.

The East Frisian islands of Borkum and Norderney were designated as the OWP region in the North Sea. There are two offshore wind farms in this region: the offshore wind farm Riffgat, which was being planned at the time of the second survey wave, is in the 12 nm zone (north of Borkum). Construction preparations were underway for the 3rd wave, but the wind turbines had not yet been erected. Outside the 12 nm zone - in the EEZ - is the OWP Alpha Ventus. Alpha Ventus was already under construction at the time of the first survey, and some wind turbines were in operation at the time of the second survey wave. Borkum is spatially closer to both OWPs. The cable route that connects Alpha Ventus to the mainland runs via Norderney. The North Frisian island of Föhr served as the comparison region in the North Sea that was not affected by OWF plans.

In the Baltic Sea was the Fischland-Darß peninsula Zingst selected as OWP region. At the time of the 1st survey wave, the OWP Baltic 1 (within the 12 nm zone) had not yet been built off this peninsula, but by the 2nd survey wave it was already in operation. Outside the 12 nm zone was

the OWP Baltic 2 (formerly Kriegers Flak) is being planned, the construction of which had not yet started at the time of the 3rd survey wave in summer 2012. The Usedom peninsula served as a comparison region in the Baltic Sea. Table 3/1 provides an overview of the study plan and the number of respondents in the three survey waves; questioned

Table 3/1: Survey regions and number of participants in the survey waves

OWP region	1st wave 2009	2nd wave 2011	3rd wave 2012
Borkum/Norderney (Rigate and Alpha Wind)	residents: 109 Tourists: 100 Experts: 12	residents: 79 Tourists: 110 Experts: 6	residents: 55 Tourists: 104 Experts: 7
darss (Baltic 1 and Baltic 2)	Residents: 103 Tourists: 100 Experts: 12	Residents: 78 Tourists: 85 Experts: 7	Residents: 55 Tourists: 103 Experts: 6
comparison region			
Foehr	Residents: 97 Tourists: 85 Experts: 12	Residents: 72 Tourists: 102 Experts: 8	Residents: 53 Tourists: 100 Experts: 7
Usedom	Residents: 114 Tourists: 100 Experts: 12	Residents: 71 Tourists: 100 Experts: 5	Residents: 50 Tourists: 100 Experts: 9

were the same local residents and experts, and different people in the case of the tourists.

In summary, the investigation plan allows comparisons between: – OWF vs.
comparison region, – North Sea
vs. Baltic Sea region, – OWP within
vs. outside the 12 nm zone
(near the coast vs. further offshore
wind farm), – residents vs.
tourists, – before or during construction vs. after commissioning.

In addition to the quantitative survey of local residents (Chapter 5) and tourists (see own reports: Schöbel-Rutschmann, 2011; Vogel, 2013b), additional interviews were conducted with local actors, some of which were evaluated quantitatively and partly qualitatively (see own report: Vogel , 2013a). Workshops were also held with experts and local residents. In the expert workshop, options for constructing OWFs with fewer conflicts were discussed (see own report: Hübner, Bruns & Pohl, 2011). The results of the first two waves were discussed and supplemented with the participants of the resident workshops (see own report: Bruns, 2012). The central results of the resident survey and the resident workshops were then summarized in an information brochure containing authorized statements and photos from individual residents (Hübner & Pohl, 2012). The brochure was presented to these residents before it was completed and their feedback was incorporated. The effect of this information brochure was checked as part of the 3rd wave (Chapter 5).

4 Summary and RecommendationsN

4.1 Summary
there project results

Acceptance component attitude: offshore wind energy meets with acceptance – residents living along the coast, tourists and regional experts (tourists and local experts for details see Vogel 2013a, b) consistently showed positive attitudes in all regions surveyed in the period from 2009 to 2012. Were most critical on the Darß OWFs in 2009

assessed, the assessments were also more positive here from 2011 and approached those of the other regions. However, acceptance is higher if the systems are set up far from the coast and the safety of maritime shipping is the top priority

stands. It should be emphasized that tourists rated OWPs near the coast more positively than the residents on average - also on the Darß, where Baltic 1 has been visible from the shore since 2011. Also appreciated
the tourist advantages of the OWPs overall more positive, disadvantages weaker than the local residents. With two Exceptions: Tourists were more critical of them
effects on the marine environment and the safety of maritime navigation.

The same applies to residents with regard to negative feelings such as distrust and anger: offshore offshore wind farms close to the coast were viewed more critically than those farther away from the coast. As a reason for a sense of threat, some people gave an assumed impairment of maritime safety. Overall, however, positive and negative feelings were rather weak on average, with the exception of curiosity. Only on the Darß did stronger negative feelings appear in 2009, but in the following years the experiences with Baltic 1 had a positive effect and weakened them. For example, the sense of threat from Baltic 1 among Darß residents increased from 2009 to 2011

significantly, as well as mistrust in connection with the OWFs. According to the workshop participants in Zingst, the emotional calming down on the Darß can be explained by a pragmatic attitude towards the facts that now exist: During the planning phase there were strong arguments and emotions, both with the external actors and within the

Local residents. Since Baltic 1 was built, people try to live with it and the disputes are over.
At the same time there was a discussion about the further

Design of the energy transition is required, which, in addition to energy security, also includes questions of decentralized energy generation and energy efficiency. (Resident workshops in detail see Bruns, 2012).

Safety of shipping: The fear already mentioned that shipping is exposed to an increased risk of accidents due to offshore wind farms was also a central topic at the workshops for residents.
In particular, accidents, which could lead to pollution of the beaches due to oil spills, would deprive the tourist regions of their livelihoods in the opinion of the local residents. Also according to the assessment of the offshore experts (offshore expert workshop in detail see Hübner, Bruns & Pohl, 2011), an OWP-related ship collision and its negative consequences for the marine environment, the beaches and thus for the tourism industry would endanger the acceptance in the long term. Despite complying with the legally prescribed minimum distances, residents and local experts repeatedly complained that the OWFs were too close to the busy shipping lanes and that the approval reports did not take sufficient account of the "human risk factor".
Mentioned dangers caused by people included alcohol problems among ship officers on duty or overloading ship crews as a result of austerity measures – recognized causes of collisions between ships, with lock gates or other objects. In the resident survey, the respondents in the OWP regions were clearly more concerned than those in the comparison regions. The fears were particularly pronounced on the Darß in 2009, where a particularly high risk was seen due to the narrowness of the shipping lane, the density of traffic and alcohol problems among ship crews. In the years that followed, there was also a slight relaxation here. This is probably due to the fact that there has not been a hazardous situation in connection with Baltic 1 to date - a collision of a tugboat with the substation at sea in September 2011 caused Baltic 1 to be temporarily idle, but there was no environmental damage. The initial fears were less pronounced on Borkum and Norderney, but remained stable. The residents and local experts brought clear recommendations for measures to protect the
Maritime shipping, which they saw as insufficiently implemented by the previous security concept. These requirements are contained in the following chapter 4.2.

Marine environment: It was not only expected to secure shipping, but also to protect the marine environment. Coastal residents feared that OWFs would significantly impair the living conditions of birds and marine mammals. Here offshore wind farms near and far from the coast were judged equally critically. Differences became apparent between Borkum/Norderney and Darß over time: While the expectation of negative effects on birds increased among the residents of Borkum and Norderney, this decreased among the residents of Darß. In the surveys, residents showed comparatively less concern about the effects on fish and communities on the sea floor (benthos). The estimated negative environmental impact of submarine cables was even lower. This was also rated significantly less negatively on the Darß in 2011 than in 2009.

Countryside and homeland: sea views and wide horizons belong to the coast. Adverse effects on this panorama as well as possible disturbing effects of nocturnal light signals were only expected from coastal offshore wind farms. Due to the proximity, a significantly greater impairment by the light signals from Riffgat was assumed on Borkum than on Norderney. On the Darß, on the other hand, the negative expectations in 2011 compared to 2009 were already significantly weakened. In 2012, the residents of Darss could be asked more precisely about their experiences with the visibility of Baltic 1 near the coast: In summary, they rated the sight of Baltic 1 slightly positive during the day and slightly negative at night.
With regard to the feeling of home or the image of the community, in 2009 OWFs far from the coast were classified as more neutral, while those near the coast were classified as slightly negative. Interestingly, on Borkum / Norderney and on the Darß from 2009 to the following years, there was a shift with a slightly positive tendency - from an assessment as a foreign body towards a characteristic feature of the region. This trend was not evident in the comparison regions. The assessment of the effects on the community image and sense of home was somewhat more differentiated: it took

The negative assessment of the OWPs also decreased slightly in this respect, but there was only a clear change of opinion on the Darß. In 2011, respondents there associated OWFs with a slight image improvement and a slightly positive feeling of home. It should be mentioned that OWFs on Borkum were associated with more negative effects on the sense of home than on Northerney.

Tourism and economy: In all regions surveyed, negative impacts on tourism were expected from the coastal offshore wind farms, but not from offshore facilities. However, this fear diminished over time, particularly clearly on the Darß. The workshop participants on the Darß explained these results with their actual experiences: Contrary to initial expectations, the visible OWP Baltic 1 near the coast had no recognizable negative impact on tourism. This was also proven by the booking figures both on the Darß and Borkum / Norderney. Even if there are no negative effects on tourism, the hope that offshore wind farms would become tourist attractions has not yet been fulfilled.

Only 15% of the tourists surveyed were interested in boat trips to the OWF. In contrast, at least one third (32% of those surveyed in 2011) would visit a wind farm information center (for details see Vogel, 2013b).

With the construction of the OWPs were in the regions also job hopes have been linked; stronger with offshore than with nearshore lay. After the commissioning of Alpha Ventus (Borkum / Norderney) and Baltic 1 (Darß), these positive local expectations increased.
While there were initially slight concerns about negative effects on real estate prices, these continued to diminish in the years that followed. There were greater concerns about

negative impact on fisheries. On the Darss these concerns had after the actual common experience with Baltic 1, but not in the other regions. The largely reassuring experiences after the OWFs went into operation are also reflected in the assessments of the local experts interviewed (for details see Vogel, 2013a).

Participation: The residents and local experts surveyed expressed their dissatisfaction with the planning process on both Borkum / Norderney and Darß. The overwhelming majority stated that they had not experienced any possibility of citizen participation. In addition, the prevailing opinion was that the planning had done little justice to the concerns of the respective municipality and the citizens. On the Darß in particular, hardly any consideration was given to community concerns.

The process on Borkum was judged little better. On Norderney, the planning processes for Riffgat and Alpha Ventus were felt to be the fairest.

At the residents' workshops and the survey, it became clear that the citizens were more balanced Information from authorities and operators as well there were no serious opportunities for participation in the planning and approval phase. It was criticized that municipalities have no formal right of objection or legal action in projects on the high seas, although they e.g. B. would be directly affected by the effects of an accident – polluted beaches and an expected decline in tourism. The desire for financial participation, on the other hand, was weak.

Especially at the Darss, the workshop participants felt that the participation opportunities offered were bogus offers. On Borkum, unconsidered entries would have increased distrust of the authorities. However, there were also reports of positive experiences during the planning process: According to workshop participants, the municipality of Norderney had achieved some concessions in the disputes about Alpha Ventus and the laying of the cable route, with which the negative emotions of those affected could be reduced. When asked how a just and fair planning process should be designed from the residents' point of view, various measures were suggested, which are described in the following chapter.

Influence of design drafts and information:
Local residents and tourists voted at the am strongest rejected design drafts (“traffic separation areas” or “national park”; for details see Schöbel-Rutschmann, 2011).

With regard to preferred drafts, the results were less clear; familiarity with the existing one seemed to be the decisive factor here

planning as well as the repeated reference to the greatest possible distance from the coast – with one exception: the design draft “islands” in the North Sea (see page 40), despite its relatively larger proportion of facilities near the coast, was frequently approved of at least six variants submitted and thus indicates a possible influence a spatially obvious, creative arrangement of OWPs towards acceptance.

The information brochure on the project results and background, which was created on the basis of social science communication research, was welcomed and positively evaluated by the residents.
Admittedly, it was not able to further reinforce the already positive attitudes towards offshore wind energy use. But reading the brochure
significantly reduced negative emotions towards the local OWFs in the OWF regions and thus ensured emotional calming. In addition, reading the brochure changed individual people
attitudes and expectations.

4.2 RECOMMENDATIONS

The experiences from the examined here
offshore wind energy projects as well as the opinions and suggestions of local residents, experts and tourists provide valuable information for a
Strategy to ensure the long-term acceptance of offshore wind energy.

The population affected should be comprehensively informed at an early stage about the project planning intentions, the integration of the project into the overall strategy and the overall scope of the offshore project. All affected groups on site should be involved right from the start of project planning, including in the location discussion and design. This not only meets the citizens' need for information, but also allows the local wealth of experience to be used in project development. Because in terms of acceptance, e.g. For example, the question of whether a wind farm can be built a few kilometers apart can prove to be quite relevant - for example, when it comes to the visual impairment of special vantage points or to create a connection to local features or a spatially meaningful arrangement. It is essential to recognize the limits and possibilities of a public
clearly disclose participation. Unclear statements about the realistic chances of participation, but also the limits of codecision in administrative acts, create distrust and, in the worst case, lead to a loss of trust. Opportunities to participate that are viewed as low
encourage negative attitudes. On the other hand, overestimating the opportunities for participation can lead to disappointment, combined with negative emotions that increase resistance.

Likewise, a non-transparent information policy, bits and pieces of information, the concealment of unpopular measures or negative consequences lead to a loss of trust, which encourages resistance. It should also be checked and ensured that information relevant to residents is provided in a credible, balanced, appealing and understandable manner.

It cannot be assumed that those affected are familiar with the offshore strategy or the planning and approval procedures for offshore wind farms and the authorities responsible for them. Therefore, they must be informed about the formal planning and approval process (procedure, rules for public participation). The competent authorities should coordinate the form and content of the information with the OWP operators. From the point of view of the competent authorities,
the operators should be held more accountable here.

The local newspapers, the most frequently used source of information in the OWP regions, offer themselves as an information medium. Another source of information was “hearsay”. In order to positively support this social exchange, it is recommended to involve local opinion leaders in the sense of “change agents” (Rogers, 2003) and to comply with their requests for information.
Local opinion leaders are characterized by high credibility and good networking. If it is possible to integrate them positively, a 7 positive communication for the OWFs can be supported accordingly. However, it is important that statements on the effects of the OWFs are empirically proven

can. In this sense, too, the accompanying research program RAVE should contribute important insights into how to deal with offshore wind energy in the future.

It is recommended for project developers, operators and the authorities involved to use a communication line

to develop a strategy for the entire process, from planning and approval to commissioning and subsequent regular operation. Setting up your own, continuously updated website is also a good way to do this. Previous burdens and parallel planning in the region as well as existing experiences must be included in the planning process. The visibility and contactability of the decisive authority and the project sponsor should be guaranteed over the entire project period. All those involved should clearly disclose their respective roles, motives and interests.

In order to open up the hitherto apparently neglected tourism potential of OWFs, an integration strategy is recommended that addresses both old and new target groups. Boat tours to the OWP are not absolutely necessary for this.

An information center on land, possibly combined with tours of production facilities, with visits to a loading or service station in the port
can suffice.

Coastal residents see themselves as regional experts who can productively contribute their in-depth knowledge of local characteristics that has been accumulated over several generations. Because of this expertise, they want their contributions to be recognized.
During the planning process, residents primarily want balanced information, e.g. B. about the advantages and disadvantages of the OWFs, as well as a comprehensible explanation of the planning content and procedures by the authorities as well as the identification and discussion of planning alternatives. In addition, they would like the knowledge of local experts to be included and, as far as possible, the offers of local businesses and companies to be taken into account. For the construction phase, it was required to comply with restrictions on construction times to protect the marine environment and to reduce the burden on local residents from construction noise and pollutants. Participation in the economic benefits of the OWF in the form of trade tax revenue for the municipality was also required. Listed below are the recommendations that came from residents and the offshore expert workshop.

Recommendations of local residents and experts on Planning phase:

– Provide balanced information (e.g. events with experts who provide information about the advantages and disadvantages)
– Information at the start of planning from the operators and authorities
– Planning content and procedures clearly explained by the authorities
– Identify planning alternatives
– Ensure participation opportunities
– Consider local experts in the planning phase
– Recognize the concern of coastal communities and take it seriously
– Allow coastal and island communities to appeal/right to sue as the high seas are part of the region

Recommendations from residents and experts on the construction and operational phase:

– increase safety for maritime shipping, Reduce the risk of accidents, take adequate precautions in the event of an accident
– Restrictions on construction times to protect the respect the marine environment
– Reduction measures to protect local residents from construction noise and pollution
– Set up an internet presence for ongoing information about the course of the project
– local businesses and companies in construction and maintenance of the OWF into account
– Participation in financial benefits, e.g. in form of business tax revenue for the municipality or a favorable electricity tariff for residents of affected communities.

In conclusion, it can be stated: Experiences in other major infrastructure projects offer clues as to how informal participatory processes can be successfully designed. At the same time, their experience shows that participation and intensive efforts to ensure a transparent process do not automatically lead to a problem-free procedure or approval. Nevertheless, conflicts and public debates are more likely to be contained *with participation* than *without.*

5 resident survey

5.1 Resident survey method

5.1.1 Acceptance indicators and questionnaires

The residents were surveyed using a standardized questionnaire which, depending on the survey wave, contained 210-260 questions and statements (items) to be evaluated. Based on the three-component model of acceptance (see p. 2), this recorded the attitude towards offshore wind energy in general and in the OWP regions to the respective local OWPs (differentiated according to near and far from the coast) and self-reported behaviour. In the comparison regions, the questions were generally related to coastal and offshore offshore wind farms. In addition, the expected advantages and disadvantages of the OWFs on which the hiring is based were recorded. Influencing factors that are known from our own preparatory work and from the literature have also been identified ren of acceptance. In order to be able to derive recommendations for communication measures, used and desired information media were also taken into account. In an introductory question, it was first determined whether the test persons were aware of the use of offshore wind energy and the specific offshore wind farms. Who at least one who answered “no” to these items was informed briefly.

Some examples of operationalization are presented below, which are based on our own preliminary work (e.g. Hübner et al., 2010) and the specialist literature (e.g. Kempton et al., 2005; Soerensen et al., 2001). The questionnaires of the second and third survey wave were only slightly modified.
For the comparison regions, the questions that directly related to the experiences with the planning and construction of the OWFs were deleted. Individual questions of the resident survey, e.g. B. the attitude towards OWFs, were taken over identically in the tourist survey in order to allow a comparison (see own report; Vogel, 2013b).

Attitude acceptance indicator: The global attitude towards the local OWFs and offshore wind energy use in general was recorded in the OWP regions. For this purpose, the respondents rated five pairs of adjectives (semantic differential), e.g. B. -3 (very bad) to +3 (very good); the Mean across the items served as an attitude indicator. In the comparison regions, the questions related to "offshore wind farms within a distance of 40 kilometers from the coast" far from the coast and "in the 12-mile zone" close to the coast. In addition, feelings were recorded as an emotional attitude component. The respondents were asked to state how strongly they associated a total of seven feelings with the OWFs, e.g threat or joy.

Perceived or expected advantages and disadvantages of the OWPs were recorded as the beliefs underlying the attitude, in relation to – the local economy, – environmental compatibility and – the sense of home.
Five questions were asked about the local economy, about tourism, local jobs and real estate prices, fishing and Germany as a business location (e.g. “Alpha Ventus scares tourists away” vs. “Alpha Ventus attracts tourists”).

The estimated environmental impact was recorded using 15 questions on the impact on the environment in general, on marine life and humans (e.g. "Alpha Ventus contributes to climate protection."; "Alpha Ventus affects marine mammals.").
The influence of the OWFs on the sense of home and the regional image was recorded using four items (e.g. "Alpha Ventus brings a loss of image for our community." vs. "Alpha Ventus brings an image gain for our community.").

Behavior acceptance indicator: It was ascertained whether the respondents had independently informed themselves about the OWFs and whether and how they had become active for or against an OWF.

Planning process: The subjective evaluation of the experienced planning and approval process influences the acceptance of the corresponding projects. In order to take this moderating influence into account, satisfaction with information, opportunities for participation and the perceived fairness and burden of the planning process were surveyed.

Design: The conclusion of the first survey was the so-called design evaluation (see Schöbel-Rutschmann report, 2011). In order to

record whether the design of an OWP can influence its acceptance, five more were drawn up in addition to the real planning drafts. These were based on the qualitative landscape analysis approach (Schöbel, 2012). Respondents were asked to choose the most and least appealing of the six designs. They then saw a day and night image of the real plan and their previously determined favorite. It was recorded whether their attitude towards the OWPs changed as a result of the visualized planning drafts. A sample design is on page 40.

Wind energy comparison: In order to be able to compare the acceptance of wind energy use, the assessment of various renewable and conventional energy sources was recorded using 14 items.

Survey of changes: One aim of this project was to record changes in the ratings of offshore wind energy over time.
As far as possible, the questionnaire was used unchanged in the two follow-up surveys. Questions were added on changes that were perceived after the construction of Alpha Ventus and Baltic 1, eg "decrease in tourism" vs. "increase in tourism".

In the second survey wave in 2011, the acute topic of the nuclear catastrophe in Fukushima was added and its influence on attitudes towards the types of electricity generation surveyed.
In addition, the residents were explicitly asked what conditions they had to meet in order to feel they were being treated fairly and fairly when planning and building future offshore wind farms. In the third survey wave, additional in-depth questions on the context of maritime safety and OWFs were added.

5.1.2 Sample and implementation of the resident survey

Recruiting participants: Before the first wave of the survey, residents were informed about the research project via press releases in local newspapers and invited to participate. In order to prevent a selective selection of those who are particularly interested, additional participants were selected at random Residents recruited by phone. The telephone numbers were taken from publicly accessible telephone books. Overall, recruiting in the summer of 2009 proved to be very difficult. This is probably due to the fact that the survey period was partly still within the main summer season – a time of intensive work demands on the part of the local residents, who are mainly employed in tourism. However, since the survey was to be carried out before Alpha Ventus went into operation, data collection in the summer of 2009 was absolutely necessary. The later two survey waves were carried out at the end of the high season. Only those residents who had already taken part in the first or second survey were included in these follow-up surveys.

Sample: Only residents who spent at least four months a year on site were surveyed; the average length of residence was 22 years. A total of 423 residents took part in the first survey in the summer of 2009 (August – November) (see Table 5/1). On average they were 55 years old, on the Darß they were a little older, but significantly older, with an average of 60 years.
Men (59%) participated slightly more often than women (41%), the gender distribution was comparable in the regions. More than half of the respondents had a higher education, the majority were married and had parents. Around half (49%) of the respondents worked in tourism, only a tiny minority of 2% in fisheries and 1% in the wind industry.

Dropout rate: The dropout rate from the 1st to the 2nd survey wave in 2011 was 29%, 123 people no longer took part in the 2nd survey - some of them had moved, could not be reached or they refused to continue taking part. Another 87 people did not take part in the 3rd survey in 2012, in which 213 people took part. From the 1st to the 3rd survey wave, this corresponds to a dropout rate of almost 50%.

Based on the first survey, the following significant differences emerged between those who had divorced and those who participated in the 2nd survey wave (Table 5/1, column “Drop-outs after 2009” and “2011”). The people who left were on average 5 years younger, relatively more often childless, lived on average 7 years less in the community

region and were relatively more often not active in tourism than participants in the second survey wave. On the other hand, there were no statistically significant differences in global attitudes towards offshore wind energy and towards local offshore wind farms. The same applies to the comparison of people who dropped out after wave 2 and participants in wave 3 (Table 5/1, column “Drop-outs after 2011” and “2012”): on average, those who dropped out were 4 years younger and were relatively more likely to be single and more often with high school and high school. But even when comparing these groups, none were found statistically significant differences in global attitudes towards offshore wind energy and local offshore wind farms.

In summary: there was no selective disappearance of people with extreme opinions. The differences in some sociodemographic characteristics are also not seen as significant with regard to their influence on key acceptance indicators. Thus, the comparison of survey waves 1 and 2 or 2 and 3 is permissible for the respective reduced sample sizes and does not lead to misinterpretations.

Table 5/1: Sociodemographic characteristics

Variable	Category	Wave 2009 Drop-Outs Wave 2011 to 2009			Drop-Outs nach 2011	Wave 2012
		(N = 423)	(N = 123)	(N = 300)	(N = 87)	(N = 123)
Alter [Years]		M = 54.77 M = 50.61 SD = 15.72 SD = 18.86 Min = 18 Max = 86		M = 58.44 M = 53.45 M = 57.71 SD = 13.52 SD = 14.04 SD = 15.33 Min = 20 Max = 88		Min = 19 Max = 86
gender male		59%	56%	61%	41%	61%
	feminine	41%	44%	39%	59%	39%
Nationality German		97%		99%		99%
Graduation	main 14%		15%	12%	6%	16%
	Real / POS 33%		42%	31%	38%	27%
	high school diploma 21%		18%	24%	25%	21%
	Studies	32%	26%	34%	31%	37%
Family status	married 66% single widowed		49%	72%	67%	75%
		15%	27%	10%	17%	11%
		8%	6%	9%	5%	11%
Children		83%	70%	89%	84%	90%
grandchildren		42%	37%	49%	31%	50%
length of residence [Years]		M = 21.77 M = 16.25 M = 22.85 M = 19.60 M = 22.60 SD = 17.29 SD = 17.61 SD = 17.18 SD = 17.64 SD = 18.12				
Profession	Pension 26% employed		24%	20%	29%	31%
	24% self-employed 21%		36%	22%	29%	20%
			13%	23%	29%	29%
Task	Tourism 49%		39%	53%	50%	42%
	fishing 2%		0%	1%	1%	1%
	wind industry 1%		0%	1%	2%	1%

Conducting the survey: The residents were visited at home by trained students and interviewed using the standardized questionnaire. The interviewers read the questions and noted the answers; the respective answer scales were available to the respondents and explained to them in detail. A survey lasted one hour on average (SD = 18.70 min). As a symbolic thank you, everyone received a monthly ticket for Aktion Mensch worth €7.50.

In the 2nd and 3rd wave of the survey, 77 and 43 residents respectively asked for a postal survey and filled out the questionnaire themselves. After returning the questionnaires, they also received a lottery ticket from Aktion Mensch.

5.1.3 Evaluation and statistical methods of the resident survey

After entering the data in SPSS files, a complete control comparison was made with the original values in the questionnaires. Group characteristics were described and differences analyzed using statistical methods. For this purpose, descriptive statistical parameters such as arithmetic mean (M), empirical standard deviation (SD) and standard error of the mean (SEM) were used, assuming interval-scaled variables.

Mean values are given by naming the exact numerical values as well as by verbal characters
shown. The latter is based on the naming of the scale levels in the questionnaire and indicates the area in which the mean value lies. Mean differences are described as “insignificant” up to 0.19, “slight” between 0.20 and 0.49, “slight” or “somewhat” between 0.50 and 0.99 and “significant” from 1.00.

For nominally scaled variables, absolute
te and relative frequencies (% values) are given.
Pearson correlations were calculated in the context of influencing factor testing.
Here, only those coefficients that were at least 0.30 were considered significant (mean effect size according to Cohen, 1988). The inferential statistical examination of the distribution of frequencies was carried out using the Chi² test. If the test result is significant, the test conditions are described in more detail, in which the observed frequency deviates significantly from the expected.

In this context, the results section
Term "relatively more frequently" used. Differences in the means of the test conditions were checked using inferential statistical analysis as part of a variance or covariance analysis. The analysis of covariance was required to examine the effect of influencing factors. One, two and three factorial analyzes were used. The first factor is a repeated measures factor with either inshore vs. offshore or inshore vs. offshore vs. general levels. The second factor “region” refers to the four independent study regions. The third factor "time of measurement" had two levels, namely "2009", "2011" or "2011", "2012". This was done in order to include as many respondents as possible in the evaluation of the time course. Greenhouse-Geisser-corrected F-values and p-values were considered for three-level measurement repetition factors. Special t-tests (least significant difference t-test, LSD; t-tests according to Kirk, 1982) were used as contrasts in post-hoc comparisons of examination conditions of the analysis of variance and the adjusted mean values of the analysis of covariance. A priori planned mean comparisons of two groups were performed using t-tests. The interval-scaled variables were often neither normally distributed nor did the subgroups show homogeneous variances.

Methods of analysis of variance are considered to be robust against these deviations, especially since the sample size was > 10 and the violation of the normal distribution was usually caused by a left-slope slope due to numerous 0 values (Bortz, 1989; Box, 1954).

The evaluation and presentation of the results followed the principles of Abt's "descriptive data analysis" (1987). The stated exceeding probabilities (p) of the two-tailed tests therefore only have a descriptive function for characterizing the size of group differences.

Since this is not a confirmatory data analysis, no alpha adjustment was made despite multiple testing of group differences.
The following terms are used to describe p-value ranges: p-values ÿ .05 are referred to as “significant” and p-values with .05 < p ÿ .10 as “tend to be significant”.

In addition to the assessment of condition differences based on p-values, the effect sizes eta², d and w were used as measures for the practical

significance used (Cohen, 1988). A group difference is called “statistically significant” if both at least a small test of the statistical assumptions of the multiple correlation (Tabachnick & Fidell, 2007) the following steps were taken: item analysis of the predictor scales (Cronbach's ÿ), test of the normal distribution of the predictors and the criterion (skewness, excess, histogram, stem leaves plot, QQ plot, box plot, Kolmogorov-Smirnov test), testing for multicollinearity (criterion VIF < 6) and multivariate outliers (criterion Cook's distance > 1.00), checking the Studentized residuals for normality and checking for homoscedasticity. The SPSS statistical package was used to calculate the descriptive statistical parameters, correlations, variance and covariance analyzes and contrasts. Effect sizes d and w were calculated using Excel.

For the sake of better legibility, only selected statistical parameters are given below. All relevant parameters can be found in the appendix: http://www.akzeptanz-windenergie.de.

5.2 Results of resident survey

5.2.1 Information

Awareness: At the beginning of the survey, the level of knowledge was surveyed. While those surveyed in the OWP regions were all already familiar with the general use of offshore wind energy in 2009, there was a minority in the comparison regions who were unaware of it (Föhr: 3.1%, Usedom: 7.0%; small effect size). The awareness of the specific OWFs differed very clearly (large effect size). The vast majority (87.2%) of those questioned from Borkum and Norderney knew Alpha Ventus, but only a quarter (24.0%) of the people from Föhr. Similar numbers were shown for Baltic 1: 85.3% of those questioned on the Darß knew about Baltic 1, but only 33.0% of the people in Usedom.

Sources of information: Those who were familiar with offshore wind energy or a specific offshore wind farm mainly obtained the information in the offshore wind farm regions from local newspapers. Local reporting was less present in the comparison regions. The respondents had their information relatively often

Table 5/2: Information sources in percent of residents (absolute number)

Remark: multiple answers possible; Percentages in columns 2–5 refer to the respective sample, in the last Column on the total sample	Borkum / Norderney	Foehr	darss	Usedom	In total
local newspaper	79.6 (86)	44.3 (43)	73.8 (76)	44.7 (51)	60.7 (256)
national newspaper	33.3 (36)	20.6 (20)	31.1 (32)	16.7 (19)	25.4 (107)
TV	28.7 (31)	29.9 (29)	47.6 (49)	47.4 (54)	38.6 (163)
Radio	15.7 (17)	6.2 (6)	35.9 (37)	10.5 (12)	17.1 (72)
hearsay	43.5 (47)	7.2 (7)	20.4 (21)	4.4 (5)	19.0 (80)
Info / citizen meetings 9.3	(10)	1.0 (1)	21.4 (22)	0.9 (1)	8.1 (34)
websites and associations	6.5 (7)	4.1 (4)	7.8 (8)	2.6 (3)	5.2 (22)
BMUB	2.8 (3)	0.0 (0)	1.0 (1)	0.9 (1)	1.2 (5)
OWP operator	1.9 (2)	2.1 (2)	2.9 (3)	0.9 (1)	1.9 (8)
Posters / information boards 1.9	(2)	0.0 (0)	3.9 (4)	0.9 (1)	1.7 (7)
Flyers / letter mail 1.9	(2)	0.0 (0)	2.9 (3)	0.0 (0)	1.2 (5)

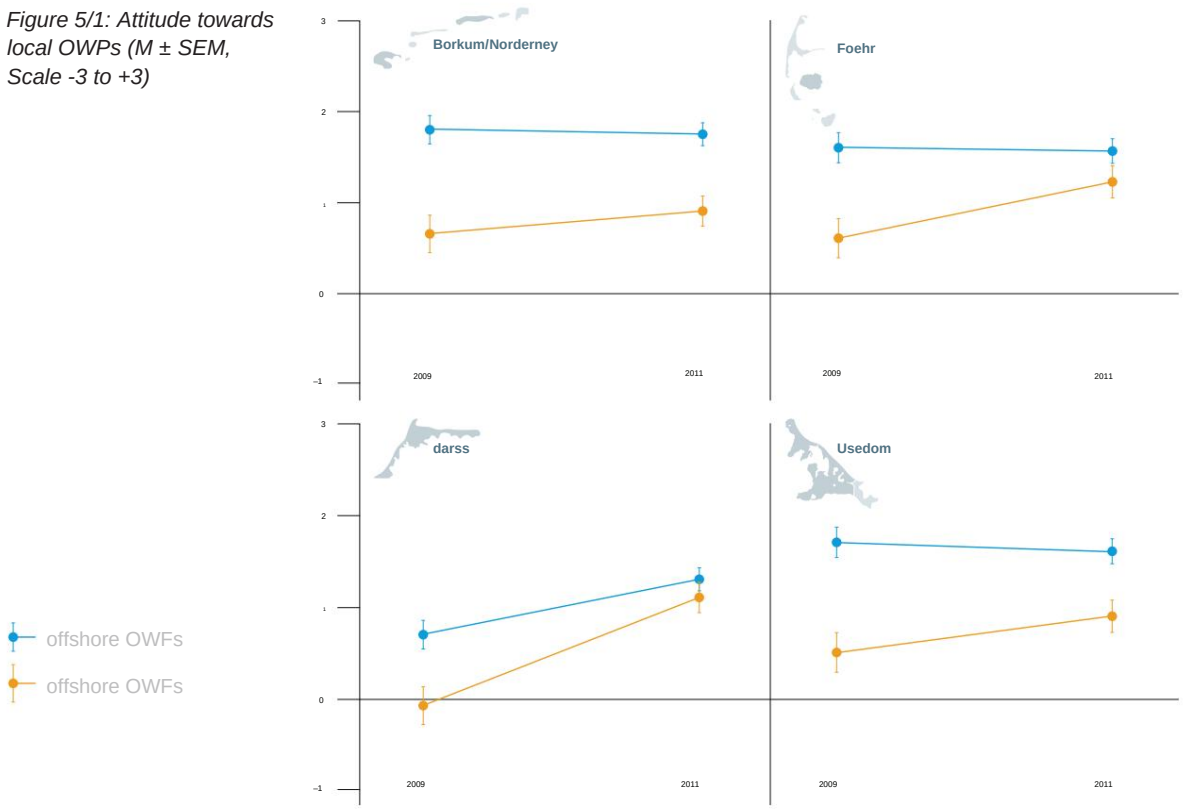
also received via national newspapers and television, followed by radio. Respondents on Borkum/Norderney had received their information from hearsay more often than not from information events. Other sources of information were only mentioned in isolated cases (Tab. 5/2). The respondents were moderately satisfied with the information, on Borkum/Norderney (M = 2.23, SD = 1.11) more than on the Darß (M = 1.55, SD = 1.18). It was also considered more credible on Borkum/Norderney (M = 2.62, SD = 1.06) than on the Darß (M = 1.93, SD = 1.10; medium effect size in each case).

In summary, almost without exception, the possibility of offshore wind energy was known in all regions surveyed. On the other hand, awareness of the specific OWFs was only very good in the affected regions, even though around 10% of those surveyed there only found out about the projects through our survey. The most common source of information in the OWF regions was the local newspaper, while information events and citizens' meetings in the OWF regions were perceived as a source of information by a maximum of one fifth.

5.2.2 Acceptance Indicators Attitude and Behavior

Attitude: The surveys in 2009 and 2011 show a stable, positive attitude towards offshore wind energy, both towards offshore wind energy in general (M = 1.65, SD = 1.14) and towards the local offshore wind farms (M = 1.10, SD = 1.22).); no significant changes were found between 2011 and 2012. However, offshore offshore wind farms were rated significantly more positively than those close to the coast, consistent with previous findings (e.g. Mills & Rosen, 2006; Firestone & Kempton, 2007; Firestone et al., 2008; Landry et al., 2012).
On the Darss in 2009, the offshore wind farm near and far from the coast was assessed most critically (medium effect sizes). Two years later, however, the assessments here were also more positive and approached those of the other regions (Fig. 5/1). According to the workshop participants on the Darß, this positive change came about because the feared negative effects of Baltic 1 did not occur. While Baltic 1 was initially the subject of heated and controversial discussion within the local community, today the topic “wouldn't break the coffee table any more” (see Bruns' own report, 2012).

Figure 5/1: Attitude towards local OWPs (M ± SEM, Scale -3 to +3)



It should be emphasized that in the OWF regions there was a close connection between the attitudes towards offshore wind energy in general and the offshore offshore wind farm (r = .68) or offshore offshore wind farm (r = .90). The repeated accusation that wind energy is only supported as long as it is not on one's own doorstep is accordingly unfounded.

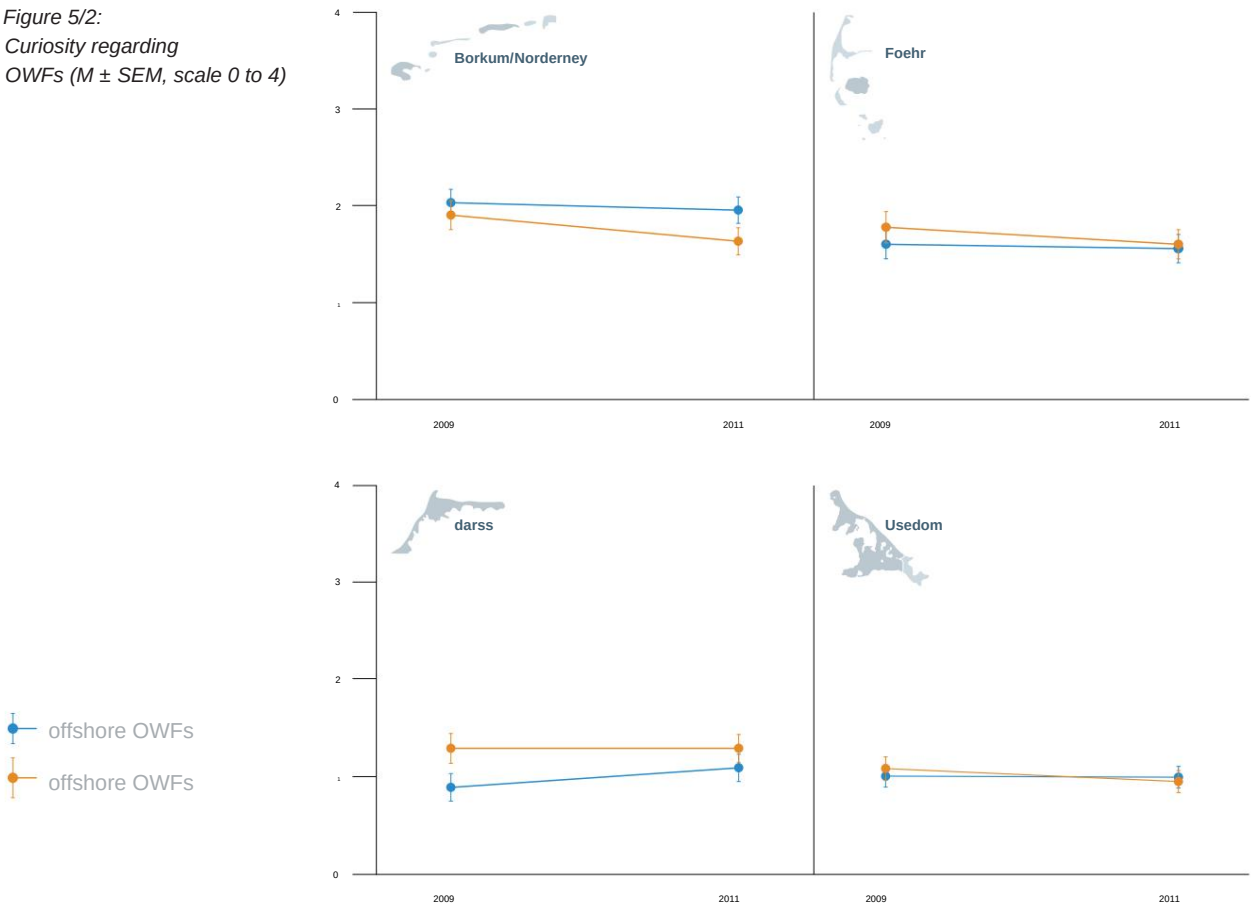
The difference in attitude between the interviewees from Darß and from Borkum / Norderney, which was ascertained in the first wave of the survey, could not be explained by the fairness experienced when planning the OWP: after statistical elimination of the influence of the assessment as to whether the concerns of the municipality and the Citizens, the significant differences remain, despite the slight approximation of the mean values (small effect sizes).

Feelings reflect the emotional attitude component. Both positive and negative feelings were associated with the OWFs, which, with the exception of curiosity, were rather weak on average at all times of the survey. The respondents were in Borkum / Norderney

Local residents significantly more curious than those in the Baltic Sea regions (small to medium effect sizes). It may be in the nature of things that in both offshore regions there was greater curiosity about the OWP that had been built than about the one that had not yet been built. Curiosity was most frequently justified with the "fascination with technology". The positive emotions are shown as an example with curiosity in Figure 5/2. The same applies to negative feelings such as distrust and anger: OWFs close to the coast were viewed more critically than those farther away. Here, the experiences with Baltic 1 on the Darß again showed a positive effect and weakened the negative feelings (small to medium effect sizes). For example, between 2009 and 2011, the feeling of being threatened by the coastal offshore wind farm in Darss and the anger significantly decreased among the residents of Darß, while the level of feeling among the residents of the other regions remained relatively stable at a low level. As a background for a strong sense of threat, some people (7%) gave a presumed impairment of maritime safety by offshore offshore wind farms close to the coast

at. Mistrust of OWFs was more pronounced on the Darß in 2009 (but remained

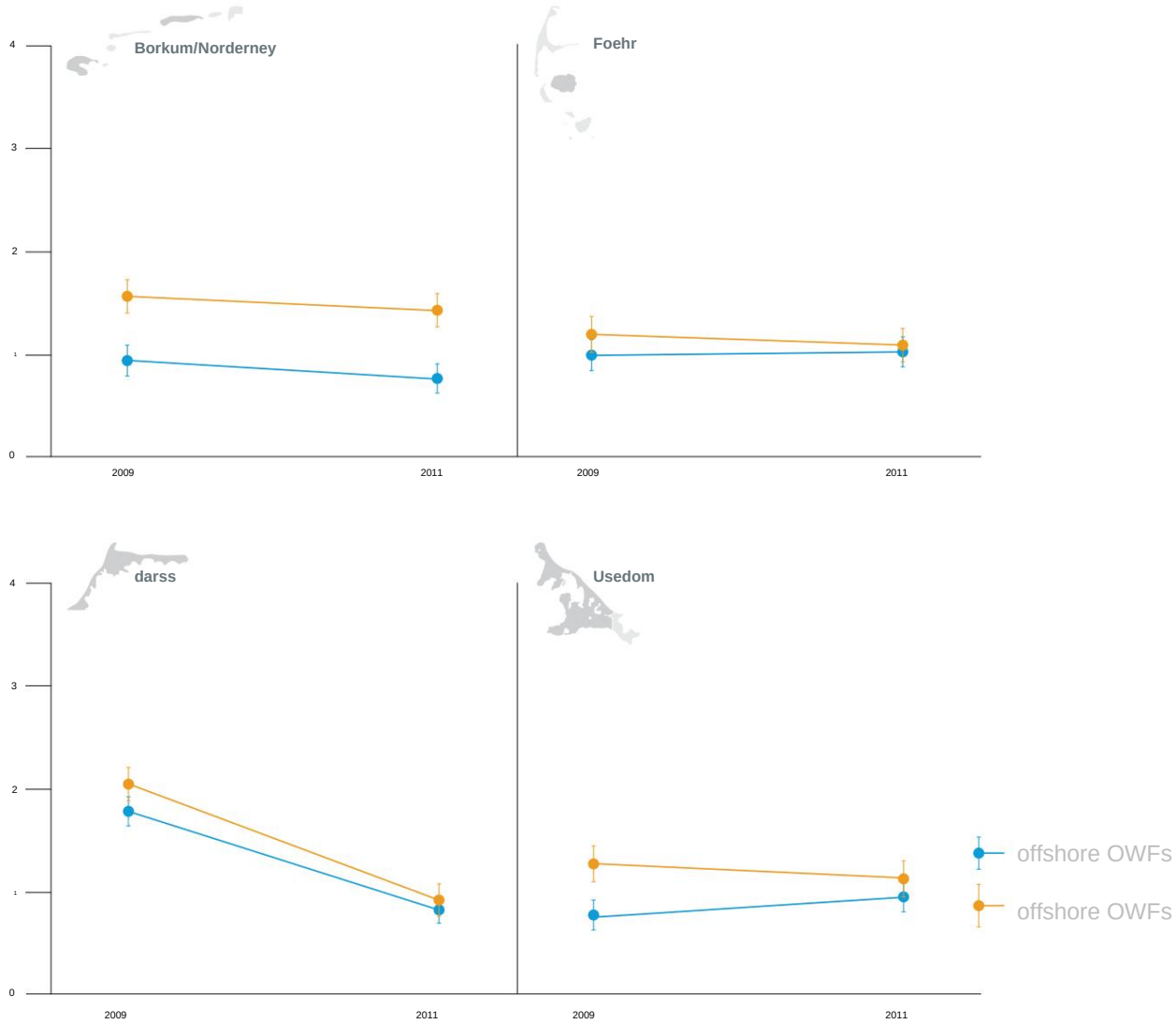
Figure 5/2: Curiosity regarding OWFs (M ± SEM, scale 0 to 4)



also here in the middle range) than in the other regions, but decreased somewhat until 2011. According to the workshop participants in Zingst, the emotional calming down on the Darß can be explained by a pragmatic attitude: During the planning phase there were strong arguments and emotions, both with the external actors and within the residents. Since
Baltic 1, try to live with him and the disputes are over (see Bruns' own report, 2012). The expression of negative feelings is shown as an example with distrust in Figure 5/3. The assessments of all feelings remained relatively stable over time from 2011 to 2012 (no significant changes in mean values).

Behaviour: In the regions affected by OWFs, 58% of those questioned in the first wave of the survey stated that they had informed themselves about the OWF. Relatively more Borkum/Norderney residents (65%) did this than Darß residents (51%; significant frequency differences, small effect size).
5% of those surveyed had actively supported the OWF and 18% had actively opposed it.
On the Darß, 24% of those questioned had taken action against the OWP, on Borkum 19% and on Norderney 4%.

Figure 5/3:
Mistrust of OWPs (M
± SEM, scale 0 to 4)



5.2.3 Expected and experienced advantages and disadvantages

5.2.3.1 Local Economy

Already in 2009 there were neither extremely positive nor negative expectations regarding the effects of the OWFs on the local economy, and there was also a positive development over time. In 2009, slightly negative effects on tourism were still expected from offshore wind farms close to the coast in all regions surveyed, but not further away from the coast. However, this fear decreased by 2011, particularly clearly on the Darß (medium effect size; Fig. 5/4). The workshop participants on the Darß explained these results with their actual experiences: Contrary to expectations, the offshore, visible OWP Baltic 1 had no recognizable negative impact on tourism. This was also proven by the booking figures (see Vogel's own report, 2013b). The assessments remained constant between 2011 and 2012.

With the construction of the offshore wind farms, hopes for jobs were also associated in the regions, slightly more with offshore than with offshore facilities (medium effect size).

After the commissioning of Alpha Ventus (Borkum/Norderney) and Baltic 1 (Darß), these positive local expectations increased slightly or slightly (small effect sizes; Fig. 5/5; no significant changes compared to 2012).

While there were initially slight concerns about the negative effects of a coastal offshore wind farm on real estate prices, these decreased slightly by 2011 (small effect size; Fig. 5/6; no significant changes compared to 2012). There were greater concerns about negative impacts on fisheries. Based on past experiences with Baltic 1, these concerns were slightly weakened on the Darß in 2011, but not in the other regions (medium effect size; Fig. 5/7; no significant changes compared to 2012).

Figure 5/4: Expected impact of the OWFs on the Tourism (M ± SEM, Scale -3 to +3)

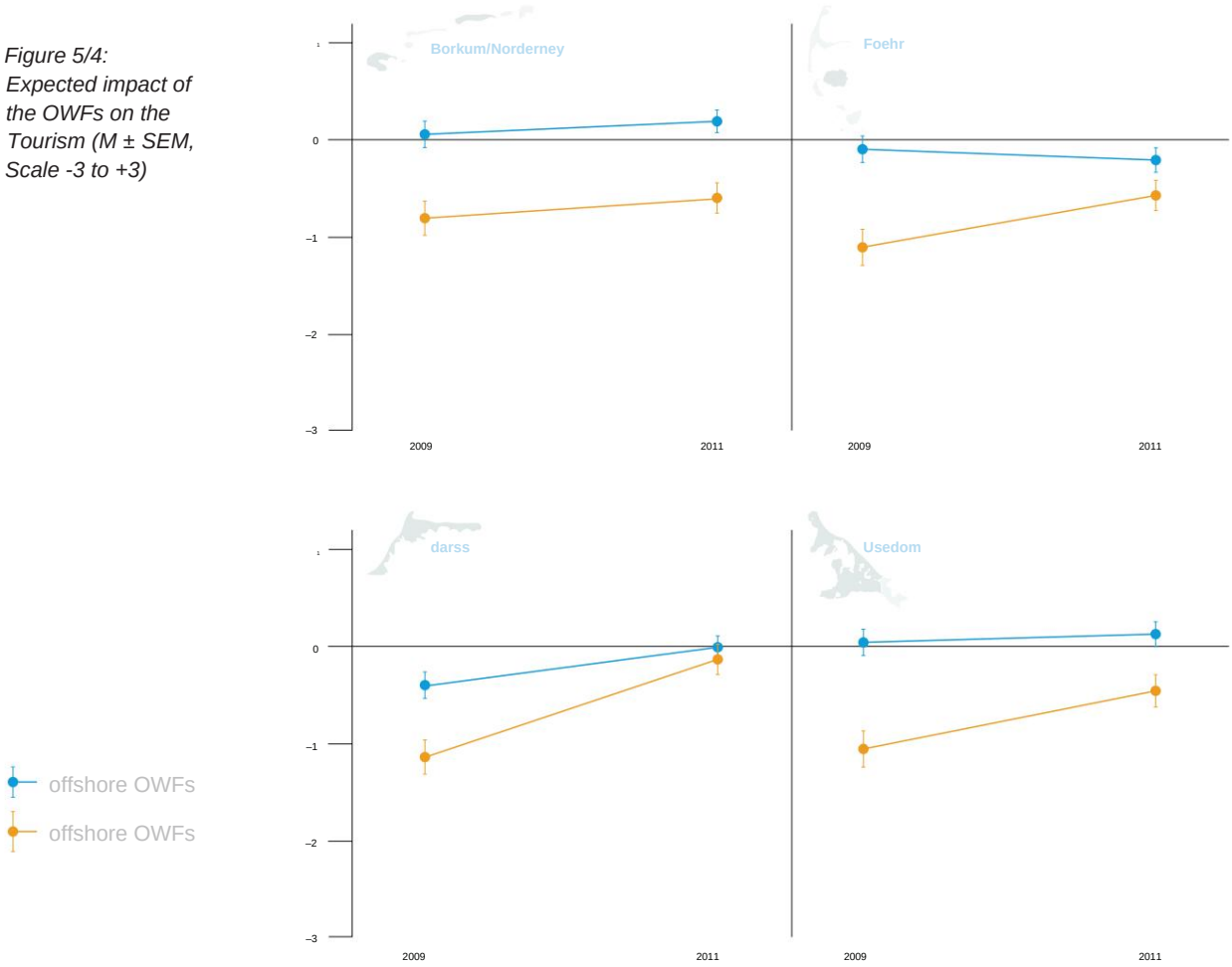


Figure 5/5: Expected impact of the OWPs on Workplaces (M ± SEM, Scale -3 to +3)

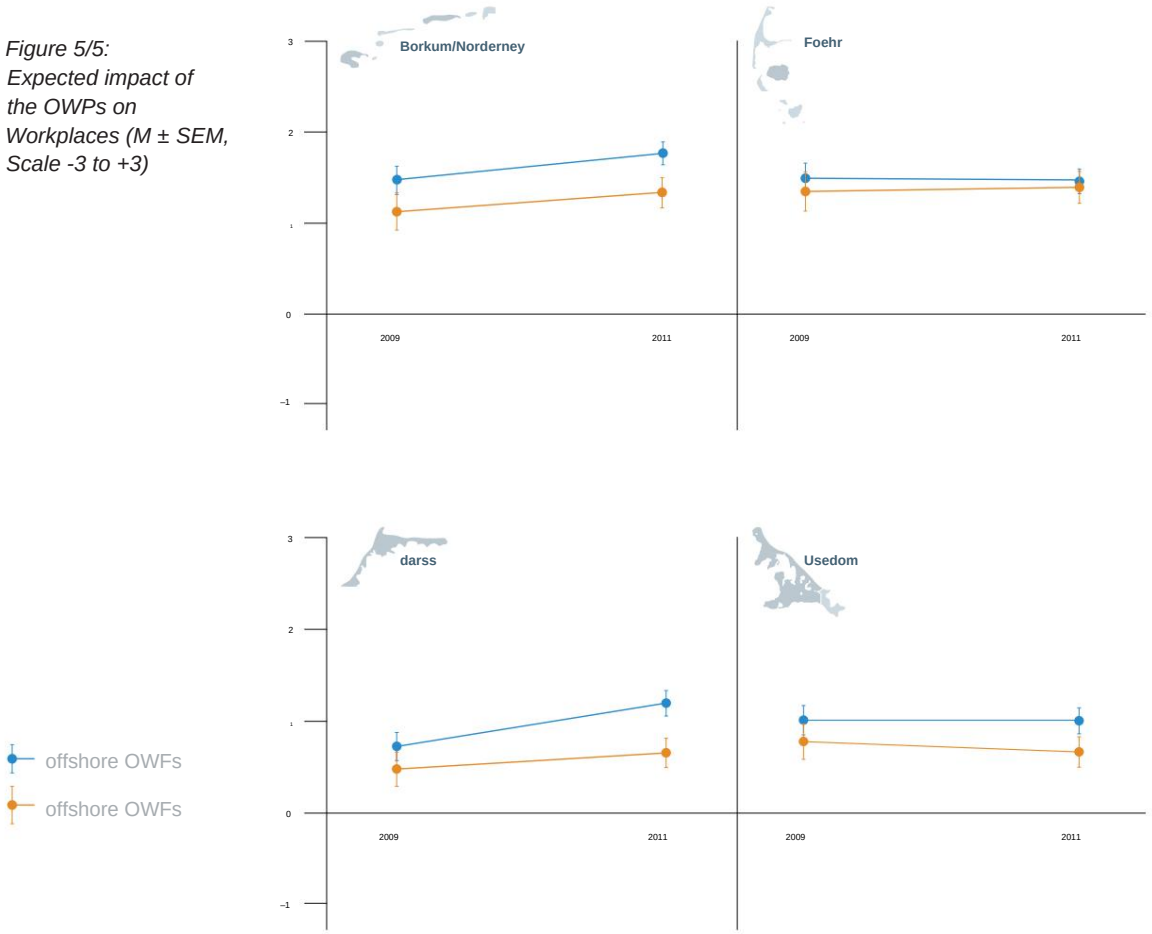


Figure 5/6: Expected impact of OWFs on property prices (M ± SEM, Scale -3 to +3)

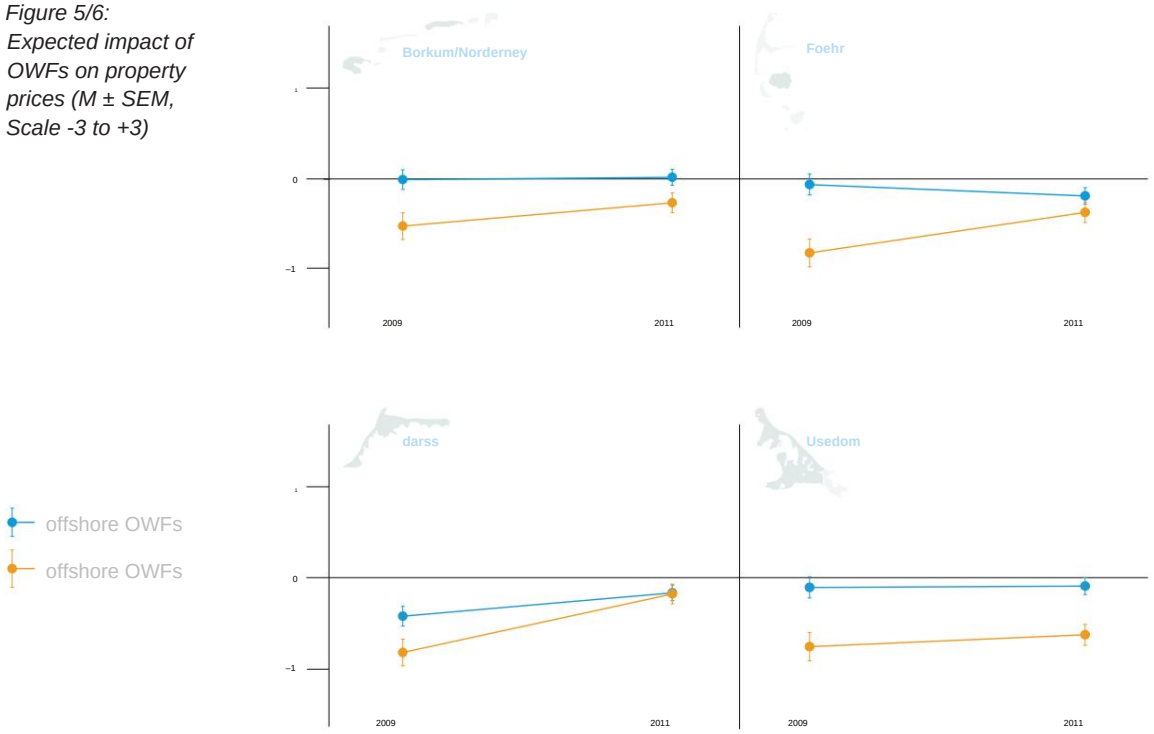
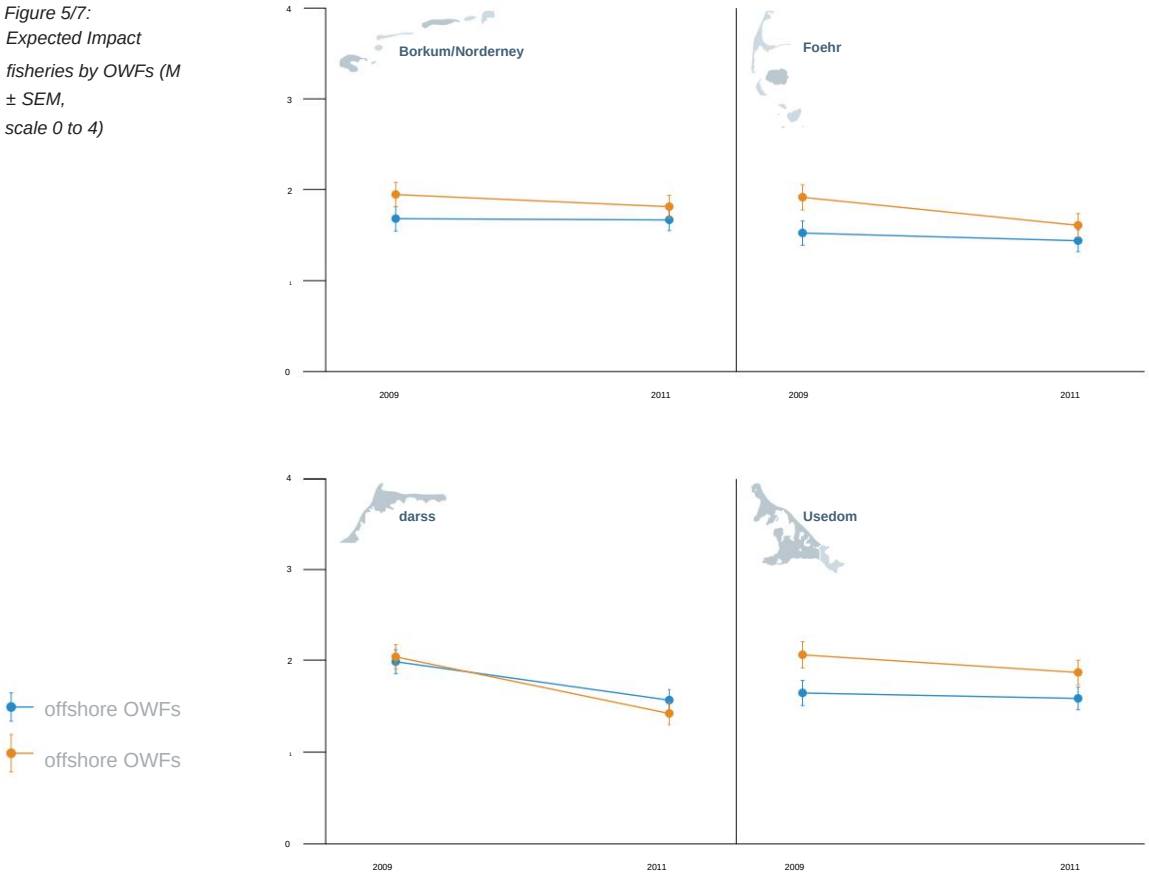


Figure 5/7:
Expected Impact
fisheries by OWFs (M
± SEM,
scale 0 to 4)



The view that OWFs strengthen Germany as a business location was moderately pronounced overall (M = 2.06, SD = 0.97), somewhat stronger in the North Sea regions than in the Baltic Sea (small or medium effect sizes).
The expected impact on Germany as a business location remained stable from 2011 to 2012.

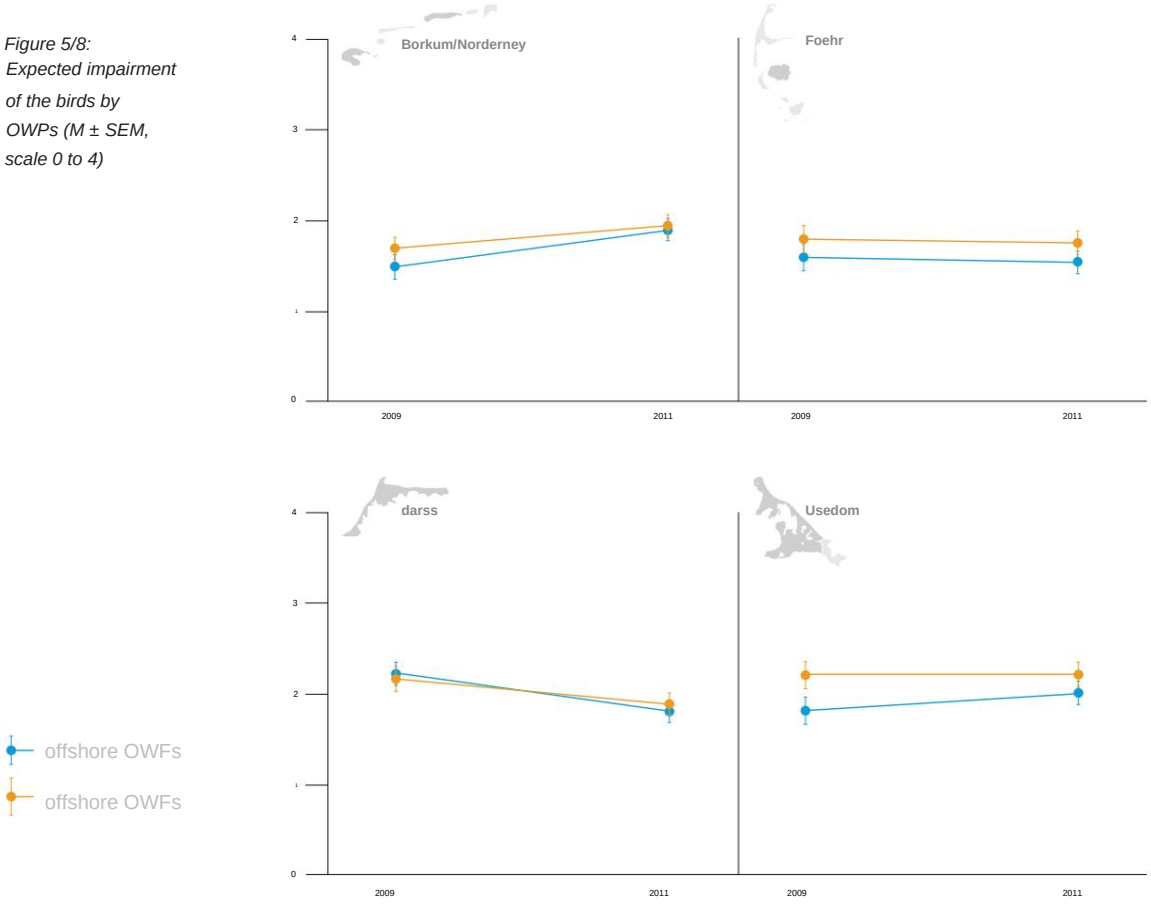
5.2.3.2 Environmental Impact

Climate and environmental protection: Respondents assessed the OWPs' contribution to climate protection as medium to fairly strong (M = 2.63, SD = 1.41); there were only minor differences between the regions and the survey dates of 2009 and 2011.
Only on the Darß did the estimated climate protection contribution of the offshore offshore wind farm Baltic 1 decrease slightly from 2011 to 2012 (small effect size).
The potential of imparting knowledge about ecological relationships through OWFs was recognised, but not rated particularly strongly (M = 1.53, SD = 0.95); again only slightly different according to region and time of survey.
On the other hand, the contribution of the OWPs to the preservation of the Wadden Sea World Heritage Site and the Lagoon Area National Park was assessed as low (M=0.93, SD=1.01). Again, there were only minor differences between the regions and the times of the survey.

Birds and marine life: Coastal residents feared that OWFs would have a moderate impact on the living conditions of birds (M = 1.88, SD = 1.02) and marine mammals (M = 1.70, SD = 1.07).
While this assessment of the impact on marine mammals did not differ according to OWFs near or far from the coast, facilities near the coast were assessed more critically with regard to the impact on birds (medium effect size). Slight differences were only seen between Borkum/Norderney and Darß over time: While the expectation of negative effects on birds increased slightly among the residents of Borkum and Norderney from 2009 to 2011, this decreased slightly among the residents of Darß (small Effect sizes (Fig. 5/8).

The fear of negative effects on marine mammals, on Borkum/Norderney and Usedom (small effect sizes) also increased slightly.
From 2011 to 2012, there were no significant changes in assessments of birds and marine mammals.

Figure 5/8: Expected impairment of the birds by OWPs (M ± SEM, scale 0 to 4)



Quality of life of local residents: The overall impact of coastal offshore wind farms on the quality of life was assessed as slightly negative in 2009 (mean = -0.39, SD = 1.45), in 2011 more neutral (mean = -0.02, SD = 1.24; small effect size). For offshore offshore wind farms, the assessment was slightly positive and stable over time. The Borkum/Norderney residents noticed a slight decline in quality of life from 2009 to 2011, while it increased slightly on the Darß and slightly in the other two regions (small effect sizes; Fig. 5/9). From 2011 to 2012 there were no significant changes in quality of life. The people from Norderney assessed the effects of OWFs near and far from the coast on the quality of life as slightly positive in 2009, the people from Borkum as more neutral (medium effect size).

Sea view: Sea view and wide horizon belong to the coast. Slight impairments of this panorama as well as slightly disturbing effects of nocturnal light signals were only expected from offshore offshore wind farms near the coast (large effect increase; Fig. 5/10, Fig. 5/11). A somewhat greater impairment from the light signals was assumed on Borkum than on Norderney, which is significantly further away from Riffgat (medium effect strength). On the Darss, on the other hand, the negative expectations in 2011 were somewhat less pronounced than in 2009 - again certainly due to the experience after the commissioning of Baltic 1 (small or medium effect size; no significant changes from 2011 to 2012).

Figure 5/9:
Impact of OWFs on quality of life
(M ± SEM,
Scale -3 to +3)

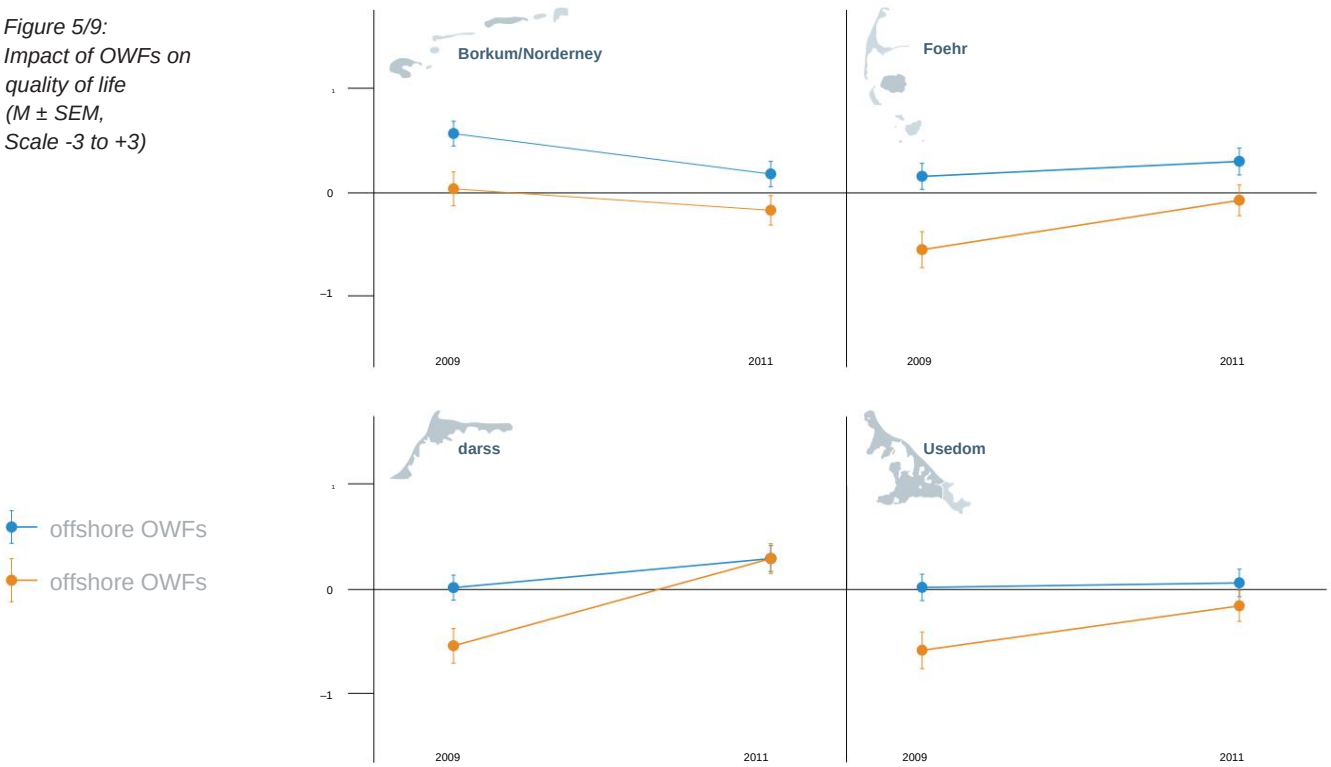


Figure 5/10:
Impact of OWFs on the sea view
(M ± SEM,
Scale -3 to +3)

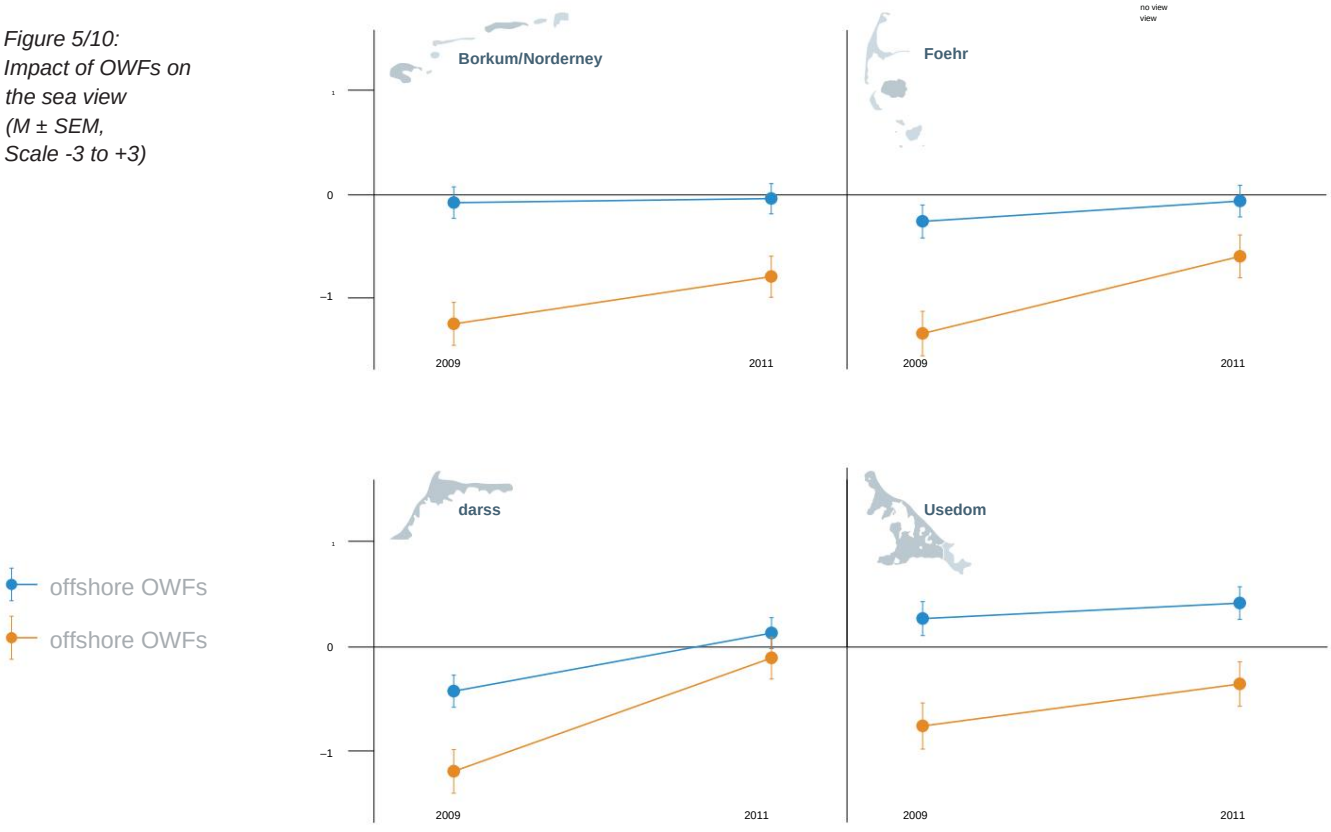
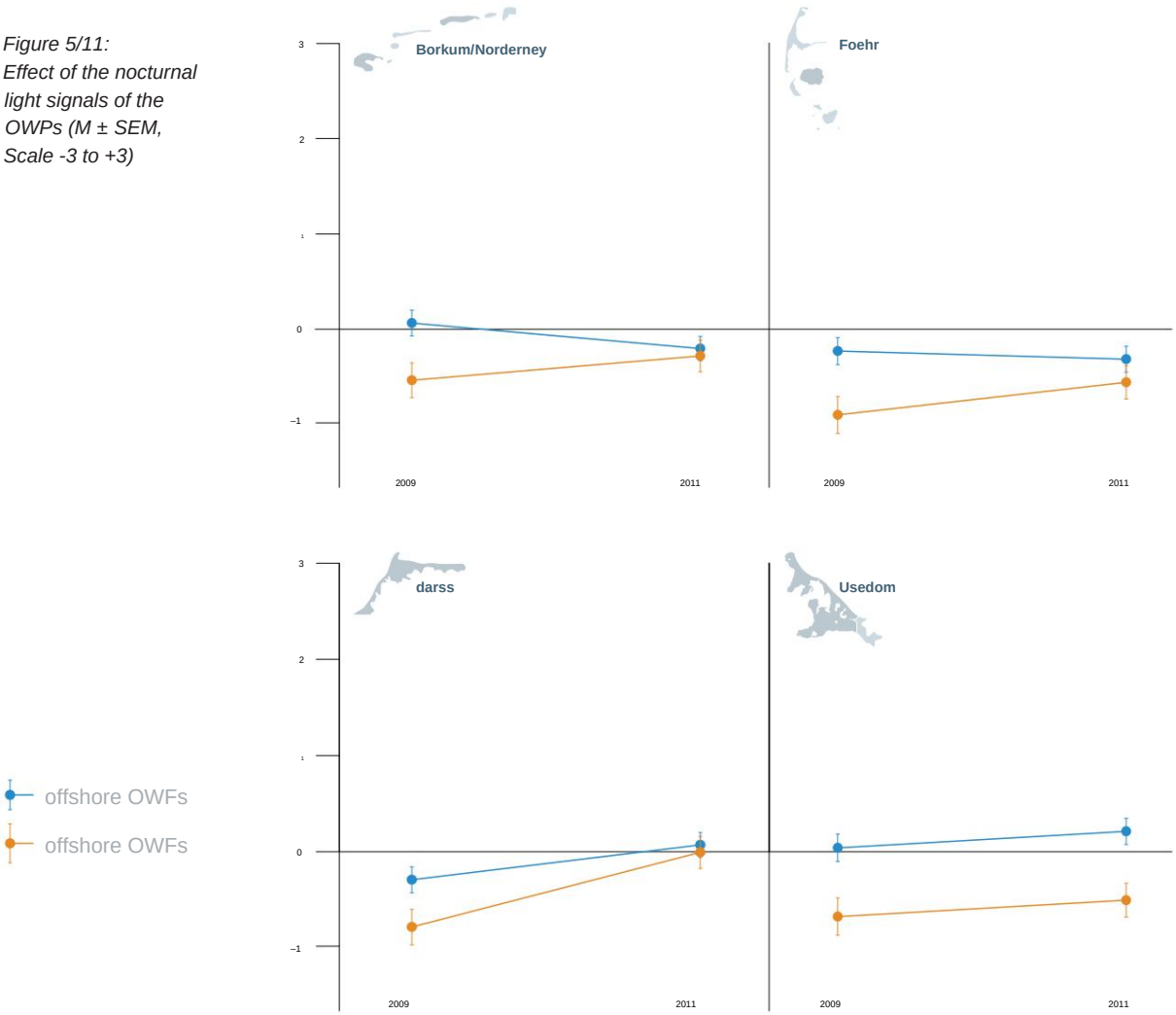


Figure 5/11: Effect of the nocturnal light signals of the OWPs (M ± SEM, Scale -3 to +3)



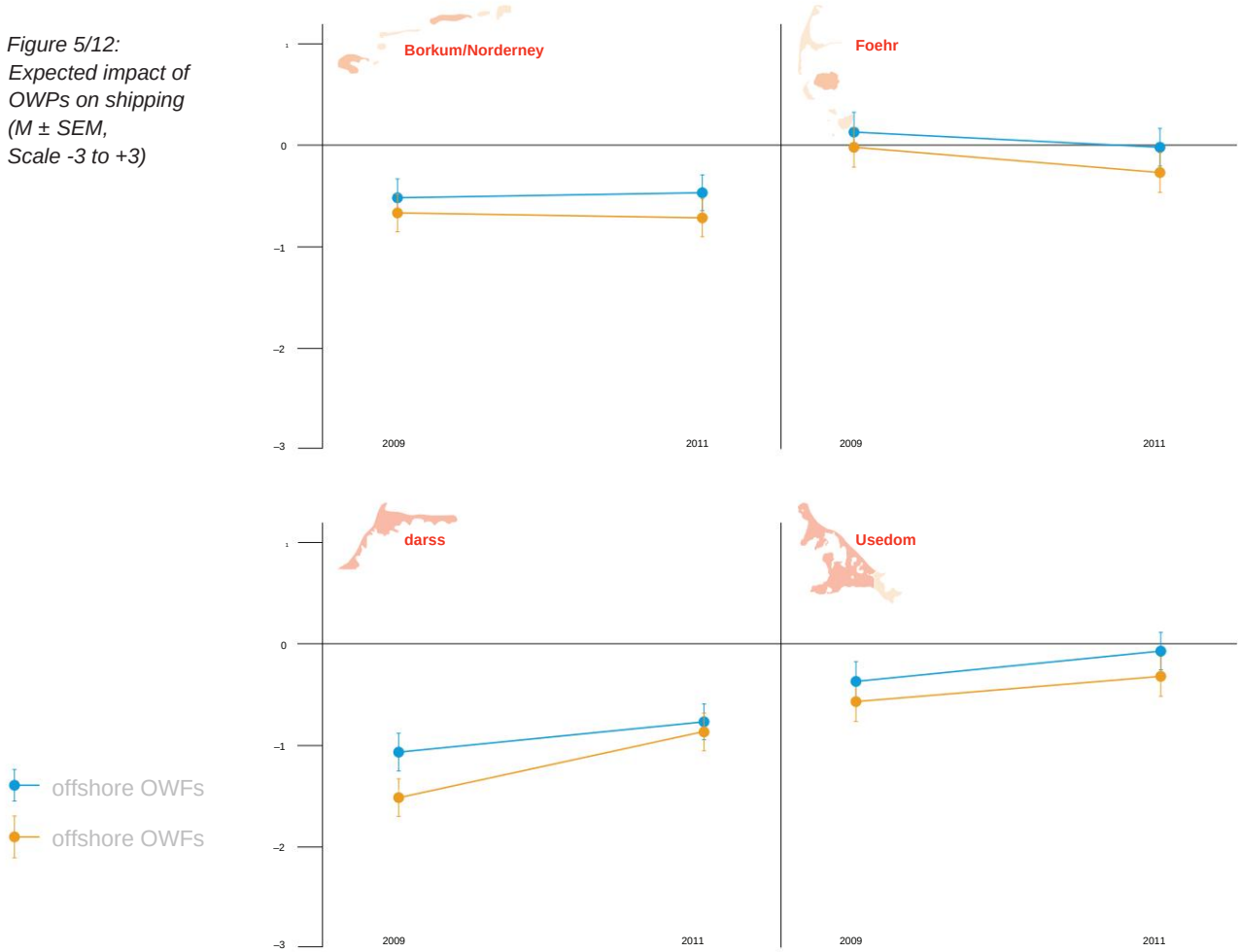
On the visibility of the offshore Baltic 1 were

Die Darßer 2012 surveyed in more detail: The residents stated that they saw Baltic 1 frequently (M = 1.98, SD = 1.19) from the shore during the day, but almost never (M = 0.04, SD = 0.27) from their residence. The "day sight" apparently hardly moved, on average the local residents rated it as slightly interesting, pleasant or appealing (each around M = 0.20) and considered it neither obtrusive nor harmonious (M = -0.08, SD = 1.57). At night, the respondents rarely saw the light signals from the shore (M = 1.49, SD = 1.36), and almost never from their homes (M = 0.09, SD = 0.49). And the night sight also led to only weak ratings on average as slightly interesting (M = 0.33, SD = 1.56), neither appealing nor repellent (M = -0.10, SD = 1.64), but slightly threatening (M = -0.26, SD = 1.42) and slightly intrusive (M = -0.39, SD = 1.67). In summary: The sight of Baltic 1 was rated slightly positive during the day and slightly negative at night.

Noise: Unsurprisingly, no negative effects of possible noise effects from offshore offshore wind farms were expected or these were classified as insignificant and not as impaired (M = 1.30, SD = 1.30; no significant changes over the years).

Shipping: Shipping was expected to be slightly impaired by OWFs, slightly more for offshore OWFs than for offshore ones (M = -0.86, SD = 1.46 vs. M = -0.61, SD = 1.35; medium effect size). However, the residents of the OWP regions were somewhat more worried than those of the comparison regions (M = -1.06, SD = 1.36 vs. M = -0.40, SD = 1.36; small and medium effect sizes). From 2009 to 2011, the feared impairment on the Darß decreased slightly (small effect size; Fig. 5/12; no significant changes compared to 2012).

Figure 5/12: Expected impact of OWPs on shipping (M ± SEM, Scale -3 to +3)



Possible ship collisions with an OWP were an important topic at the residents' workshops, particularly concerns about polluted beaches.
The existing security concept was assessed as insufficient. Compulsory pilotage, tugs on site for emergencies and ship traffic monitoring were required. It was criticized that human error was not included as the cause of accidents in the reports on the probability of an accident – which is, however, a frequent cause of accidents. Because of the importance of the topic of safety in maritime shipping, in-depth questions were asked in the 3rd survey. In 2012, almost half of those surveyed (47%) saw an impairment of maritime safety as by far the greatest problem in connection with offshore wind farms. Borkum/Norderneyer (31.1%) and Darßer (37.8%) mentioned this problem relatively more frequently than the residents of the comparison regions (15.6% each, medium effect size).

The disturbances to birds (14.6%) and the disturbances to marine mammals (9.7%) were more frequently stated as the greatest problem.

Measures in the area of maritime safety: Due to the discussions in the residents' workshops, wave 3 asked about the importance of various measures to increase the safety of maritime shipping. There was no clear pattern according to region. Overall, the respondents rated five measures as fairly important on average:

(a) Radar watch (M = 2.71, SD = 1.18)

b) powerful tugs (M = 2.59, SD = 1.34)

c) Improvement of the sea rescue system (M = 2.55, SD = 1.33)

d) Introduction of traffic surveillance (M = 2.47, SD = 1.42)

e) Introduction of a sea pilot obligation (M = 2.14, SD = 1.42).

The only measure rated as of little importance was the privatization of tugboat companies (M = 1.22, SD = 1.30).

Probability and consequences of an accident: On average, the respondents considered an accident due to an offshore wind farm to be low to moderately probable (M = 1.76, SD = 1.04). The average was slightly more likely for the Darsser (M = 2.07, SD = 1.06) than for the Borkumer / Norderneyer (M = 1.83, SD = 1.06) and somewhat more likely than for the Föh rer (M = 1.51, SD = 0.82, mean effect size) and Use domer (M = 1.60, SD = 0.86, small effect size). The consequences of an accident for the region were rated as fairly serious by all respondents (M = 2.97, SD = 1.13). The Borkumer/ Norderneyer (M = 3.35, SD = 0.93) and Darßer (M = 3.13, SD = 1.07) rate them slightly or slightly higher than the Föhrer (M = 2.87, SD = 1.13) and Usedomer (M = 2.51, SD = 1.13). Significant differences were found between Borkum/Norderney and the comparison regions as well as between Darß and Usedom (small and medium effect sizes).

Changes after construction: In the third survey wave, direct questions were asked about changes since the OWP was built. Although concrete experience with the OWPs was only available in the OWF regions, there were only differences in one case, maritime safety: the adverse effects on maritime navigation safety caused by OWPs were perceived by the residents of the OWP regions (Borkum/Norderney: M = – 0.92, SD = 1.18; Darß: M = -1.12, SD = 1.50) significantly higher than the Föhrer (M = -0.47, SD = 0.78; medium effect size) and Usedomer (M = -0.44, SD = 1.42; small effect size) . The latter each assessed the impairment as minor. No or only weak changes were perceived in the following areas - without noticeable or systematic differences between the survey and comparison regions:

a) Tourist numbers

b) real estate prices

c) fishing

d) marine mammals and birds

e) OWP obstacle marking

f) sea view

g) homeland

5.2.3.3 Home

With regard to the feeling of home and the image of the community, in 2009 OWFs far from the coast were rated more neutrally, while those near the coast were rated slightly negatively (large effect sizes). Interestingly, on Borkum/Norderney and on the Darß from 2009 to 2011 there was a shift with a positive trend – from an assessment of the OWFs as foreign bodies towards a characteristic feature of the region (small or medium effect size; Fig. 5/13). From 2011 to 2012, however, there was a renewed change of opinion in the direction of "foreign bodies" (small effect size) for the coastal OWF on Borkum /Norderney. There were no distinct trends in the comparison regions. The assessment of the effects on the community image and sense of home is somewhat more differentiated: Here there was only a clear change of opinion on the Darß. There, respondents in 2011 associated OWPs with a slight image gain and a slightly positive sense of home (medium effect sizes); no significant changes from 2011 to 2012.

It should be mentioned that OWFs on Borkum were associated with more negative effects on the sense of home than on Norderney (medium effect size).

The evaluation of the OWPs as appropriate to the respective seascape - Wadden Sea or National Park Bodden landscape - was slightly critical: OWFs were rated on average as somewhat unsuitable for the respective seascape (M = -0.76, SD = 1.59) ; again slightly more negative than far from the coast, with the difference decreasing slightly from 2009 to 2011 (large or medium effect size; Fig. 5/14; insignificant changes from 2011 to 2012). On the Darß, there was a slight reduction in the negative assessment from 2009 to 2011 (small effect size).

Figure 5/13:
Fit of the OWFs to the region (M ± SEM, Scale -3 to +3)

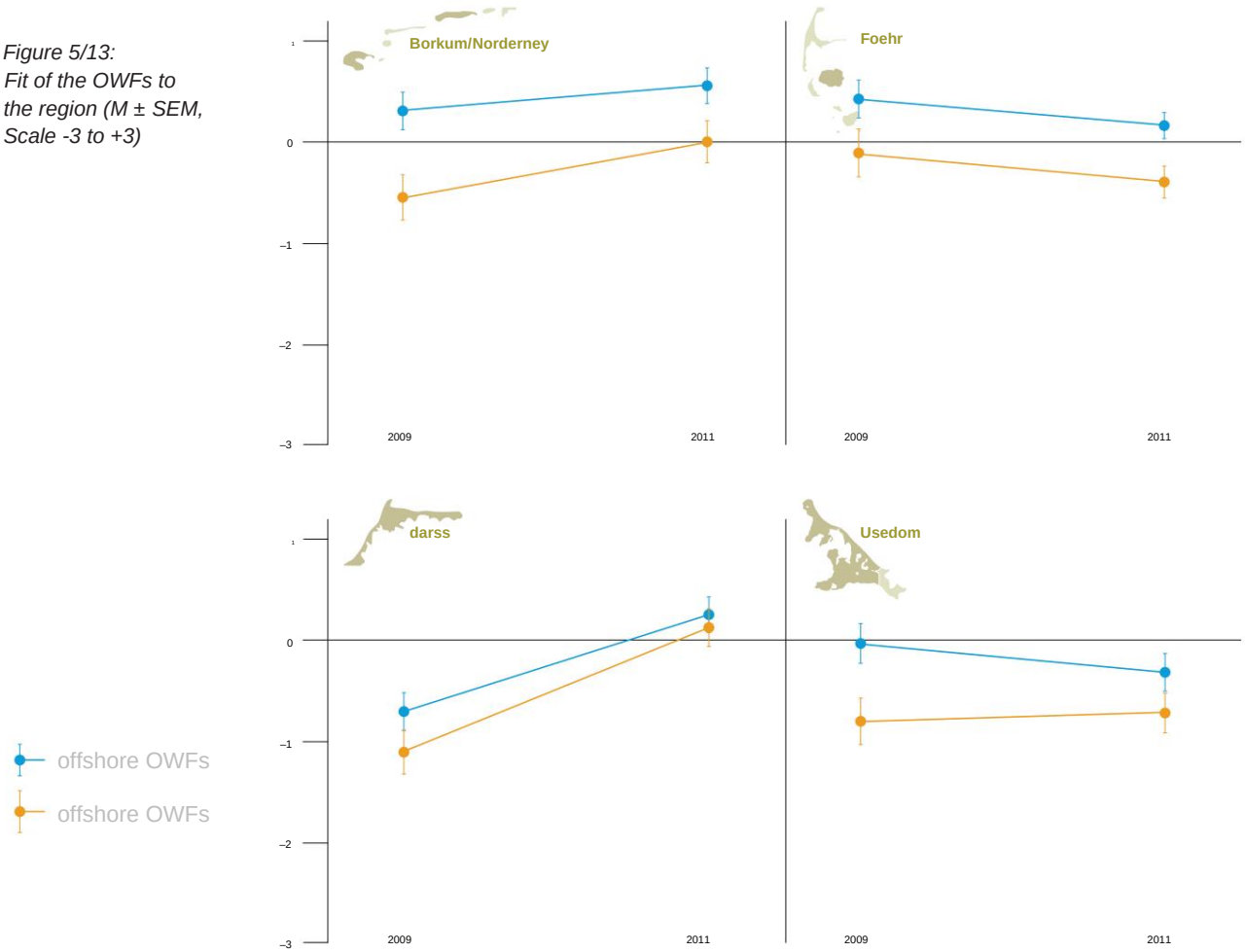
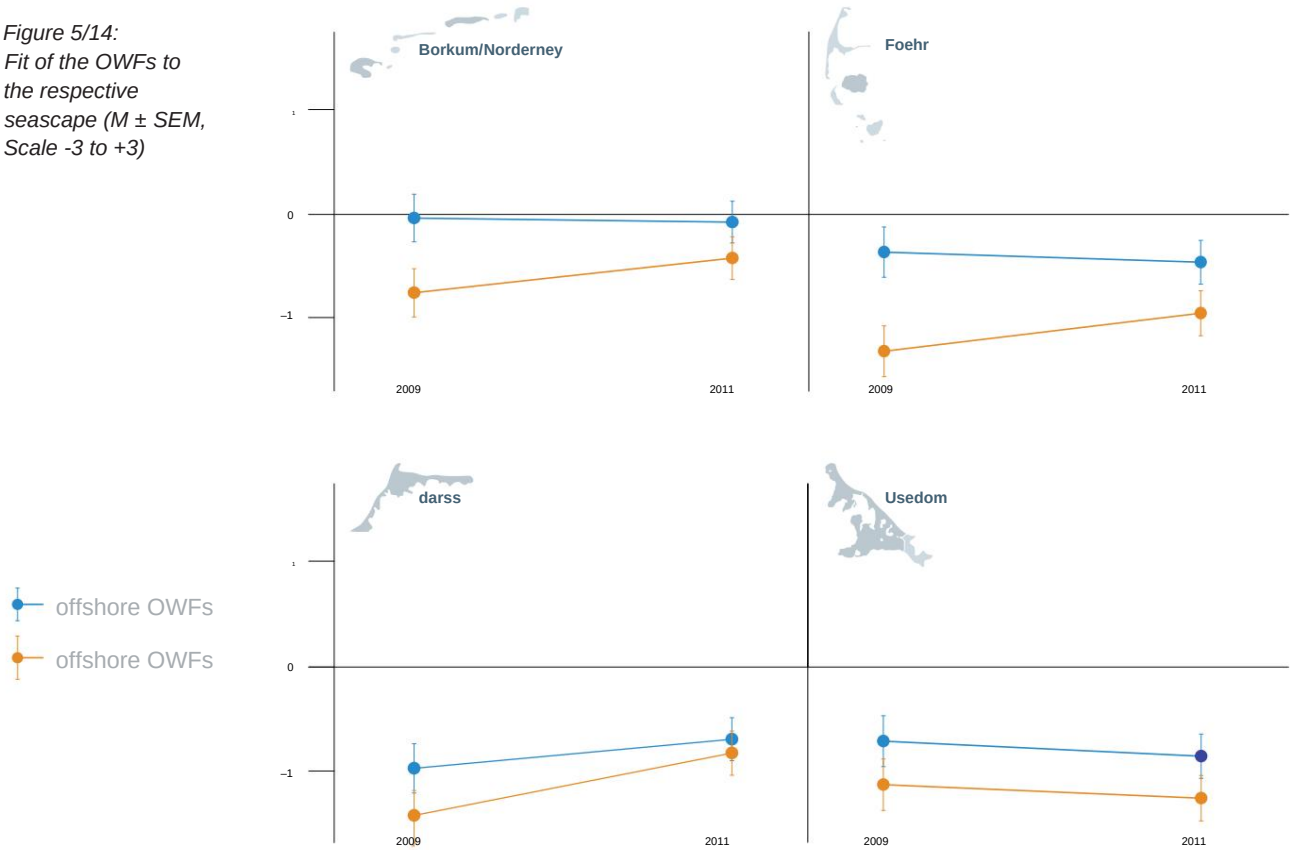


Figure 5/14:
Fit of the OWFs to the respective seascape (M ± SEM, Scale -3 to +3)



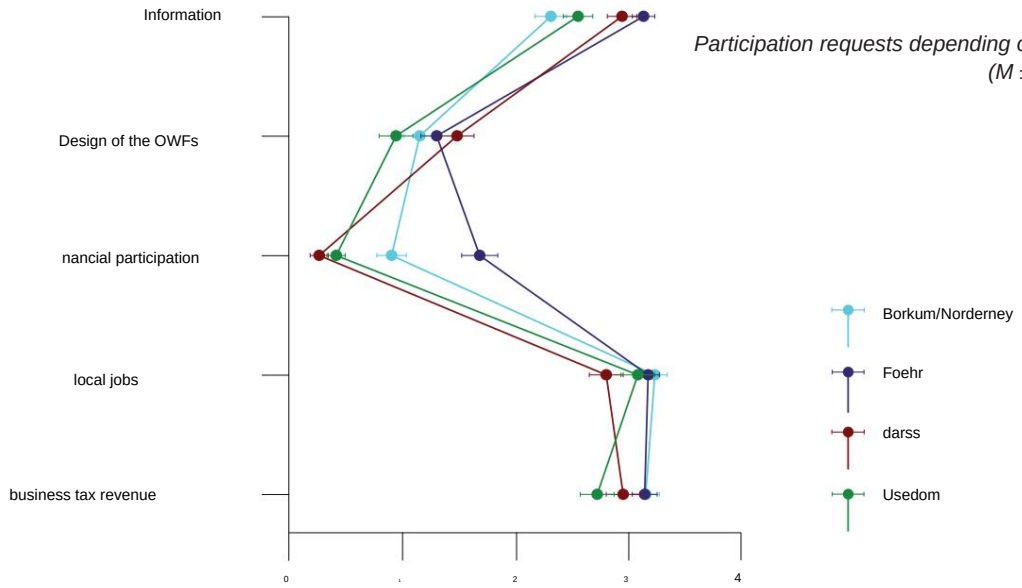
5.2.4 Participation and OWP construction

Participation: The respondents expressed their dissatisfaction with the planning process both on Borkum / Norderney and on the Darß (M = 1.24, SD = 1.34). The vast majority (81%) indicated that they had not experienced any opportunity for citizen participation. In addition, the prevailing opinion was that the planning was the concern of the respective people Municipality and citizen only little fair (M = 1.11, SD = 0.96). On the Darß in particular, hardly any consideration was given to community concerns. The process on Borkum was judged little better. On Norderney, the planning processes for Riffgat and Alpha Ventus were felt to be the fairest (medium and large effect sizes; Fig. 5/15).

Figure 5/15:
When planning the OWP, the concern is Community and citizen fair
(M ± SEM, scale 0 to 4)

Desires for participation: The most pronounced were the desires for local jobs in connection with the OWP and for trade tax revenue for the coastal community (Fig. 5/16), in their intensity they were in the range of quite strong. The Darss residents wanted local jobs, and they wanted trade tax income was significantly weaker among the Usedom residents, in each case compared to the North Sea islanders. Overall, the desire for more information on OWFs was slightly weaker. On the other hand, the desire to be able to participate in the design and financing of the OWP was weak.

Figure 5/16:
Participation requests depending on the region
(M ± SEM, scale 0 to 4)



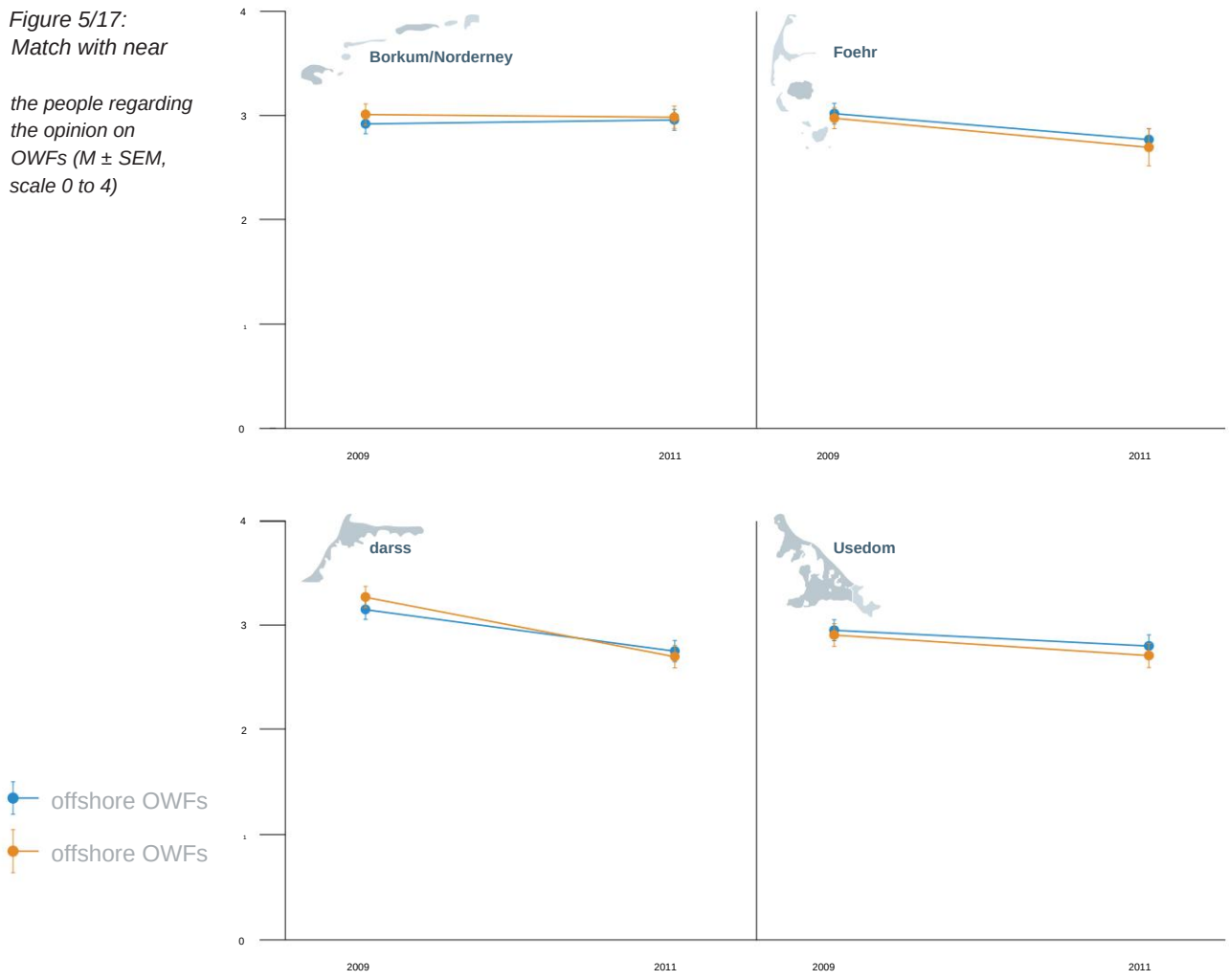
Burden from planning, approval procedures and construction work: In the final survey in 2012, residents were asked to rate their experiences with the construction of the local OWFs. In retrospect, the residents assessed their interest as rather weak, in Borkum/Norderney somewhat stronger (M = 1.41, SD = 1.04) than on the Darß (M = 0.64, SD = 1.05, medium effect size). The interest in the construction phase was almost identical (Borkum / Norderney: M = 1.43, SD = 1.04, Darß: M = 0.56, SD = 1.03, large effect size). With no difference by region, the burden experienced by the planning and approval procedures was also weak in retrospect, with regard to the offshore OWPs slightly stronger (M = 0.61, SD = 1.14) than in the case of the offshore OWFs (M = 0.28, SD = 0.77). , large effect size). The residents of Borkum/Norderney were asked two more questions about the construction of Riffgat: The exposure to construction noise was insignificant (M = 0.13, SD = 0.39) and the exposure to tourists was assessed as insignificant (M = 0.44, SD = 0.72). The Borkumers did not differ significantly from the Norderneyers in any of the characteristics listed in this section.

5.2.5 Social Norm

The social norm describes the extent to which the respondents assumed a correspondence between their own opinion about the OWFs and that of other people.

Closely related persons: On average, the estimated asked the degree of agreement with them close people as quite high (M=2.92, SD=0.66). For residents in the Föhr and Darß region, the estimated degree of agreement decreased slightly from 2009 to 2011 (small or medium effect size; Fig. 5/17). It remained relatively stable for residents in the other two regions. In addition, the estimated agreement relative to offshore OWFs decreased slightly from 2009 to 2011, but was relatively stable relative to offshore OWFs (small effect size). With regard to OWPs far from the coast, the degree of agreement decreased slightly from 2011 to 2012 (small effect size).

Figure 5/17: Match with near the people regarding the opinion on OWFs (M ± SEM, scale 0 to 4)



Regular tourists: Based on the group of regular tourists, the interviewees assessed the agreement as moderately high (M = 2.34, SD = 0.78). From 2009 to 2011, the assessments remained relatively constant (no significant differences in mean values). The mean assessment increased slightly from 2011 to 2012 in the Borkum/Norderney region, decreased slightly on the Darß and slightly on Usedom and remained relatively stable on Föhr (small and medium effect sizes). In addition, there was a slight, negative change in assessment from 2011 to 2012 in relation to offshore offshore wind farms, but not in relation to offshore offshore wind farms (small effect size).

5.2.6 Acceptance Model - Predicting attitudes towards local OWPs

The data from the first survey in 2009 was used to examine the extent to which the specific attitude towards the local OWFs could be predicted by the attitude towards onshore and offshore wind energy use in general and the social norm among those surveyed in the OWF regions.
In addition, the influence of the perceived fairness of the planning process was analyzed. The "justice" was recorded by assessing the extent to which the concerns of the citizens / community were met in the planning of the OWP.

The variable "Specific attitude towards the local OWFs" was formed from the 46 items on the advantages and disadvantages of the areas of economy, environmental compatibility and home of the planned offshore or offshore offshore wind farms.

The moderated multiple regression analysis revealed that the global attitude towards offshore wind energy use, social norm and equity predicted almost 50% of the variance in the specific attitude towards local offshore wind farms (Table 5/3). The perceived fairness turned out to be an independent predictor, but had no significant effect on the relationship between the attitude variables – all interaction terms between fairness and the other predictor variables were not significant. Attitudes towards onshore wind energy use were not significantly related to attitudes towards the local offshore wind farm. Unexpectedly, the social norm showed a negative beta weight: the less it was assumed that there was a consensus between one's own opinion and that of others on offshore wind energy, the more positive the specific attitude towards the local offshore wind farm turned out to be. It is possible that the opinion of others about the OWP was rated more negatively than their own. Since no information was available on this, this assumption remains speculative.

Table 5/3:
Predicting the specific attitude towards local OWFs
(N = 200; scales 0 to 4; -3 to +3)

Parameter	M (SD)	Cronbachs ÿ	B (SE B)	b	p
setting onshore	2.68 (0.99)	.73	-	-	-
Setting Oshore	1.33 (1.60)	.92	.25 (.03)	.43	< .001
social norm	2.62 (0.80)	.84	–.24 (.07)	–.20	< .001
justice	0.98 (1.01)	.85	.29 (.05)	.31	< .001
Setting local OWPs	–0.29 (0.95)	.90			

R^2 = .504, R^2adj. = .496, F(1, 196) = 33.26, p < .001; Eect strength f^2 = 0.98 (large eect strength)

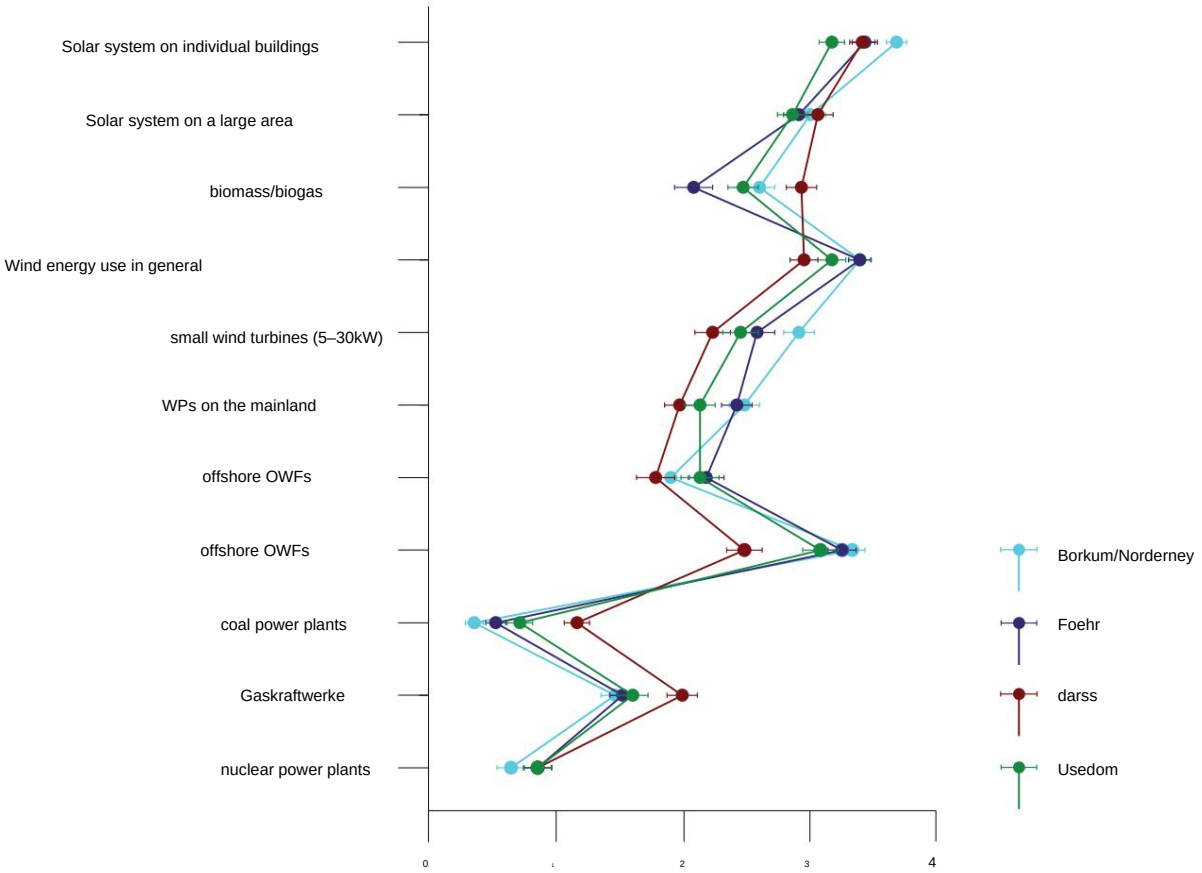
5.2.7 Power generation, energy transition and Fukushima

Evaluation of electricity generation: The favored electricity generation techniques of the total sample of residents in 2009 were solar systems on individual buildings (M = 3.26, SD = 0.90), wind energy use in general (M = 3.24, SD = 0.97) and offshore offshore wind farms (M = 3.05, SD = 1.21). Nuclear power plants (M = 0.82, SD = 1.14) and coal-fired power plants (M = 0.70, SD = 0.93) received the least support. The assessments for 2009 are shown in Figure 5/18. Slightly more negative assessments of the overall sample in 2011 compared to 2009 were found for solar systems on individual buildings, biomass / biogas and nuclear power plants; from 2011 to 2012 the acceptance of large-scale solar systems and biomass / biogas decreased slightly (small effect sizes).

Simultaneously with the other energy sources, the assessment of OWPs was queried at this point. Advocating offshore offshore wind farms by the population of Darß increased slightly from 2009 to 2011 (small effect size), in the other regions it remained relatively stable. From 2011 to 2012 there were no significant changes of opinion. Borkum/Norderneyer supported offshore, non-visible offshore wind farms slightly more than Föhrer and Usedomer and somewhat more strongly than Darßer (small or medium effect sizes). While the mean assessment on the Darß increased slightly from 2009 to 2011, it remained relatively stable in the other regions (small effect size). From 2011 to 2012 there were different developments in the regions: In the OWF regions there was a slight decline in approval of distant OWF coasts (small effect sizes), while it remained relatively stable in the comparison regions.

Energy transition in Germany: The energy transition in Germany was supported quite strongly in 2012 (M = 3.14, SD = 1.04). Agreement was slightly stronger in the North Sea region than in the Baltic Sea region (significant differences, small and medium effect sizes).

Figure 5/18:
2009 Power Generation Rating (M ± SEM, Scale 0 to 4)



Changes after Fukushima: In the 2011 survey, 38% of respondents said that the nuclear disaster in Fukushima (Japan) changed their opinion on electricity generation.

The following results relate to this sub-sample: The strongest negative change in attitude was in relation to nuclear power plants, the attitude had become much more negative (M = –2.31, SD = 1.01). Two other conventional forms of electricity generation were also assessed slightly more negatively as a result of Fukushima: coal-fired power plants (M = -0.23, SD = 1.32) and oil rigs (M = -0.37, SD = 1.16; surveyed from 2011). Attitude towards gas-fired power plants was influenced by Fukushima and rated slightly more positively (M = 0.36, SD = 1.16), attitude towards the associated natural gas pipelines in the sea remained on average rather unchanged (M = 0.19, SD = 0.96). Renewable energies were the clear beneficiaries of the events in Fukushima: The strongest positive changes related to wind energy use in general (M = 1.43, SD = 1.31), solar systems on individual buildings (M = 1.27, SD = 1.27), offshore, non-visible OWFs (M = 1.16, SD = 1.38) and large-scale solar systems (M = 1.15, SD = 1.32).

Also the attitudes to small wind turbines (5–30 kW; M = 0.98, SD = 1.28), wind farms on the mainland (M = 0.91, SD = 1.14), offshore offshore wind farms near the coast M = 0.75, SD = 1.27) as well as to biogas/ Biomass (M = 0.57, SD = 1.22) had become slightly more positive on average.

5.2.8 Measures to avoid conflict and increase acceptance

In the second wave of the survey, residents were asked to indicate what should be done to ensure that they feel they are being treated justly and fairly in the planning, construction and operation of future offshore wind farms. For the assessment, 42 measures were specified.
There were no clear patterns of regional differences.

A Communication

The most pronounced (each M > 3.25) was the importance of the following communicative measures (listed in descending order):

a) balanced information (e.g. expert events on advantages and disadvantages)

b) active information with the start of planning on the part the operators and authorities

c) comprehensible presentation of the planning content and procedures by the authorities

d) Identify planning alternatives

The importance of an internet presence with the following content (listed in descending order) was somewhat weaker, but still moderately pronounced (each 2.42 < M < 2.83):

a) Ongoing information on the course of the project

b) Background information on the project

c) Access to reports on the project

d) Possibility to ask questions to operators and authorities deliver

e) Inspection of planning documents for the project

The following four measures (listed in descending order) were also moderately pronounced (2.24 < M < 2.96):

a) Consideration of local experts in the planning phase

b) public recognition and appreciation of Willingness of residents to innovate

c) Discussions with residents of already built PLOs

d) Visit to an OWP that has already been built

B Participation in the planning process – in addition to the formal one

In order to feel that they were treated justly and fairly, the residents expected the following measures to be very pronounced (each 2.73 < M < 2.83):

a) Feedback on how the opinions and experiences of local residents are incorporated into the planning

b) Participation in the distance of the OWF to the coast

c) Appreciation of local residents as partners

d) Mediation in severe conflicts

e) moderated events, in addition to formally prescribed discussion meetings

The respondents almost unanimously (90.6%) wanted moderated events before the start of the formal process, a minority (7.1%) only wanted them during the formal process, 2.4% thought they were equally important in both phases.

In the middle of the range (M = 2.29, SD = 1.38) was the desire to involve experts suggested by local residents, while the desire to have a say in the design of the offshore wind farm (M = 1.54, SD = 1.40) and the submarine cable route (M = 1.47, SD=1.34). Participation in the naming of the OWP seemed hardly relevant (M = 0.93, SD = 1.09).

C Monetary participation – direct and indirect

In the area of monetary benefit, two wishes were most pronounced: a) to commission local businesses and companies to build and maintain the OWF (M = 3.03, SD = 1.12) and b) to receive trade tax revenue for the municipality (M = 2.80 ,SD=1.30).

The average desire for the following measures was moderately strong (2.04 < M < 2.42; listed in descending order):

a) cheaper OWP electricity prices for local residents

b) financial compensation for a submarine cable landing

c) financial compensation for possible fishing atone

d) Inclusion of the OWP in local tourism concept

e) Inclusion of the OWF in the image concept of Region

f) Expansion of the local infrastructure for the construction and maintenance of the OWP (e.g. port)

g) Strengthening of the local benefit of the OWFs in particular through e.g. B. the creation of a mussel farm in the OWF

The desire to participate financially in the OWP was less pronounced (M = 1.81, SD = 1.45).

D Measures in the construction and operational phase

The following wishes were quite pronounced:

a) comply with the restrictions on construction times to protect the marine environment (M = 2.92, SD = 1.28)

b) Carry out reduction measures to protect residents from construction noise and pollution (M = 2.84, SD = 1.31)

The desire for noise reduction measures when driving (M = 2.44, SD = 1.47) and the use of a vibratory plow when laying the submarine cable were moderately strong on average (M = 2.24, SD = 1.36). The option of being able to make trips to the OWF during the construction phase was less popular (M = 1.56, SD = 1.37).

5.2.9 Design and evaluation of an information brochure

5.2.9.1 Concerns and Procedure

Information is an acceptance factor, albeit not an exclusive one. Exhibitions are designed accordingly, and websites, brochures and other information media are used. However, to the best of our knowledge, it has not yet been evaluated whether these actually influence attitudes and thus promote acceptance. One concern of the present project was to inform the participants about the study results and to discuss them with them. At the same time, it should be recorded whether the provision of information had an influence on the opinion of the residents. In order to achieve these goals, workshops were held in the OWF regions and all respondents received a brochure with the interim results of the first two survey waves. A total of three resident workshops were held, one each in Borkum, Norderney and Darß. Everyone was invited

study participants. The survey results were presented and discussed at the workshops. It was also a question of clarifying the factual/problem level, the feelings involved and the underlying needs of the residents and wishes of the actors involved (for details see Bruns, 2012). The workshop and survey results were then summarized in a brochure (see Hübner & Pohl, 2012). This brochure was designed based on the dual process models of information processing (eg Maio & Haddock, 2009).

In order to stimulate an intensive examination of information, the information must be relevant for the target group. To ensure this, the local residents themselves were involved: Too individually n subject areas, local residents were shown with photos and quotes. At the same time, the complete content on the respective topics was presented to the people photographed and only published after their approval. The brochure also contained photographic landscape impressions of the OWP regions. The photos were taken by a professional photographer, Eric-Jan Overkerk, and the people received photos as a thank you. Another condition of successful communication is its credibility. This requires, among other things, reporting on positive and problematic issues in a balanced manner. The residents also explicitly demanded balanced information and “no glossy brochures”. Accordingly, the brochure also contained critical statements, e.g. B. to the home picture and the security question. The attractive, legible design of the brochure was designed by Adler & Schmidt – with a simultaneous website, which, however, was only activated after the end of the 3rd wave of the survey (www.akzeptanz-windenergie.de).

Half of the study participants (52.6%; 112 people) received the information brochure around ten days before the 3rd wave of the survey, 101 people (47.4%) only afterwards. The majority of people who had received the brochure in advance had already read it at the time of the survey (80 people; 72.1%). Table 5/4 shows the distribution of readers/non-readers across the regions; it is regionally balanced.

Table 5/4:
Readers and non-readers of the information brochure in wave 3

	Reader	non-reader
Borkum/Norderney	24	30
darss	21	34
Foehr	17	36
Usedom	18	32
In total	**80**	**132**

Brochure readers (mean = 63.08 years, SD = 12.25) were slightly but significantly older than non-readers (mean = 59.53, SD = 13.59, small effect size). The distribution in terms of gender (readers: f = 27 (34.2%), m = 52 (65.8%); non-readers: f = 53 (40.8%), m = 77 (59.2%) School leaving certificate and job were relatively balanced (none significant differences).

5.2.9.2 Results

Design and content: The readers of the brochure rated the design and content as fairly positive (M = 1.91, SD = 0.92; scales from -3 to +3), interesting (M = 1.80, SD = 0.99), transparent (M = 1.78, SD = 1.04), meaningful (M = 1.84, SD = 1.11), appealing (M = 1.89, SD = 1.00), structured (M = 1.98, SD = 1.05) and understandable (M = 2.24, SD = 0.90) and as very credible (M = 3.08, SD = 0.69) and complete (M = 2.55, SD = 0.85). The positive assessment was also reflected in the high percentage of over 84% of those questioned who recommended a wide distribution of the brochure. A total of 33 people also stated that they had exchanged information about the brochure with others, mostly in the family (34.2%).

Attitude: When asked directly, only a small minority of 5 people (6.3%) said that reading the brochure had changed their opinion of OWFs - and in a clearly positive way. There was also no significant influence on the already positive attitudes towards offshore wind energy in general, offshore and offshore offshore wind farms. However, reading the brochure in the OWF regions significantly reduced negative emotions towards the local OWFs and thus provided emotional calming. On the Darss, for example, the readers felt a little less threatened by the OWP that was far from the coast than the non-readers (medium effect size).

On Borkum/Norderney, readers felt significantly less anger than non-readers for offshore wind farms (small effect size), especially with regard to coastal offshore wind farms (medium effect size). The brochure also showed significant influences on individual expectations, albeit inconsistently. For example, only Usedom showed an influence with regard to expected effects on real estate prices - readers did not expect any, non-readers, on the other hand, expected a slightly negative influence of coastal offshore wind farms on real estate prices (medium effect size).

In order to avoid a fragmented presentation of numerous individual effects, only the effects that occurred in at least two regions or one OWF region are reported below.

Environmental Impact: The more negative assessment of offshore offshore wind farms shone in part through reading of the brochure to be reinforced. So rated on the Darss reader the climate protection contribution near the coast OWPs somewhat weaker than non-readers, on Borkum / Noderney the contribution to the preservation of the Wadden Sea National Park (medium effect sizes). The Borkumer/Norderneyer and Föhrer readers also assessed the positive influence of OWFs close to the coast on fish stocks to be slightly weaker than those far from the coast (insignificant or small effect size).

Maritime safety: Reading the brochure seems to have heightened a sensitive perception of the safety issue: readers saw a clear impairment of the safety situation, e.g. due to the risk of collision, while non-readers saw only a slight (small effect size), especially on the Darß (medium effect size). Correspondingly, readers considered the introduction of traffic monitoring and the stationing of powerful tugboats on site to make accidents with OWFs less likely to be slightly more important than non-readers (small effect size in each case). Likewise, readers considered a safety concept for accident victims during the construction and operation of offshore wind farms to be slightly more important than non-readers (small effect size), especially on Usedom (medium effect size). A reverse effect was shown with regard to the privatization of the smuggling companies – the readers considered them slightly less important than the non-readers (small effect size).

5.2.10 Residents in direct comparison with tourists

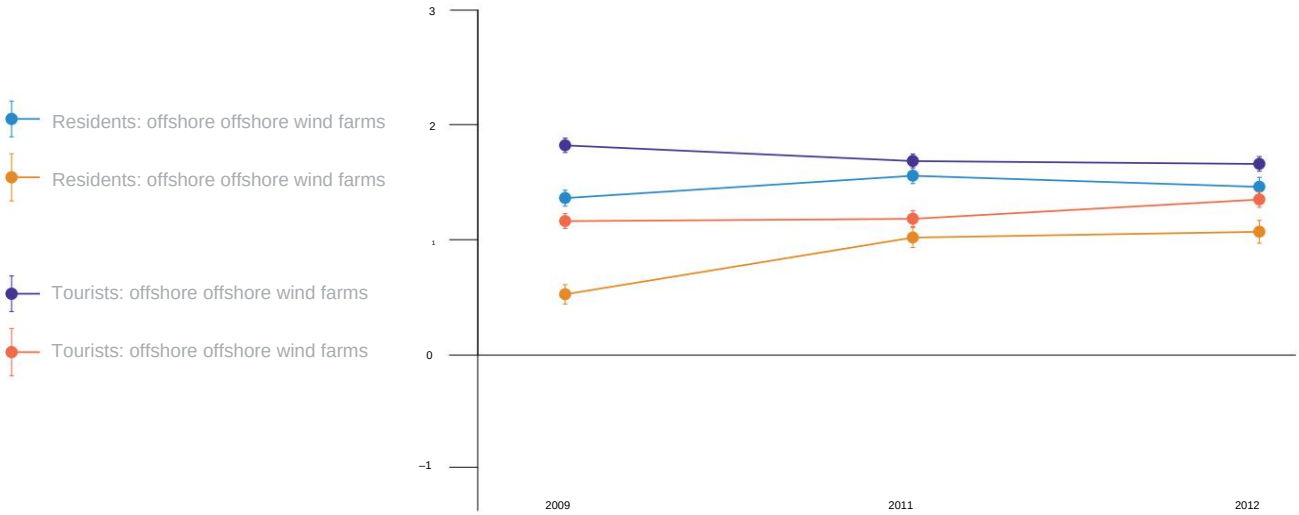
In order to enable a direct comparison between local residents and tourists, both groups were asked some directly comparable questions. Most of the tourists surveyed were already aware of the use of offshore wind energy in 2009 (90.4%), although this value was even higher among local residents (97.4%; small effect size). Across the regions, tourists rated OWFs close to the coast consistently as rather positive to fairly positive and therefore more positive on average than the residents. OWFs far from the coast were also assessed more positively by the tourists than those close to the coast (small effect size), tourists and residents differed only slightly here (small effect sizes; Figure 5/19).

Corresponding to the positive attitudes, the tourists surveyed also showed more positive assessments than the residents with regard to the expected advantages and disadvantages: Tourists saw a stronger contribution of the OWPs to climate protection and were also consistently more common across the surveys (at least 30.7% each) than Local residents think OWPs attract tourists. This opinion was shared more and more frequently by residents – 2009: 13.3%, 2011: 16.4%, 2012: 24.4%. Also, consistently, significantly more tourists than local residents considered the OWPs to be a characteristic feature of the regions (medium effect size), with a slight upward trend (2009: 80.8% vs. 33.6%; 2012: 87.2% vs. 37.4%).
On the other hand, tourists and local residents alike consistently assessed whether the construction of the OWFs would improve the image of the region, with around a third each agreeing with this statement (2012: 30.7% tourists, 30.8%). Perceptions differed noticeably only on the Darß – here tourists more frequently considered the OWPs to be an image booster than residents (52.0% vs. 21.5%, medium effect size).

The tourists assessed the effects of the OWPs on wildlife and the safety of shipping more critically than the local residents. In 2012, around a third of tourists said OWFs would impede shipping, compared to 17.0% of local residents.

Even if there are no negative effects on tourism, the hope that OWFs would become tourist attractions has not been fulfilled so far. Only 15% of the tourists surveyed were interested in boat trips, while a third (32%) of those surveyed in 2011 would have visited a wind farm information center.

Figure 5/19:
Attitudes of local residents and tourists towards OWPs (M ± SEM, scale -3 to +3)



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freely available as a PDF file:
http://www.akzeptanz-windenergie.de

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imprint

final report

"Acceptance of offshore wind energy use"

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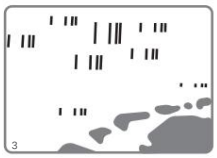
Offshore wind farms off East Friesland

Current planning and five fictitious drafts

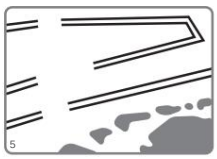
`Alpha Ventus´ (im construction) and planning

`Inseln´



`Ostwanderung´

`Miozän´

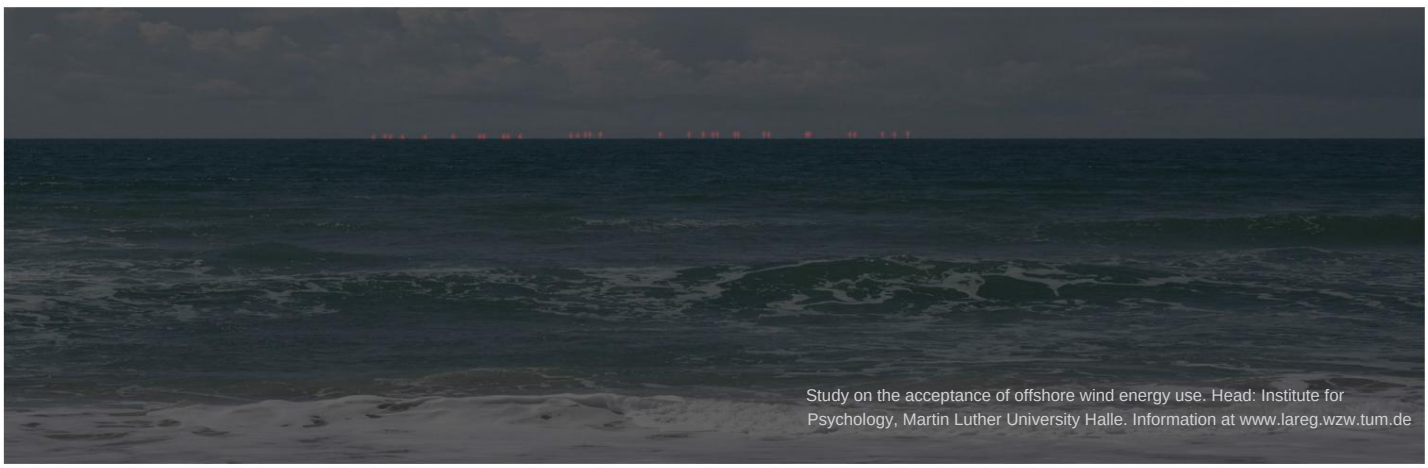


`Traffic Separation Areas´

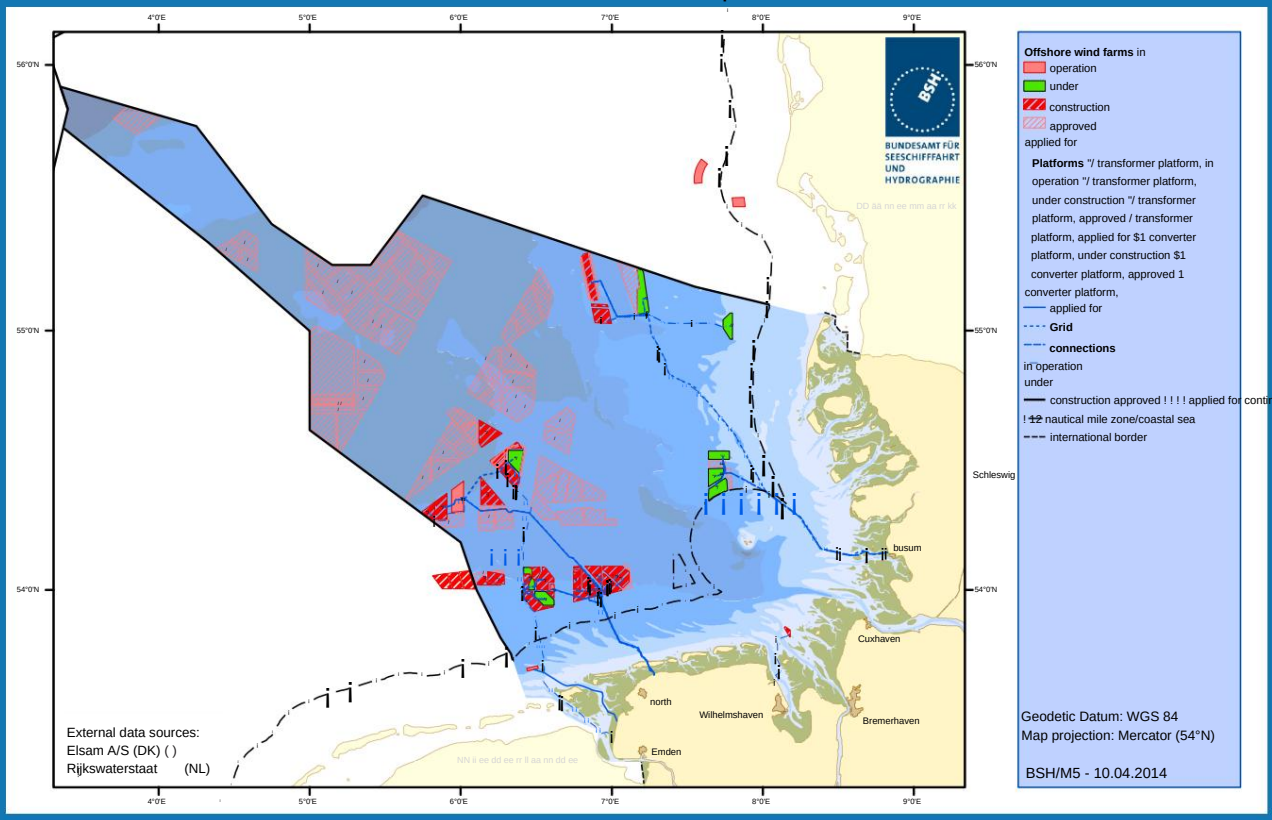
`Wassertiefen´

2 `Inseln´

Those of the West and Northwest
In the west of the German Bight, the incoming tidal wave forms elongated islands with north and south ends bent back, the codends (tails) and Hörn (horns). The wind farms also show this flow-related form.



North Sea: offshore wind farms



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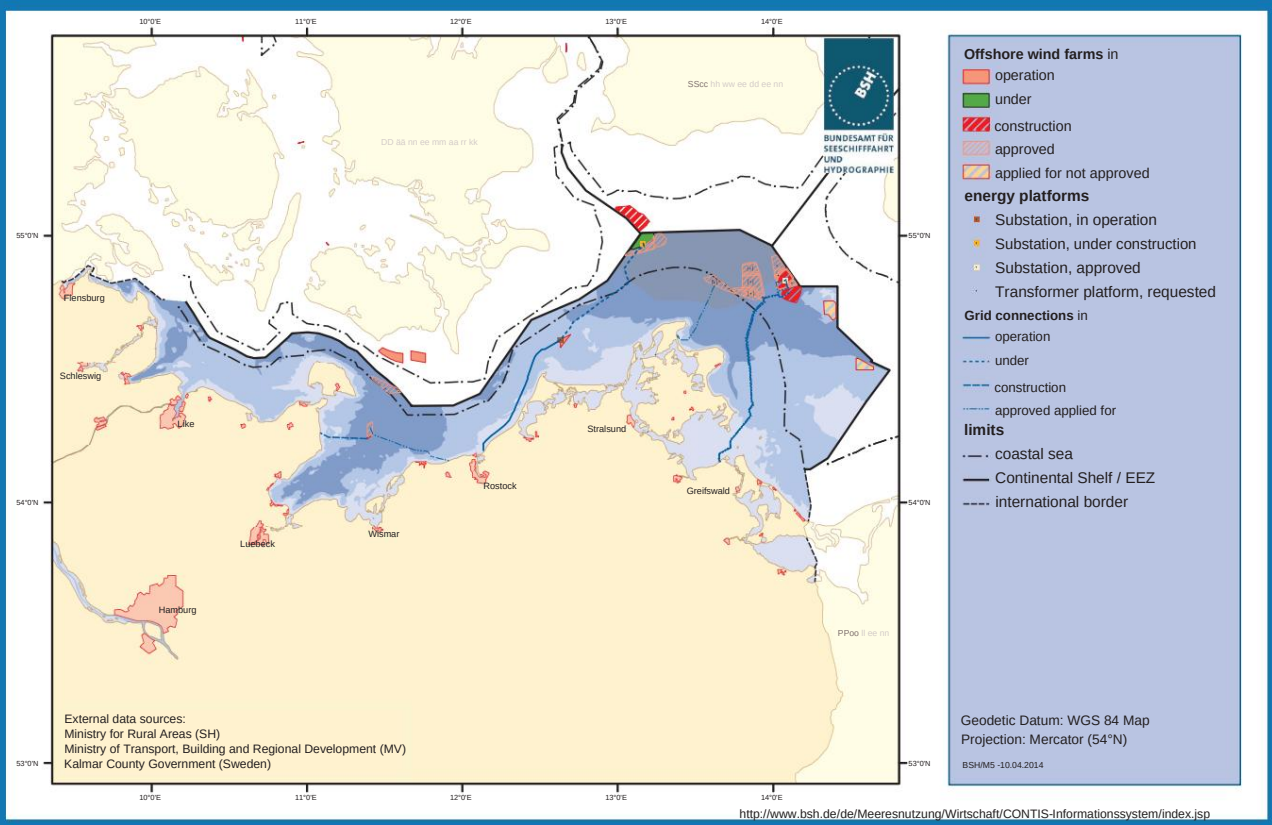
North Sea: Oshore wind farms

Baltic Sea: offshore wind farms



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Ostsee: Oshore-Windparks