The impacts of offshore wind farms on local tourism and recreation: a research study

Balmedie Beach, Aberdeen, Scotland (Source: K.Welch)

John Glasson, Bridget Durning and Kellie Welch

Impact Assessment Unit (IAU), Oxford Brookes University

October 2021

VATTENFALL

Contents

Executive Summary

Offshore wind is a major, dynamic, and rapidly evolving renewable energy industry, and a vital element in the transition to a greener energy economy. This is particularly so in Europe, and especially so in the UK. Offshore wind farms (OWFs) are increasingly large, and have a range of biophysical and socio-economic impacts. This study is part of the European Offshore Wind Deployment Centre (EOWDC) Environmental Research and Monitoring Programme supported by Vattenfall. The research focus is on the impacts of OWFs on local tourism and recreation activities in adjacent coastal communities.The conventional wisdom on such impacts is mixed and unclear. Are impacts generally positive, or might they be negative and a deterrent to visitors and locals alike? The research includes three core elements:

In Section 2, a literature review sets out some of the findings from recent academic articles and professional and industry reports on the impacts of OWFs on local tourism and recreation. The focus of the literature is on the perceived impacts of operational OWFs, with much less on the construction stage and on hard evidence of actual impacts. Whilst impacts vary from stakeholder to stakeholder, findings from the literature indicate that the overall impact of OWFs on tourism appears relatively benign, and in sometimes positive. In some cases, OWFs may be a tourism attractant by virtue of their modern, innovative and novelty factors, and have a positive impact on tourism. There are several examples of attempts to use initiatives to promote the virtues of OWFs, such as visitor centres, viewing platforms and boat trips, although hard evidence on effectiveness of such initiatives is limited.

Section 3 includes a review of secondary sources on the predicted impacts of actual OWF projects, drawing on a content analysis of Environmental Statements (ESs) and various associated reports for major OWF developments in the UK and in a number of EU states. Tourism is an important impact topic in almost all of the ESs reviewed, and is usually included with socio-economic factors, with visual impact at the forefront. The ESs largely predict no impact or minor/negligible impact concerning both tourism and recreation, and there are several examples of predicted positive impacts. The research shows that, certainly for UK OWFs, the use of community benefits initiatives is a previously hidden and unreported dimension to the impacts of OWFs especially on local recreation.

Section 4 includes a small number of UK case studies of specific OWF project coastal locations that provide a primary and more detailed examination, by direct survey, of impacts and of mitigation and enhancement responses to those impacts. A *macro-survey* of key onshore agencies for a wide set of UK OWF locations provides little evidence of any negative effects of OWFs on either tourism or recreation activities. Indeed, there are more comments on positive impacts, including on boat trips, visitor centres and angling, all set in the wider context of the importance of such developments in the transition towards renewable energy. A *micro-survey* focuses on a small sample of relatively near-coast OWF locations across the British nations with: Aberdeen (Scotland), Scroby Sands (Great Yarmouth, England), Rampion (Brighton, England) and Gwynt-y-Mor (North Wales). Aberdeen, as the key location from previous research, was the main study. Again, the responses are either neutral or positive, with very few negative comments. The positive comments cover several themes: visually attractive OWF; positive symbol of/local pride in renewable energy initiative; local/school educational links and potential; plus harbour/boat tours.

A final Section 5 draws together some key conclusions from the research studies. All three elements show similar findings; whilst impacts vary from stakeholder to stakeholder, the overall impacts of OWFs on tourism and recreation appear relatively benign, and in some cases, positive. Surprisingly, given the increasing incidence of the use of community benefits funds, especially in relation to UK OWF projects, there is very little mention, both in the literature and from our case studies, of the positive impacts of such funds on local recreational activities.

The report concludes with some recommendations for future good practice, including the importance of early engagement and planning to both mitigate negative effects on tourism and recreation and enhance potential positive impacts, plus the need for significant commitment, especially between the OWF developer and local authorities/agencies, to support enhancement measures such as visitor centres. Community benefit schemes also provide the potential to support local tourism and especially recreation facilities, with a focus on sustainability initiatives; they would benefit from a much higher profile from developers and local authorities/agencies. Finally, the monitoring of hard evidence on changing tourism and recreation impacts over time, and their auditing against predictions, is important for better managing impacts and for improving predictions for future OWF projects.

Introduction

1.1 Context -- why research the impacts of OWFs on tourism and recreation?

The focus of this research study is on the impacts of offshore wind farms (OWFs) on local tourism and recreation activities in coastal communities adjacent to the OWFs.

Offshore wind is a major, dynamic, and rapidly evolving renewable energy industry, and a vital element in the transition to a greener energy economy. This is particularly so in Europe, and especially so in the UK. OWFs are usually large projects in terms of spatial spread and development expenditure. Such projects normally require specific planning and assessment procedures, including an Environmental Impact Assessment (EIA), in advance of any development consent. For OWFs, the focus of EIA activity, and the content of resulting Environmental Statements (ESs), has been on the biophysical impacts (especially on birds and marine mammals). There has been much less ES content on the impacts on the human environment, and especially the impacts on those local and regional coastal communities near to the offshore projects. Such communities are often suffering greatly from the decline in traditional industries, such as shipbuilding, fishing and tourism. Human environmental impacts include a wide range of social and economic issues.

There is a growing recognition of the importance of local community support in the development of major projects such as OWFs, encapsulated in the concept of a social licence to operate. There is also a growing international interest in assessing socio-economic impacts of major projects, as evidenced in IFC/World Bank performance standards (2012/2017), IAIA Guidelines for Social Impact Assessment (2015) and even the EU revised EIA Directive (2014). In England statutory guidelines for the assessment of OWFs (e.g. National Policy Statement for Energy (HMG 2010) para 5.12.3 of EN-1) specify a set of socio-economic impacts to be considered, including workforce lifecycle, jobs and training and **effects on tourism.**

1.2 Tourism and recreation OWF research questions

The conventional wisdom on the impacts of OWFs on local tourism and recreation is mixed and not particularly clear. Are the impacts generally positive, or might they be negative and a deterrent to visitors? Our approach set out an initial set of research questions, as below:

(i). Does the visual presence of an OWF in a coastal location have negative and/or positive impacts on the attraction of that location for tourists?

(ii). Do any potential negative and/or positive impacts on tourism decline with the distance of the OWFs from the coast (i.e. out of sight, out of mind)?

(iii). Does the presence of an OWF bring opportunities for local tourism businesses?

(iv). Can developers/other stakeholders mitigate the negative impacts and enhance the positive impacts by various policy and infrastructure measures (e.g. community involvement; viewpoint parking areas; OWF visitor centres; boat trips/offshore safaris; community benefit schemes)?

(v). Do the tourism impacts vary significantly between the construction and O&M stages of the OWF project life?

(vi). Do impacts vary between local recreation groups and visitor tourism groups, and between different tourist groups, such as day and staying, old and young?

Whilst it is not possible to examine all of the questions in detail in the context of this short research project, they do help to provide points of reference for the key elements of the research.

1.3 Scope of the research

The research includes three core elements:

In Section 2, a literature review sets out some of the findings from recent academic articles and professional and industry reports on the impacts of OWFs on local tourism and recreation. This section builds on our previous research on the socio-economic Impacts of OWFs (IAU 2020), boosted, updated and further focused through searches on the Internet on tourism and recreation impacts. This section also sets out the main parameters of the research, including the scope of local tourism and recreation, and the geographical scope of the research.

Section 3 includes a review of secondary sources on the predicted impacts of actual OWF projects, drawing on a content analysis of Environmental Statements (ESs) and various associated reports. It examines the coverage of tourism and recreation impacts, and any associated mitigation and enhancement measures, in the ESs for major OWF developments in the UK and in a number of EU states. This section also reviews the growing use of community benefits funding for local tourism and recreation initiatives; this is a currently under-researched area.

Section 4 includes a small number of UK case studies of specific OWF project coastal locations that provide a primary and more detailed and targeted examination, by direct survey, of impacts and of mitigation and enhancement responses to those impacts. The research has two levels of survey: *a macro-survey* of key onshore agencies for a wide set of UK OWF locations. These include local authority planning, economic development and tourism departments; chambers of commerce; tourism bodies; and relevant local councillors (e.g., as chairs of tourism committees). A *micro-survey* focuses on a small sample of relatively near-coast OWF locations across the British nations with: Aberdeen, Scroby Sands (Great Yarmouth), Rampion (Brighton) and Gwynt-y-Mor (North Wales). Aberdeen, as the key location from previous research, was an important study. The other locations provided examples of locations that had taken some important tourism initiatives associated with OWFs. (e.g., visitor centres, boat trips, and community benefits project funding).

A final Section 5 draws together conclusions from the previous literature review, ES review and case study sections on the impacts of OWF developments on local area tourism and recreation. It also addresses, where possible, the research questions raised in section 1.2. The report concludes with some recommendations for future good practice.

2. Literature review

2.1 Review approach

2.1.1 Scope of the literature review

This literature review seeks to set out some of the findings from academic articles and professional and industry reports on the impacts of OWFs on local coastal area tourism and recreation. Our previous research on the socio-economic Impacts of OWFs (IAU 2020) provided much relevant material. This was boosted, updated and made more focused through searches on the Internet using combinations of terms *impacts of offshore wind farms on tourism, in UK, EU and internationally*. This opened up a further array of sources. The temporal focus is on the period 2000 to 2021, corresponding to the early days and then major growth period for this dynamic renewable energy industry. In terms of a snowball approach, some important references provided a lead into the wider literature. For the UK, a report for the East Anglia North OWF (Scottish Power Renewables, 2019) was a very useful starter, as were studies for the EU Marine Spatial Planning Platform (EU MSP 2018, 2019) for the European Union countries.

2.1.2 Some research framing considerations

The following considerations provided an initial framing for the literature review to

- *Include some coverage of onshore as well as offshore wind farms in the review*—because there has been more research on onshore impacts on tourism. However, the focus is on offshore, which is the growth sector. Offshore projects do of course have some important onshore elements (eg substations, and grid connections).
- *Focus on operational wind farms*—because they are the stage in the OWF lifecycle with long-term impacts; although construction can be more negative (but short lived), and will be included in the research.
- *Include impacts on local recreation as well as tourism, with a focus on the coastal marine environment.* Recreation and tourism can represent different stakeholders and some different, but also some overlapping, activities. Recreation, for example includes local fishing, yachting, and beach walking. Non-local tourism visits are for all the usual tourism activities (e.g. sight-seeing, beach/coastal walking, local touring, heritage site visits, coastal entertainment facilities, and dining).
- *Include UK, EU and other international studies (mainly US).*

2.1.3 Some definitions

Tourism – a generic definition

Tourism is the generic term to cover both demand and supply of activities adopted in various forms worldwide. *Tourism is defined as the activities of persons identified as visitors. A visitor is someone who is making a visit to a main destination outside his/her usual environment for less than a year for any main purpose [including] holidays, leisure and recreation, business, health, education or other purposes….This scope is much wider than the traditional perception of tourists, which included only those travelling for leisure* (UNWTO Statistics Guidelines: 2010).

Visitor is the common denominator that covers all the forms of tourism defined above for the same range of purposes. The term embraces three separate categories:

(1) Tourists who are visitors staying away from home for one or more nights for any of the purposes noted above (domestic, or from abroad).

(2) Same day visitors, also known as tourist day visitors spending at least 3 hours away from home outside their usual environment for general leisure, recreational and social purposes. Many are local residents of an area.

(3) Leisure day visitors spending less than 3 hours away from home but outside their usual environment, for general leisure, recreational or social purposes. Not included (in the published volume and value of tourism statistics in England), these short stay leisure day visitors contribute directly to the local visitor economy and should be formally recognized in destination management decisions. Most of this third group of visitors are also residents of destinations and their local catchment areas (Tourism Society website).

Marine tourism and recreation activities

Table 2.1 provides some definitions of marine tourism from the EU MSP platform (Conflict fiche 1: Maritime tourism (incl. local communities) and offshore wind (2018)), which includes some overlaps between marine tourism and recreation. There is also a distinction, and some overlaps, between water-based and land-based activities (e.g. recreational fishing from shore or from a boat). Many activities may be publicly and freely available, others may be provided by the private and public sectors for a price.

Table 2.1: Marine tourism and recreation

- *Maritime tourism is a hugely diverse sector, ranging from nature-based tourism and low impact recreational activities on the coast to mass tourism. In some regions of Europe, the direct and indirect employment and income generated from tourism is significant – in hotels, restaurants and a wide range of other service industries. Maritime and coastal tourism are also highly competitive sectors, and there is sometimes strong pressure on coastal areas and resorts to remain attractive. Whether this is informal recreation or more organised and formal activities and sports, all forms of coastal and marine tourism rely on particular experiences a site can offer. Sometimes the scenery is more important than the activity itself, and especially in the case of low-impact tourism, the main attraction may be a natural landscape or a cultural landscape, such as coastal villages, traditional harbours and fishing boats.*

- *Recreational and landscape-related experiences are also important to local residents, and especially second homeowners often choose a location because of its attractive landscape. Recreational activities can take place either on land or in the water. Typical coastal activities might be walking or cycling on the coast, rock climbing, or "coasteering" for example. It may also simply be to lie on a beach, or quietly sit by the water. Water-based tourism takes place close to the shore, but also further out at sea in the case of sailing. Key examples are swimming, canoeing, surfing, wind surfing, rowing, sport fishing, diving, snorkelling, whale watching, seabird watching, boating, and yachting. Many innovative and new activities have recently grown up, including for instance kite surfing or hang gliding from cliffs.*

- *Offshore wind farming is mostly a problem for coastal tourism because of its aesthetic landscape impacts, while it can be both a problem (e.g. for the safety of sailing) and an attraction (e.g. as a visitor attraction). Because of the great diversity of the tourism and recreation sector, many different stakeholders must be considered in the planning process.*

Source: EU (2018).

Key stakeholder groups in marine tourism and recreation

There is a variety of stakeholders involved in marine tourism and recreation activities, bringing with it a variety of perspectives on the impacts of OWFs. Broadly, they can be divided into User Groups and Provider Groups. A US study for a Rhode Island site on Block Island (Smythe et al. 2018) identifies four main categories, two users and two providers groups, as set out in Table 2.2.

Table 2.2: Key stakeholder groups in marine tourism and recreation

a. Recreationalists: *Those who participate in a leisure or sports activity for pleasure, not for income or professional purposes. These participants can but do not need to spend money through their recreation activities. Many recreationalists also work as recreation professionals. Depending on the context, recreationalists can in some cases be considered tourists*

b. Tourists*: Those who engage in what the local community considers a tourism activity and/or a part of the tourism economy; this is context-specific. Tourists typically spend some amount of money and contribute to the community's tourism economy. Tourists can participate in recreational activities, but not all recreationalists are tourists.*

c. Recreational Professionals: *Those who work in or operate businesses providing services to recreationalists (includes fishing charter boat captains, fishing tackle stores, dive shop owners, marinas, paid yacht racing organizers, etc.). Many, but not all, recreation professionals are also local residents.*

d. Tourism Professionals*: Those who work in the tourism industry, whether full-time or part- time, or who operate tourism businesses. Examples include hotel or restaurant owners or staff, taxi drivers in tourist destinations, land- or boat-based tour operators, and professionals with tourism councils and chambers of commerce. Many, but not all, professionals are also local Island residents.*

Source: Smythe et al. (2018)

There can be conflict between these groups with, and indeed without, the presence of an OWF. Local people may resent the seasonal pressure on their recreational resources, whereas local businesses may welcome such pressure as a main source of their annual income. The presence of an OWF adds an additional element into the tourism and recreational mix. The EU MSP platform notes examples of potential stakeholder conflicts associated with an OWF (Smythe et al. 2018), Table 2.3.

Table 2.3 Examples of potential stakeholder conflicts associated with an OWF

- *Conflicts arise over the attachment people have to a particular landscape (fears of the visual impacts of wind turbines) and access to certain sea areas.*
- *Stakeholders related to beach and coastal tourism are concerned that the visibility of offshore wind farms from the coast reduces the attractiveness of the place. This can negatively influence the number of visitors and could have effects on the local economy.*
- *Not only tourists, but also local property owners (residents and second homeowners) are concerned that offshore wind farms could decrease the attractiveness and therefore the value of their house. Stakeholders related to sea-based tourism, such as recreational boating, may have more difficulties accessing the open sea. Offshore wind farms can block potential sailing routes, or restrict the available space for other recreational activities, such as windsurfing or diving.*
- *The visual impact of offshore wind farms – whether real or expected – can give rise to emotional discussions. People can be very attached to a particular place and may strongly resent the visual intrusion caused by an offshore wind farm*
- *Although the conflict over a wind farm may appear small, it can quickly escalate if these concerns are not taken seriously*

Source: Smythe et al. (2018)

2.2. Varying perspectives on research methodologies

A review of the literature raises a number of issues and approaches when researching the impacts of wind farms on tourism and recreation activities.

2.2.1 Issues in tourism impact and wind farm research

Aitchinson (2012) is a major source on the impacts of, primarily onshore, wind farms on tourism. In her writings, she cautions particular concern about sources of tourism impact reviews with dangers of interested party bias in presentation and interpretation of findings; be wary of survey methods used where biased sampling methods may distort results (e.g. using tourism business views as a proxy for tourists' views). "*In a number of surveys, such as that undertaken by the Western Isles Tourist Board (2005), tourism businesses rather than tourists provide the sampling frame. The findings therefore provide some insights into business owners' views but are unrepresentative findings of tourists' perceptions of windfarms".* Following her extensive review of previous research Aitchison also suggests best practice as follows:

- *The research should include a survey of tourists rather than tourism businesses;*
- *The survey methodology and sampling frame must be rigorous, reliable and valid;*
- *There is a danger of extrapolation of findings from one location to other temporal and spatial environments, from small scale to large scale;*
- *The findings of all tourism research should be seen within the context of tourism as a growth industry and thus any limited negative impact is likely to be an impact on growth rather than on current levels of tourism; and*
- *The research should acknowledge that the tourism business is dynamic and self-generating such that when a particular type of tourist ceases to visit an area they are frequently replaced by a different type of tourist thus continuing 'the tourist lifecycle' of destinations and resorts.*

Whilst these are reasonable points for good research practice, if there is to be coverage of wider stakeholder interests it is important to include surveys of tourism and recreation businesses as well as surveys of tourists. Further, the issue of the dangers of extrapolation raises a question as to whether there are indeed dangers in extrapolating from the more-researched impacts of onshore wind farms to the less-researched impacts of OWFs.

2.2.2 Primary and secondary analysis in research methodology

Primary and secondary analysis

A key methodological distinction is between primary/empirical based studies, and those based on secondary data, as noted below. These are usefully set out in various publications, including ClimateXchange (2015), as set out in Table 2.4.

Table 2.4 Primary and secondary approaches

Primary/empirical approaches *- include a variety of methods for exploring perceptions, including face-to-face interviews or administered questionnaires, postal or internet surveys, choice experiments, visual preference of actual and/or potential developments, and consultations. The sample population varies between studies and includes tourists/visitors, niche tourists, tourism providers/businesses, residents of areas with and without wind farm developments; and government agencies.* ***Secondary analyses -*** *Desk-based studies of wind farm effects on tourism include reviews of existing published research either as part of or as the main focus of the research , of tourism and renewable energy policies, visitor numbers before and after the development of wind farms); tourist features that could be affected; and GIS analyses of wind farm sight lines.* *Mixed and interdisciplinary methods can offer the most comprehensive understanding of the effects of wind farm developments on tourism because quantitative data, such as number of visits and tourist spend, can be compared with more qualitative data in relation to attitudes and perceptions.* *A case study approach may include a mix of secondary and primary approaches and, if several cases are involved, may provide comparative exploration of impacts in a range of contexts.*

Source: Adapted from ClimateXchange (2015)

Some gaps in research methodology on impacts of OWFs on tourism

From the literature, and from our own recent research on the socio-economic impacts of OWFs, a number of research gaps can be identified, including:

- Research on the predicted tourism impacts of OWFs, and associated mitigation and enhancement approaches, contained in OWF project Environmental Statements (ESs);
- Quantitative evidence on changes in tourism in an area with a coastal OWF, measured for example by changes in number of visitors, and tourism employment, relative to local/regional trends;
- Assessment of impact of OWFs on different tourist categories (eg day/overnight, age, socio-demographic background);
- Differences and similarities between impacts of OWFs on tourism and on recreation activities, and categories of stakeholder;
- Variations in tourism impacts between the construction and O&M stages of the OWF project life;
- Types of beneficial impacts of OWFs on tourism, and types of enhancement measures and their effectiveness;
- Assessment of relative impacts in relation to factors such as distance from the coast, size of OWF and type of coastal location;
- Comparison of tourism impacts and types of enhancement measures and their effectiveness across countries, including UK, EU states and others internationally.

2.3. Tourism impacts: some lessons from UK onshore wind

2.3.1 General Impacts

There have been many studies of the impacts of onshore wind farms on tourism in the UK, relating to the major growth period for such developments up to around 2015. A brief review of such studies can provide some guidance to the potential impacts of offshore wind. The Scottish Power Renewables study (2019) provides a good summary of key literature on onshore wind farms, especially from studies in Scotland and Wales, as does work by Aitchison (2012). Aitchinson (2012) sums up well the general findings of these studies in the following quotation --- "*Previous research from other areas of the UK has demonstrated that windfarms are very unlikely to have any adverse impact on tourist numbers (volume), tourist expenditure (value) or tourism experience (satisfaction) (Glasgow Caledonian University, 2008; University of the West of England, 2004). Moreover, to date, there is no evidence to demonstrate that any windfarm development in the UK or overseas has resulted in any adverse impact on tourism".* Aitchison's own 2012 research in Wales (for Garreg Lwyd Hill wind farm) subsequently reinforced this conclusion; as do later studies by Regeneris (2014) also for locations in Wales and Biggar (2017) for locations in Scotland.

Shamsuzzoha et al (2012) present a more positive perspective; they do not assume that wind farms deter visitors. Instead, they highlight the potential of onshore wind turbines in a rural Scottish context to attract visitors. In doing so, they interestingly discuss whether the increased numbers of visitors are perceived as disturbing or beneficial by the local population. This assumption complies with the claim that onshore wind farms could well act as a tourist attraction (Frantál & Kunc 2011), even if a smaller number of tourists might hold negative attitudes towards such wind farms.

The Regeneris review (2014) of a number of well-established wind farm sites in mid-Wales -- *"has not revealed any evidence of significant impacts on tourism to date. The few local studies, which are available, have shown the majority of visitors are positive or indifferent about windfarm development. Although there was some anecdotal evidence of visitors staying away due to windfarms, the vast majority of consultees believed there had been no impact on*

total visitor numbers and hence on the visitor economies as a whole". This was a view supported by key stakeholders including local authorities, businesses and trade bodies. The review also noted factors influencing visitor perceptions, including views on renewable energy and landscape, proximity to wind farms and types of visitor. One particularly sensitive visitor market was identified as older people visiting locations for tranquillity, remoteness and natural scenery. Direct tourism benefits from onshore wind farms were seen as limited, although there could be potential to link with and enhance existing visitor attractions. "*The more significant opportunities for generating additional economic benefit impact are linked to new visitor attractions and facilities. They are more appropriate in locations with large day visitor catchments, good accessibility and a significant degree of complementarity with the local tourism strategies".*

Similarly, the Biggar study (2016) of wind-farm locations in Scotland showed no evidence of adverse impacts on sustainable tourism in areas nearest to the wind-farm locations. The study compared trends in sustainable tourism employment (as defined by the Scottish Government) from 2009-13, within a 15 km radius of 18 wind farms with a capacity of at least 10MW, that became operational in 2011-12, with the overall trend in Scottish sustainable tourism employment over the same period. It concluded:

"It would be reasonable to expect that any impacts associated with a wind farm development are most likely to be felt strongest in the immediate vicinity of the development. An analysis of the levels of employment in the sustainable tourism sector in the immediate vicinity of onshore wind farm developments did not find any evidence of these areas being adversely affected. On the contrary, it was found that the tourism sector in the majority of areas surrounding wind farms grew faster than in the local authorities where they were situated. Although this study does not suggest that there is any direct relationship between tourism sector growth and wind farm development, it does show that wind farms do not cause a decrease in tourism employment either at a local or a national level".

2.3.2 Mitigation and enhancement

As noted in the previous Regeneris study (2014), onshore wind has the potential to be a tourist attraction in its own right, given the right conditions. ClimateXchange (2012) notes that wind farms and renewables could play an important role in eco-tourism. Such tourism seeks to maximise environmental performance and minimise impact on the local environment. It identifies this as an area for growth.

Whitelee, near Glasgow, provides a good example (Scottish Power Renewables n.d). It is the UK's largest onshore windfarm, with 215 turbines capable of generating about 540 MW. It is located on Eaglesham Moor, just a 20 minutes-drive from Central Glasgow. Scottish Power Renewables owns Whitelee Windfarm Visitor Centre; Glasgow Science Centre manages it. Established in 2009, it provides an exhibition, learning hub for presentations, café, bus tours to get up close to the turbines, over 100km of trails to explore (including mountain bike trail) etc. The site has had approx. 700,000 visitors since it opened. It was the first UK wind farm to join a visitor attraction organisation, in this case the Association of Scottish Visitor Attractions (ASVA).

2.4 Tourism impacts: some lessons from UK offshore wind

2.4.1 Difference in context from onshore wind

The OWF industry is a much more recent phenomenon, and a very dynamic phenomenon, especially in the UK. Table 2.5 illustrates the size and European predominance of the UK industry. Whilst early OWFs were quite small and sometimes experimental, recent developments are regularly over 500MW and many over 1000MW. Early developments

tended to me close to shore and very visible; in contrast, many of the recent large developments are further off coast, some over 100km, and many are not at all visible from the shore. This of course raises questions as to whether some OWFs are of any significance for tourism at all, and can be regarded *as out of sight and out of mind.* However, all OWFs come ashore at coastal locations, and have construction and especially operation and maintenance stage socio-economic impacts.

Table 2.5: Number of offshore wind farms, MW capacity and turbines connected at end of 2019, per country

Country	Number of Wind Farms Connected	Cumulative Capacity (MW)	Number of Turbines Connected	Net Capacity Connected in 2019	Number of Turbines Connected in 2019
UK	40	9,945	2,225	1,760	252
Germany	28	7,445	1,469	1,111	160
Denmark	14	1,703	559	374	45
Belgium	8	1,556	318	370	44
Netherlands	6	1,118	365	0	0
Sweden	5	192	80	0	0
Others	9	114	31	8	1
Total	110	22,072	5,047	3,623	502

Source: adapted from Wind Europe (2020)

2.4.2 General impacts of UK OWF developments

Predictions of tourism impacts from OWF Environmental Statements

From earlier IAU research on OWFs (IAU/ Glasson and Olorundami, 2019) several of the ESs include discussion of the *potential impact of the project on other economic sectors, especially on tourism and fishing.* For the construction stage, the ESs assess the impacts on tourism as negative, and of minor and in some cases of medium significance. Some analyses draw on previous studies of the impacts on tourism of both onshore and offshore wind farms; these tend to show little impact on tourists' destination decisions, as noted in section 2.3 of this literature review. The findings are similar for the O&M stage, although there is occasional mention of the potential tourism value of OWFs. Further contents analysis research on the material on tourism impacts in the ESs for OWFs in the UK and EU states is an important element of this research covered in section 3.

From the literature – some examples of OWF impacts on tourism

Hattam et al. (2015) note that studies of the impacts of OWFs on recreation and tourism appear to be rare; see for example, implications and guidance on the EIA process for recreation (particularly surfing), and objections raised during the planning process regarding perceived impacts on tourism (Rudolph 2014). Rudolf quotes the literature – "*studies on tourism impacts have revealed a discrepancy between the degree of concern of local residents about negative impacts and the actual attitudes and expected tourist behaviour. The majority of surveys indicated that only a minor percentage of visitors may change their behaviour and would not visit a seaside exposed to an offshore wind farm (Firestone et al. 2012 a&b), although concerns regarding damages to the tourism economy and the local livelihood subsist (Devine-Wright 2009). Others (Lilley et al. 2010) come to rather ambivalent results and do not rule out the possibility of negative effects on tourist levels".* However, hard evidence of actual, or lack of,

impacts is limited and somewhat anecdotal. Keuhn (2005) points to the continued existence of a tourism industry close to an OWF site and there is reference to the success of the Scroby Sands OWF visitor centre, with 35,000 visitors in one summer season (BWEA 2006).

Rudolf (2014) focuses on the importance of storylines and people's perceptions of potential impacts of coastal wind farms in quite pristine natural environments, using two case studies of planned (but not constructed in Scottish case) OWFs in Argyll, and the Baltic Coast. His Interview approach identifies five storylines, which give rise to local concerns and conflicts regarding the tourism impacts of OWFs. These are visual disruption, disruptions of local character and identity, constructions of visitors and tourists (what they want from their visit), disturbance of recreational activities, and environmental impacts (especially killing seabirds). The research also notes a recreation–tourism issue, with tourism associated with OWFs being blamed for interfering with the local recreational value and leisure activities at the coast. However, the lack of empirical evidence reduces the value and credibility of such storylines to nothing more than claims. Indeed, Rudolf argues that, because of so much uncertainty of impacts --- "*a comparison of changes in definite numbers of tourists, before and after the construction of a wind farm, is the only sound indicator to measure impacts on tourism that may likewise have noticeable economic repercussions"*.

Biggar (2020) provide an interesting and original time-series based study, using employment data for the accommodation and food services sectors, to estimate **actual** tourism impacts of the construction stage of UK OWF developments. The purpose was to identify any evidence of the construction of OWFs having an impact on the local tourism economy. The study analysed indicators of the tourism industry in 11 comparable cases (eg Walney, Burbo Bank, Westermost Rough and Rampion), including one location adjacent to an AONB and one location adjacent to a National Park, to identify any relationship between OWFs and changes in visitor behaviour or spending during the construction periods. The study compared employment trends in the local OWF coastal employment areas with trends in the wider regional economies. ….. *"Overall, analysis of the 11 areas studied did not suggest any relationship between the construction of the offshore wind farms and a reduction in tourism, visitor spending or tourism-related employment"*. Indeed, more locations showed a better local employment growth than the wider region than did not.

2.4.3 Mitigation and enhancement measures re UK OWF developments

UK examples in practice

Approaches to mitigate potential negative impacts of OWFs on tourism and to enhance potential positive impacts are largely covered in the planning and assessment process for OWFs, and documented for example in tourism chapters in the associated Environmental Statements (ES). Again, section 3 of this research provides a content analysis of the material on tourism impacts in the ESs for OWFs in the UK and EU. Examples of mitigation measures to protect local tourism and recreation activities include routeing of onshore cabling away from attractions and accommodation (eg. from caravan parks); avoiding Public Rights of Way; landscaping sub-stations etc. Examples of enhancement measures to promote local tourism and recreation activities include the development of multi – use visitor centres (see Table 2.6), boat trips, information boards and viewing points. A more detailed summary of the pioneering Scroby Sands Visitor Centre is included at Box 2.1.

Box 2.1: Summary of Scroby Sands Visitor Centre

Scroby Sands is one of the UK's first commercial OWF. It is located 2.5km off the coast of Great Yarmouth on the East coast of England. It consists of 30 turbines each of 2.5MW, and is quite a small OWF development. The permanent Scroby Sands OWF Information Centre opened in 2004, and had a major refurbishment in 2011. E.ON Climate and Renewables UK own it; E.ON is also the developer, owner and operator of the OWF. The company provided the initial finance for the facilities; it also covers the staff running costs. The Centre is open May to October, and entrance is free of charge. The Centre is near the Great Yarmouth Tourist Information Centre, fair and piers, making it an attractive location for tourists.

The Scroby Sands OWF Information Centre includes an exhibition area providing general information about renewable energy, plus specific information about Scroby Sands. There is also an interactive educational area; here children from local and regional schools can visit, experience and learn about energy outside the classroom. It is also possible to view the OWF through binoculars. The programme supports the school geography and science curriculum (EU/South Baltic report 2016).

Every year people, of all ages, from all over the world, visit the Centre. With over 35,000 visitors a year, it is probably the busiest of such centres in the UK (BWEA 2006).

"*Over the years the building has gone through a number of redesigns and this new look is part of our commitment in supporting the local community. We hope it offers the chance for visitors and local people alike to come and learn about offshore wind and the positive impact it has had on the area of Great Yarmouth,"* Peter Lawson, Scroby Sands Site Manager at E.ON, said following 2018 refurbishment.

"*While walking along the prom we came across this visitor centre and we were amazed at the wealth of information from the staff. We were also lucky on the day we visited as they were doing checks on the windfarm. A member of staff told us to use the binoculars and look at the first wind turbine and what we saw was amazing as a member of the team was abseiling down one of the blades doing a check. It showed you how large these things are*" (Trip Adviser 2019).

Source: E.ON Scroby Sands Wind Farm Visitor Centre

Potential benefits for local tourism may also be associated with the use of community benefit funds to support and/or create new tourism and recreation facilities. Rudolf et al. (2018) provide an interesting discussion of community benefits; they focus on economic benefits, although communities located near offshore renewable energy developments may perceive other benefits such as changes to aesthetics, pride, status, and other intangible effects (Soma and Haggett, 2015). However, in this context, Rudolf et al. (2018) also add the cautionary note that whilst currently some OWFs may be tourism attractants by virtue of their novel and innovative technology, the novelty may perhaps wear off with a rapidly growing OWF industry. There is a more detailed examination of community benefits for local tourism and recreation initiatives in section 3 of this report.

Table 2.6: Examples of offshore wind – tourism multi-use centres include

OWF	***Size***	***Location***	***Tourism activities***	***Comments***
Scroby Sands (RWE)	30x2 MW turbines	2.5 km off coast	Visitor Centre attracts 35,000 visitors pa; opened in 2004, refurbished in 2011	As in Box 2.1. The UK pioneer of OWF Visitor Centres. *Great Yarmouth being re-energised by OWF* (BBC 060519)
Lincolnshire (Lynn and Inner Dowsing projects)	194 MW 54 turbines	5km off coast	Gibraltar Point Visitor Centre	Primarily Nature Reserve centre
Sheringham Shoal (Equinor)	317MW, 88 turbines	17-23 km off coast	Visitor Centre opened in 2011	Can see turbines with powerful telescopes.
Rampion (RWE)	116 turbines; 400MW	13-20 km off coast	Visitor Centre on Brighton Beach, opened in 2020	Boat trips, fishing trips available.

2.5. Tourism impacts: some lessons from offshore wind for some EU states

2.5.1 General Impacts

Studies of the impacts of OWFs in various EU states indicate that impacts may vary according to distance from the coast but, in general, there is little evidence of negative impacts, as in two examples here from France and the Netherlands.

- In France, Westerberg et al (2013) suggest that, everything else being equal, OWFs should be located no closer than 12 km from the shore. However, the authors say that a wind farm can be located from 5 km and outwards without a loss in tourism revenues if accompanied by a coherent environmental policy and wind farm associated recreational activities. They also indicate that – "w*hile most respondents experience some visual nuisance associated with wind farms, the degree and thus their corresponding compensation requirements decrease when they are younger or mature, of Northern European origin, frequent visitors to the Languedoc Roussillon, and when their vacation is partly motivated by the objective of visiting friends and family or enjoying cultural and historical experiences, aside from 'sun and sand' tourism".*

- In the Netherlands, the EU MSP platform (2018) explores the issue of potential OWFs off the Dutch coast (near Zandvoort and Scheveningen). Whilst the MSP acknowledges direct negative effects for sailing and recreational fisheries in the short term, these are likely to disappear once the OWFs are operational. *"On the visual effects of the offshore wind farms, the plan mentions that research has been done on the experiences of tourists, the regional economic impact to the municipalities and the impact on tourism. The results of this research were only positive and gave no reason to object to the development".*

Section 2.5.2 provides examples of measures to protect and promote tourism and recreation associated with OWFs.

2.5.2 Mitigation and enhancement

A focus on protecting and promoting tourism; studies of some Baltic Sea and North Sea sites

A study by the German Offshore Wind Energy Foundation (2013) noted some of the negative and positive aspects of tourism and OWFs (Table 2.7), but focused in particular on best practice in promoting or protecting tourism as part of OWF development. The study noted the importance of early engagement with the tourism industry to find benefits for the sector. Tourism can provide a niche market for an area to stand out in the competitive tourism market. There can be a multitude of potential attractions. However, this requires significant commitment in terms of personnel, finance, networking and partnerships. More specifically, the study recommended viewing platforms and information boards as a minimum, so that people can understand more about the windfarm development. This approach appears to have created tangible benefit in Denmark (Renewables UK 2016) where visitors can now take "wind safaris" of nearshore windfarms.

An EU Interreg supported report on a Danish case study (Lolland Falster 2013) examined the local potential of OWF related tourism, distinguishing two types of tourist groups: those seeing OWFs as a reason for visiting the area, and those already in area who would like to know more about the coastal OWFs. The study suggested a possible hierarchy of enhancement initiatives ranging from just providing basic information to the local tourist office about the OWFs, and to local recreationalists (eg anglers and sailors) in terms of access, to production of OWF guides, energy tours, and the biggest initiative of establishing a Visitor Centre. However, a particular issue highlighted was the communication/information gap between the OWF developer and local agencies. "*The Energy Tours are challenged by the fact that the product owners themselves do not give sufficiently high priority to providing information about their systems and trial facilities. The undertakings that operate the sites, including the offshore wind farms, do not feel responsible for serving as guides for ordinary or business tourists. They are primarily interested in running their business. This creates a missing link between the knowledge and expertise possessed by the undertakings and the dissemination of this information to ordinary and business tourists."*

Table 2.7: Tourism and OWFs –some negative and positive issues

Tourism and Offshore Wind Energy	
Fears and prejudices ("damages to image due to disturbing emotions")	**Benefits** ("better image due to the value of experiencing the entertainment and prosperity of the region")
Impacts on the landscape	Fascination with technology
Use of sea space	Event character
Noise and shadow flickering (only for ship and boat tourism in close proximity)	Contribution to active environmental protection
Risk of ship collisions (difficult to predict impact on tourism)	General attractiveness of region

Source: Stiftung Offshore Windenergie (2016)

An important EU/South Baltic 2016 report (Stiftung Offshore Windenergie 2016), with a focus on '*Bringing together tourism and offshore wind energy'* – examines how various aspects of offshore wind energy can help to attract new and greater numbers of tourists to the South

Baltic area. Some key points and some promotional examples for these OWFs, which are mostly close to shore, include:

- Importance of engagement strategy to get locals on board at an early stage;
- use of communication technology/websites;
- encourage green tourism;
- provide boat tours; also maybe sightseeing flights in some locations (more distant OWFs);
- open the OWF site to local recreational sailors to sail within (very popular);
- provide permanent 'World of Wind' exhibition centre (importance of location) ;
- use of harbour boat based exhibition centre; and
- link with other activities (e.g including nature tourism; also industrial tourism–with linked visits to wind farm manufacturers; also potential linking onshore and offshore wind farm tours in some locations).

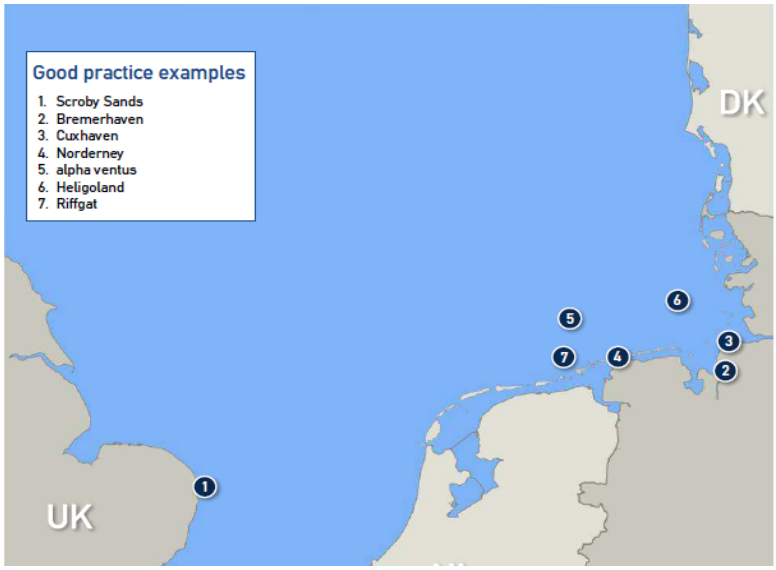
Table 2.8 and Figure 2.1 note particular OWF locations and good practice OWF attractions.

Table 2.8: S. Baltic examples of tourism and recreation good practice OWF attractions

Type of attraction	**Specifications**	**Good practice**
Offshore information centre	*Temporary exhibition*	*Lillgrund, Cuxhaven, Heligoland*
	Permanent exhibition	*Boat exhibition in Rostock, Nysted, Scroby Sands, Bremerhaven, Cuxhaven*
	Travelling (boat) exhibition	*"Fascination Offshore" on museum ship. Offshore goes Onshore.*
	Lectures	*Middelgrunden*
	In combination with other topics	*Guldborgsund, Norderney*
Viewing platform with telescopes	*Temporary exhibition*	*Scroby Sands, Nysted*
Information boards		*Blekinge, Hvidovre*
Boat tours	*Nearshore wind farms*	*Lillgrund, Middelgrunden, Nysted, Scroby Sands, Riffgat*
	Offshore	*Alpha Ventua*
Sightseeing flights		*Alpha Ventua, Riffgat*
Combined onshore and offshore wind energy tour		*Bremerhaven, Cuxhaven*
Routes for motor and sailing boats		*Nysted, Riffgat*
Offshore restaurants and merchandising products		*Middelgrunden*

Source: German Offshore Wind Energy Foundation (2013)

Figure 2.1: S. Baltic and N. Sea locations of OWF sites



European MSP platform solutions (from European MSP Platform 2018)

The European MSP approach strongly advocates using Marine Spatial Planning (MSP) to minimise conflicts between key stakeholders and maximise benefits from OWF developments. This involves an eight-step solutions approach, as set out in Table 2.9.

Table 2.9: MSP solutions approach

Main steps	**Amplification of some steps**
1: Zoning to minimise the visual impact of OWFs	
2: Sensitive siting of OWFs to minimise socio-cultural impacts	

3: Collect data on the coastal tourism and recreation sector—OWF planning stage	Data on recreation and tourism activities in coastal waters are often lacking when the MSP process begins. A solution is to create a bottom-up open-source database of important recreation areas, where anyone could add recreational sites or routes, such as areas where they go to sail.
4: Develop a Tourist Impact Statement and possibly include it as standard part of the SEA or EIA – project assessment	Tourist Impact Statements are statements by developers on the likely impacts of the development on the local tourist industry. They also set out the methods to minimise any costs on local tourism and maximise any benefits (e.g. access arrangements). The statements include information such as the number of tourists travelling, views from tourist accommodation, the scale of tourism impact and the outdoor activity in the area of development, and should be part of the EIA and/or SEA process
5: Allow access to offshore wind farms to recreational vessels	In the UK, Denmark wind farms are open for transit and both commercial and recreational use; no special requirements regarding vessel equipment or limit on the vessel size are imposed. In Poland, the limit on vessel size is 50 meters and there is a safety zone of 100 m around pillars. In the Netherlands, access conditions include for example: recreational vessels need to have an AIS (satellite) responder; access is only possible during daytime; and vessels can have a maximum length of 24 meters.
6: Design a multi-use OWF	
7: Use MSP process to ensure OWF development benefits local communities	
8: Use MSP process for clear and transparent communication on visibility of OWF	

Source: EU (2018)

2.6. Tourism impacts: some lessons from US OWF projects

2.6.1 General Impacts

A number of US studies focus on the significance of impact of distance of the OWF from the coast, including:

- Lilly et al. (2010) who found from their studies that people were put off by nearshore windfarms but only at a distance of less than 10km.
- Noblet, C et al. (2016*)* carried out a survey of visitors to Monhegan Island, Maine about the potential impacts of a proposed OWF---- *"Our results showed that the proposed wind turbine would have little negative impact on visitation patterns to Monhegan Island. Over 90% of those surveyed would continue visiting the island at current or increased levels if offshore wind turbines are established; only 1% stated they would no longer visit the island. Most respondents were indifferent; people felt that wind power would not affect their visit at all, with almost 75% of visitors saying they would not change the locations of the island they visited, even if the proposed wind turbines were established".*
- Lutzeyer et al. N. Carolina study (2017), using an indirect monetary evaluation method, showed that renters of beach front properties would not expect a reduction in price if the OWF were further than 13km from shore.

A particularly interesting US study is that of Block Island, Rhode Island (Smythe et al. 2018; Carr-Harris and Lang, 2019). The study collected empirical data from this first US OWF, consisting of five turbines located three miles off coast. It aimed to provide a methodology for developing indicators to monitor effects on recreation and tourism activities, using a mix of

methods – content analysis, media review, participant observation, interviews and focus groups. An outcome was a suite of 40 social indicators in six categories (recreational boating/sailing; recreational fishing; boat and aircraft charters; coastal and marine tourism; tourism and recreation-dependent communities and economies; and visual effects). Figure 2.2 shows the location of the OWF in relation to the coast and boating areas.

Figure 2.2: Block Island offshore Wind Farm.
Source: https://electrek.co/2016/12/13/americas-first-offshore-wind-farm-powers-up-in-rhode-island-deepwaterwind-will-cut-rates-40-take-island-off-diesel/

Overall findings on impacts reveals the diverse interests and perceptions of stakeholders, but little evidence that the Block Island OWF has adversely affected participation in tourism and recreation in the area and on the mainland, which is 16 nautical miles from the OWF. Although many recreationalists and tourists acknowledge pros and cons about the OWF, ***the wind farm's overall effect is relatively benign and, in some cases, positive***. Research by Smythe et al. (2020) demonstrates that, contrary to the conventional wisdom on the impacts of distance previously referenced, in the case of the Block Island study some of the positive effects are because of the siting of the project close to the coast, with the project being an attractant to both land- and boat-based visitors and marine users. However, caveats to make include the wind farm is young, and some effects may not have fully developed, hence the importance of monitoring. This is also a small coastal OWF location, and may not be typical of larger, and/or further offshore locations. In addition, there may be various local factors in play, such as curiosity factor of first of kind in USA, and perceived improved fishing around the OWF.

Carr-Harris and Lang (2019) assess the extent to which the Block Island OWF has affected the vacation rental market, using data from AirBnb, in comparison with other nearby tourist destinations in Southern New England before and after construction. *"Their results suggest that the construction of the Block Island Wind Farm caused a significant increase in nightly reservations, occupancy rates, and monthly revenues for AirBnb properties in Block Island during the peak-tourism months of July and August* (increase of 19% compared to three nearby destinations), *but had no effect in other months. The findings indicate that offshore wind farms can act as an attractive feature of a location, rather than a deterrent".*

The Block Island study also provides a very succinct summary of recent literature (with a US focus), including seeing the OWF as a tourism attractant (Smythe et al. 2018):

- *"When an offshore wind energy project is proposed, people in communities near the proposed site and other interest groups frequently raise concerns that the project will affect tourism and recreation (Gee 2010; Rudolph 2014). Although there is often a presumption that wind energy projects threaten tourism (via visual impacts and resource-use conflicts), people also raise the potential of offshore wind farms acting as an asset to the tourism industry (Parsons and Firestone 2018)".*

- *"There is little empirical evidence for how wind energy projects have affected tourism and recreation; however, the literature suggests that wind farms do not negatively influence tourism to a substantial degree, and in fact, they may act as a minor attraction (Westerberg et al. 2013). Most works on wind farm tourism impacts examine the potential impacts of a proposed wind farm, based mostly on the responses of tourists or residents to visual simulations. These studies provided mixed results for whether a wind farm would dissuade or attract visitors to an area".*

- *"With relative consistency, researchers find that stakeholder concerns about visual impacts of offshore wind farms decrease as distances of the wind farm from shore are increased (Ladenburg 2009; Landry et al. 2012; Lilley et al. 2010; Westerberg et al. 2013; Parsons et al. 2018). There is some evidence that more frequent visitors to an area may be most concerned about potential wind farms, based on their desire to preserve natural or pristine settings (Ladenburg 2009; Landry et al. 2012, Voltaire et al. 2017). Researchers stress that tourists are not a singular group, and that their attitudes towards wind farms are influenced by personal factors, beliefs about renewable energy and the environment, and motivations for tourism and perceptions about the landscape (Broekel and Alfken 2015; Ladenburg 2009; Smith et al. 2018). There is also evidence that wind farms can attract tourists or revitalize tourism sectors (Firestone et al. 2008; Frantál & Kunc, 2011)".*

2.6.2 Mitigation and Enhancement

As noted in section 2.6.1, OWFs may themselves be 'attractants' for some tourists, as illustrated by the Block Island OWF. "*Visitors to the wind farm site, or sites where the wind farm is visible, regularly engage with the wind farm as its own destination or as an auxiliary attraction to other recreationist or tourist activities. Some tourists and recreationalists are interested in seeing the wind farm up close or at a convenient vantage point, learning about its features, or taking advantage of the perceived benefits of fishing near it"* (Smythe et al. 2018). This finding is not unique to the Block Island study.

2.7. Summary of findings and issues from the literature review

2.7.1 Some key findings to date

- Comparative findings from research on UK *onshore* wind farms indicate little or no evidence to demonstrate that any windfarm development has resulted in any adverse impact on tourism; indeed, in some cases the impacts may be positive.
- Whilst impacts vary from stakeholder to stakeholder, findings from the literature also indicate that the overall impact of OWFs on tourism appear relatively benign, and in some cases positive.
- The focus of research studies is on the perceived impacts of operational OWFs, with much less on the construction stage and on hard evidence of actual impacts.
- It is important to identify key tourism and recreation user and provider stakeholder groups, who may have differing and sometimes conflicting perceived and actual impacts of OWF developments.

- Early engagement and planning to both mitigate negative impacts on tourism and enhance positive potential impacts is important, and can be part of a planning and assessment approach, possibly via Marine Spatial Planning, and inclusion of Tourism Impacts Assessment as part of an EIA/SEA process.
- In some cases, OWFs may be a tourism attractant by virtue of their modern, innovative and novelty factors, and have a positive impact on tourism.
- OWF-led tourism can provide a niche market for an area to stand out in the competitive tourism market. However, this requires significant commitment in terms of personnel, finance, networking and partnerships, especially between the OWF developer and local authorities/agencies
- There are several examples of attempts to use initiatives to promote the virtues of OWFs, including Visitor Centres, viewing platforms and boat trips, although hard evidence on effectiveness of impacts is limited.
- There may be potential for enhancement initiatives which link OWF promotions with other activities, including nature based tourism.
- The literature on the impact on tourism and recreation of near- distance of OWFs from the coast is mixed; however, *w*ith relative consistency, researchers find that stakeholder concerns about visual impacts of offshore wind farms decrease as distances of the wind farm from shore are increased.
- Community Benefit Schemes, now associated with many OWFs, provide the potential to support local tourism and especially recreation facilities, with a focus on sustainability initiatives.

2.7.2 Some current research issues and gaps

- There is little research on the differences, if any, between impacts of OWF projects on tourism and recreation activities.
- There is little research on variations in tourism impacts between the construction and O&M stages of the OWF project life.
- There are not many examples of actual hard evidence of the impacts of OWFs on tourism and recreation (eg. quantitative evidence on changes in tourism in an area with a coastal OWF, measured for example by changes in number of visitors, and tourism employment, relative to local/regional trends).
- There seems to be little research on the differential impacts of OWFs on the various key tourism and recreation user and provider stakeholder groups, including for example different tourist categories (eg day/overnight, age, socio-demographic background).
- Visitor perceptions of the impacts of OWFs, both generally and for particular locations, may change overtime, with for example the innovative attraction waning; as such, monitoring over time is important.
- As OWFs become larger and more distant, the perception by visitors, negative and positive, may decline.
- The potential costs and especially benefit opportunities to tourism for depressed areas appear under-researched.
- Research is needed on the predicted tourism impacts of OWFs, and associated mitigation and enhancement approaches, contained in OWF project Environmental Statements (ESs).
- There appears to be little research on types of beneficial impacts of OWFs on tourism, and types of enhancement measures and their effectiveness, and on their effectiveness across countries, including UK, EU states and others internationally.

3. Tourism impacts of offshore wind farms – ES and practice review

3.1 Approach -- scope of review and sources

Under the EU EIA Directive (EU 2014), implemented by various national regulations, it is mandatory to carry out Environmental Impact Assessments (EIAs) for large offshore wind farms (for example with a generation capacity of at least 50MW in the UK). Such assessments are set out in Environmental Statements (ES). This section of the report examines the coverage of tourism and recreation impacts, and any associated mitigation and enhancement measures, in the ESs for major offshore wind farm developments in the UK and in a number of EU states.

The UK study reviewed 62 projects, including several extensions to earlier projects. Of these 37 have been commissioned and are operational. The earliest operational station studied dates back to 2000; in general, the developments up to 2010 are quite small at less than 100 MW. There is then a major growth in the number and MW size of the projects; Hornsea 1 at 1200MW, which became operational in 2020, is currently the largest UK operational OWF. Many other projects are in the construction and/or planning and assessment stages, and some of these will be in the 1000-2000MW size. ESs were sourced for most of the projects, although for some it was only the Non-Technical Summary (NTS) that could be located and for some the ES could not be found (see Appendix 2 for details of sources).

The EU study reviewed 43 projects in eight Member States – Netherlands, Belgium, Denmark, Germany, Finland, Sweden, France and Ireland. The largest number of projects were for the first four countries in this list. Thirty of the projects are operational. Many date from the early 2000s, especially in Denmark, and are quite small at well below 100MW, compared with subsequent later and larger projects, for example in Germany and the Netherlands. ESs were located for about half of the projects.

The projects were divided by distance from the coast into four categories: 1--<19km offshore (turbines considered a major-focus); 2 -- 20 to 40km (turbines noticeable to casual observer); 3--40 to 60km (turbines visible with extended or concentrated viewing); and 4-->60km (turbines not visible). The review of the ESs sought to identify any coverage of tourism impacts (negative/positive), the assessment of significance of identified impacts, and mitigation and enhancement measures. The latter includes, for example, the presence of a visitor centre, and various entrepreneurial enterprises such as boat trip businesses. There is also the growing use of community benefits funding for local tourism and recreation initiatives; and this is considered separately. The research compares UK and EU Member States EIA/ES practice, and draws out overall conclusions on, for example, prediction methodology, mitigation and enhancement measures, and gaps in research.

3.2 Nature of tourism and recreation impacts predicted in ESs

3.2.1 UK OWF project ESs

Balance, significance and types of impact findings

The review of ESs identified tourism as an important impact topic in almost all the reviewed UK ESs; although interestingly there was some scoping out as a topic of concern for a small number of recent Scottish based ESs -- Inch Cape and Neart Na Gaoithe (see below):

***Effects scoped out** – on the basis of the desk – based and survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic areas have been 'scoped out':*

- *potential effects on formal recreational activities during construction, operation and decommissioning;*

- *potential direct effects on recreational amenity, public access and tourism during operation; and*
- *all potential cumulative effects during operation (Neart na Gaoithe ES, GoBE Consultants 2015)*

Tourism is typically addressed along with socio-economic factors, with visual impact at the forefront. For example, the East Anglia 2 ES (SPR 2019) states "*During the offshore windfarm's operation, the potential effect is driven mainly by the visual change to the seascape"*. The ESs largely predict there to be no impact or minor/negligible impact concerning both tourism and recreation, although there are a few examples of predicted positive impacts. The majority of ESs separate impacts by project stage and onshore and/or offshore impacts are considered; again, there is little variation in the nature of predicted impacts. The table below sets out some examples of impact predictions:

Table 3.1: Some summary examples of UK OWF ES predicted tourism and recreation impacts

OWF	Summary comments
Beatrice	The effect on tourism is defined largely by the findings of other assessments, such as the seascape, landscape and visual assessments. Significance of impact considered minor.
Aberdeen	The ES assessed the impacts on tourism, for example from the visual effects on the landscape and seascape potentially to deter tourist visits, and the effects on local coastal recreation activities, as of negligible significance.
Hywind	Economic impacts specifically for new boat tour operations are considered positive, although their magnitude is considered to be of minor impact and overall not significant. Impacts on existing tourism and recreational businesses during construction and installation is likely to be a combination of both positive (related to increase local spend) and negative (due to short-term local disruption around onshore construction works). Both impacts are likely to be minor and not significant. During operation, the impacts from loss of scenic visual quality predicted as not significant. Overall, the ES assessed impacts on key tourism attractions and recreation activities as of negligible significance for both the construction and O&M stages.
Kincardine	The development expected to have a negligible impact on tourism and recreation in the local area. The distance of the development from the shore and very limited onshore development element means there is no impact on existing tourism and recreation uses and users in the local area.
Inch Cape	No impact: consideration of the potential for tourism and recreation visual effects during the construction (and decommissioning) phase and the O&M phase scoped out of the assessment. This is after agreement by MSLOT in their Scoping Opinion that it is not required subject to confirmation that the Scottish Marine Recreation and Tourism Survey published in 2015 and strategic framework for Scotland's Marine Tourism Sector is consulted to confirm the results do not result in a material change in the socio-economic activity.
Westermost Rough	The assessment concluded that during the operational stage of the wind farm, the visual effects will be limited by the elevated coastal edge of the Holderness Peninsula and the Humber Estuary and impact will be no more than moderate for users of the coastal areas.
Hornsea 1	Negligible adverse. Overall, the evidence suggests that offshore wind farm developments generate no or a very limited negative impact to offshore tourist and recreational users during the construction and O&M phases.
Dogger Bank Creyke Beck	No or minor adverse impact. May be moderate adverse associated with onshore recreation receptors of high sensitivity – e.g NCN Route 1.
Greater Gabbard	Due to its position offshore, the wind farm is unlikely to produce any significant impacts, positive or negative, on the Suffolk coast. Anecdotal evidence suggests that wind farms enhance local generic attractions by providing 'more to see' in the vicinity. However, local feeling in Aldeburgh, as stated in a public exhibition questionnaire, indicated that the town

	already had too many tourists. No respondents to this survey felt that the wind farm would discourage day-trippers and tourists visiting the area.
London Array	Very unclear, however, the NTS states that ' Visual impacts arising on these marine based receptors would generally be negligible/slight to moderate'.
Kentish Flats Extension	The impact on tourism and recreation because of the construction of Kentish Flats Extension anticipated as of minor adverse. Operational project - overall the impact considered to be of negligible significance. .
Rampion	Construction -- moderate impact from temporary beach closure. Offshore anticipated that the impact on tourism will be minimal with implementation of relevant mitigation measures. Operational - introduction of the wind farm 13km out to sea is unlikely to have a serious impact on those elements of the rural experience.
Ormonde	Appears to be neutral to positive about impacts. The existence of the wind farm may generate a new business of offering small boat trips for tourists or sports anglers to visit the wind turbines nearby, thus increasing local revenue.

Sources: See Appendix 2.

The assessment practice is largely desk based with research utilising baseline data, pre-existing research studies relating to perceived impacts on tourism, and consulting with local partners. There were some examples of new surveys investigating public attitude at some locations, for example, for North Hoyle and Gwynt-y-Mor OWFs off the N. Wales coast. There was some recognition that there is limited up to date information regarding impacts on tourism associated with offshore windfarms, for example:

- Burbo Bank Extension ES – "*In relation to the assessment of visual and noise impacts on coastal tourism, there is a limited body of evidence relating to the extent to which offshore wind farms impact upon tourism".*
- Rampion – "*The impact on marine tourism should be considered. At present, there is no publicly available data showing the volume or value of visitors using such services. These broadly break down into private yachting and motorboat use from the marinas along the coast; sailing training, flotilla holidays and charter services; diving, wildlife watching and fishing trips".*
- Galloper 2011 ES states – *"Tourism data for specific areas within the East of England has been taken from the GB Tourism Survey; however, area data is only available up to 2004 and with average values for tourist visits provided between 2006 and 2009. Regional data comparing the East of England to other regions is available up to 2006 (again taken from the GB Tourism Survey), but only an average value between 2006 and 2009 is provided".*

3.2.2 EU Member States OWF project ESs

Balance, significance and types of impact findings

The coverage of tourism and recreation impacts in the EU Member States ESs is more difficult to identify, partly because of translation issues, and/or unavailability of documents. Whilst ES coverage of tourism and recreation is sporadic, in general tourism and recreation are important considerations where evidence is available. This may partly be a function of the near coastal location of many projects. Most of the Dutch, Belgium and Danish projects are in the first two distance categories [i.e (1) <19km offshore (turbines considered a major-focus); and (2) 20 to 40km offshore (turbines noticeable to casual observer)]. In contrast, some of the more recent German projects are further offshore, and tourism and recreation impacts are regarded as of less significance. Where there is coverage of tourism and recreation, impact findings are similar to those in the UK; that is, on balance largely benign and of low significance, although there is

somewhat more coverage of potential tourism and recreation opportunities. Table 3.2 provides two examples from the Netherlands and Denmark.

Table 3.2: Some summary examples of EU ES predicted tourism and recreation impacts

OWF	Summary comments
Friesland, Netherlands	Coverage of tourism and recreation included sailing, recreation on the water (beaches), swimming, windsurfing and kitesurfing. Impacts on tourism and recreation were addressed comprehensively in a study conducted by the European Tourism Futures Institute (ETFI). They examined the already documented experience concerning the relationship between tourism and wind turbines. Research concluded that a negative economic impact through the introduction of a wind farm is not expected, but cannot with certainty, be completely ruled out. There were also opportunities for positive impact on tourism and / or the opportunity to give a positive impetus to tourism.
Horns Rev 1,2,3 Denmark	The Horns Rev 3 project as a whole is seen as having only a negligible effect, and presumably will not harm the positive nature of tourism and the possibility of using the recreational areas in the region. This expectation draws partly on the experience of Horns Rev 1 and Horns Rev 2. There is no reason to anticipate adverse socio-economic effects of Horns Rev 3 offshore wind farm in relation to offshore recreational activities. Instead, there is the opportunity for Horns Rev 3 to build further on the successful local tourism initiatives already launched in connection with the Horns Rev 1 and Horns Rev 2 projects.

Sources: EU (2018, 2019); Stiftung Offshore Windenergie (2016).

3.3 Mitigation and enhancement responses

3.3.1 UK responses

About two thirds of the ESs had some coverage of mitigation and/or enhancement measures in relation to predicted tourism and/or recreation impacts. The ESs included a number of *mitigation measures*, with many related to the possible onshore construction impacts on tourism and recreation. These included for example:

- temporary redirection of Public Rights of Way (PRoWs);
- timing of construction out of season;
- communication re construction times with caravan parks, chalet sites etc;
- careful planning of cable routes to avoid key recreation and tourism sites;
- landscaping to make onshore substation more discrete; and
- some impact monitoring requirements.

In terms of *enhancement measures,* to date there are very few examples of visitor centres associated with offshore wind farms. Those identified include Sheringham Shoal, Lincolnshire, Scroby Sands and Rampion. The Community Fund at least in part funded Rampion visitor centre. Details of the successful Whitelee onshore windfarm visitor centre are included in the previous literature review. Not all visitor centre ventures survive. For example EcoCentre, (Swaffham, Norfolk) that turned into GreenBritain, had a 'not for profit' set up, but closed down in 2019 stating '*unable to break even.'* There is evidence of pre-existing boat tours incorporating offshore wind farms into their routes for the Aberdeen, Scroby Sands, Thanet and Rampion OWFs. Overall, it would appear that the tourism ventures that survive provide a service paid for by the public (e.g. boat tour) or, are financially supported/owned by the OWF operator.

Table 3.3: Some summary examples of UK ES mitigation and enhancements measures

OWF	Summary comments
Aberdeen	Aberdeen Harbour tours running a 1.0 hr cruise out to Aberdeen Windfarm getting you close up to the World's most powerful Wind Turbines in Aberdeen Bay. Adults £40, Children Under 14 £20 http://www.greenhowemarineservices.co.uk/aberdeen-harbour-tours/
Kincardine	As a pioneering floating OWF, likely to generate interest and a requirement to undertake offshore visits to the development area during the lifetime of the project. This additional tourism will generate revenue for the local area through a number of methods: • Transport and accommodation with the local area • Additional people visiting the Aberdeen City area • Placing Aberdeen on the world map for offshore renewables • Vessel hire and support • Tourist centre
Neart Na Gaoithe	Potential mitigation measures for visual effects are limited to the design of the onshore works, which has been considered in such a way as to relate to the surrounding landscape and minimise the effect on landscape and visual amenity where possible.
Dogger Bank Creyke Beck	Liaison with the PRoW Officer. Good communication with local community will be undertaken to inform of any changes to the pedestrian arrangements at any PRoWs, to avoid inconvenience. All features of the PRoWs affected will be reinstated immediately following construction phase.
Lincolnshire	OWF developer made substantial financial contribution to the redevelopment of a visitor centre of Gibraltar Point National Nature Reserve, which attracts 180.000 visitors annually and helped to boost tourist numbers in the area. In addition to the redevelopment of the centre, the developer also invested in particular projects of the centre, sponsored several local initiatives in Skegness and funded the installation of the heating and hot water system of the community centre in Winthorpe.
Sheringham Shoal	Onshore cable laying operation will be constructed outside the main tourist season. During the construction stage there will be an exhibition for educational purposes (e.g. near a nice viewpoint) that will attract attention from tourists as well as from local residents. It is anticipated that this will have a beneficial effect.
Triton Knoll	ES states none, but nearby caravan parks, chalet sites etc will be informed of construction activities that may affect their usual operations and activities, such as access, opening hours, and planned events. All PRoW will be kept open or diverted.
Scroby Sands	See Box 2.1.
East Anglia 1	Visual impact of substation reduced by mitigation planting that would mature and the substation would become largely enclosed by a combination of existing and mitigation planting.
Norfolk Vanguard	Onshore cable route and onshore infrastructure to be a minimum 1km from tourism and recreation assets in Norfolk, following Code of Construction Practice (CoCP).
Galloper	Where access is required across the beach / dune habitats temporary gridded matting, or similar, will be placed along all such access routes to minimise disturbance from vehicles. Areas temporarily affected by works will be restored to at least their original condition through planting, smoothing of tracks, and/or natural regeneration.
Thanet	Embedded mitigation includes keeping PRoW and promoted trails and footpaths open where practicable and reinstating disturbed PRoW following construction activities. A number of companies provide boat trips out to the windfarms for people interested in seeing them. Horizon Sea Safaris from Ramsgate Harbour operates a trip to see London Array, at the time the largest windfarm in the world, which is just 12 miles from North Foreland. For more information, visit www.horizonseasafaris.com or call 07931 744788.

London Array	Temporary safety zones during construction will be marked by navigation buoys and there will be marked channels for recreational craft.
Kentish Flats Extension	Local charter skippers, angling clubs and boat clubs will be informed of the construction activities through the release of Notice to Mariners that will help mitigate any significant impacts on tourism and recreation. Direct contact with stakeholders will be made throughout the lifetime of the development in order to minimise conflicts. .
Gunfleet Sands	No mitigation measures are required. Tendring District Council undertakes regular monitoring of the local economy; close co-operation should be maintained to monitor any effect of the wind farm, for employment, tourism and leisure activities.
Rampion	The permanent PRoW diversion arrangements to be agreed with West Sussex County Council. During the detailed design and construction phases of the Project, Eon will ensure that regular contact and consultation with all parties potentially affected by the project is maintained including local authority tourism departments and the local community. There is also scope to link the visitor economy for other major tourist attractions, such as the proposed i360 observation tower, with the wind farm proposals. Rampion Catamaran Boat tour cost £30-40 per person; positive reviews on Trip Advisor and shows high take-up. The Visitor Centre is free to enter and forms part of the £4mn Rampion Community Fund, voluntarily created for the Sussex community.
Gwynt y Mor	Minimisation of the active offshore construction area as much as possible, minimisation of the area of beach used for cable installation and a system to ensure effective liaison with the relevant authorities and user groups.
Walney	Regular consultation with relevant local authorities and departments to enhance mitigation and monitor tourism activities/businesses.

Sources: See Appendix 2.

3.3.2 EU Member States responses

The literature review (section 2.5) covers various approaches to mitigation and enhancement responses to project impacts on tourism and recreation. These studies include in particular: the EU/South Baltic 2016 report, with a focus on '*Bringing together tourism and offshore wind energy',* which emphasises various protection and promotion measures, as set out again below:

- Importance of engagement strategy to get locals on board at an early stage;
- use of communication technology/websites;
- encourage green tourism;
- provide boat tours; also maybe sightseeing flights in some locations (more distant OWFs);
- open the OWF site to local recreational sailors to sail within (very popular);
- provide permanent 'World of Wind' exhibition centre (importance of location) ;
- use of harbour boat based exhibition centre; and
- link with other activities (e.g including nature tourism; also industrial tourism–with linked visits to wind farm manufacturers; also potential linking onshore and offshore wind farm tours in some locations)

There is also the important European MSP Platform approach (2018) with a process emphasis, strongly advocating Marine Spatial Planning (MSP) to minimise conflicts between key stakeholders and maximise benefits from OWF developments, with an eight-step solutions approach. Whilst these provide good guidance, much based on actual practice, the review of EU ESs indicates that such practice is limited, and measures may have a short life. Current information on mitigation and enhancement proposals and practice is limited, but the two examples in Table 3.4 provide some fascinating practice from Denmark and Germany.

Table 3.4: Two fuller examples of EU ES mitigation and enhancements measures

OWF	Some local initiatives and stakeholder comments
Nysted (Denmark)	https://www.visitlolland-falster.com/tourist/plan-your-holiday/world-winds-gdk615719 Permanent exhibition' The World of Wind" (in Nysted Harbour adjacent the Tourist Centre). Free to enter and open all year around; it was originally for local residents but later considered an attraction /interest for tourists visiting Nysted Harbour. No formal figures but estimates of 20-25 people on a 'normal day' c4 000 a year including school visits. Harbour master and mayor state there are more boats in the harbour as the turbines provided a focus. Previously, organised boat trips departed from Nysted to the wind turbines, but this activity was discontinued when the Nysted tourist office closed, but reopened in 2018 https://www.visitlolland-falster.com/tourist/plan-your-holiday/info-cafe-nysted-gdk615697 Safari boat tours combing seal watching and visiting the windfarm. "*We have seen a huge demand on our safari tours that combine seal safari with a visit to the offshore wind turbines. During summer, we have two departures every day which are fully booked*," said Anne Marie Larsen, the owner of the holiday resort in Nysted. The harbour master Sven Erik Hauberg, who is engaged in running the local information and activity centre "The world of wind" in Nysted, said he sees only positive effects of installing offshore wind turbines. *"On safari trips to the Rødsand 1, a boat can enter between the turbines and that is something that really impresses tourists. Also, our wind museum is well attended by both school groups and various bus tours, and we also get some foreign visitors, especially from Asian countries,"* Hauberg said. Offshore wind safari https://www.offshorewind.biz/2016/11/17/offshore-wind-turbines-part-of-danish-touristic-offer/ article linked with Danish Wind Industry Association DIWA Head of tourism in Lolland Municipality, Marie Louise Friderichsen, said "*We are visited by many foreign delegations that are interested in seeing our green solutions, including offshore wind farms. Therefore, we have experienced a boost in what might be called business tourism as a result of our overall climate efforts. Moreover, we can disprove that setting up the wind turbines has had any negative effects on tourism, which generally continues to grow."*
Bremerhaven, Germany	The "Tour de Wind" Bremerhaven highlights the potential for industrial areas/cities with manufacturing capacities related to offshore wind energy to exploit the attractiveness of this new industry. In addition, the development of the Offshore Wind Energy exhibition demonstrates vividly how to combine such an exhibition with an existing tourist attraction and hereby benefit from synergy effects. The "Tour de Wind" is a guided bus excursion offered by the Bremerhaven Economic Development Company, which takes in 20 halts through Bremerhaven. The tour focuses on providing information on offshore wind energy and its entire supply chain. Parts of the tour are, for example, the offshore security-training centre, the wind house and the offshore heliport. Another station is the College of Applied Sciences in Bremerhaven, which offers a Masters' Degree programme in Wind Energy Technology. The aim of the exhibition is to present the offshore base Bremerhaven to the public and tourists, and to industry experts. It is also an events venue and location for meetings etc.

Sources: EU (2018, 2019); Stiftung Offshore Windenergie (2016).

3.4. The use of Community Benefits initiatives

3.4.1 UK initiatives

There has been a significant growth in the use of community benefits initiatives in the recent development of UK offshore wind farms, and some of these have implications for local tourism and recreation.

"Developers provide community benefits normally voluntarily, and additionally, outside of the planning and licensing process for major projects. They are not mitigation measures to manage adverse project impacts, nor are they enhancement measures for increasing positive project impacts, for example for local employment and supply chain benefits — important though those measures are. As such, they are not material considerations in the project decision-making process (Walter, 2012). Developers provide community benefits to communities associated with a development, increasingly in the form of a monetary annual payment, often referred to as a community benefits fund. The community can access this fund for a wide range of local community socio-economic and environmental initiatives. Developers may also provide

some community benefits that are for particular projects, which may be more site specific. In total, community benefits usually come together in a community benefits package, incorporated in a community benefits agreement" (Glasson 2021).

Two thirds of UK operational or under construction OWF projects since 2010 have established annual community benefits funding (Glasson 2021). In its report, *Offshore Wind Operational Report*, the Crown Estate (2019), which manages the seabed for England, Wales and Northern Ireland, noted that "*community benefits schemes are now well established and an integral part of offshore wind energy development-signifying the positive relationships being built between operators and the local communities within which they operate".* The Crown Estate estimated the annual value of the benefits spending at c£3m in 2018.

Our research on community benefits and tourism and recreation initiatives found that approximately half of all UK OWFs since 2000 have included such initiatives to varying degrees. Many of the other half are at too early a stage of development to have such initiatives. Table 3.5 provides a summary of the initiatives by OWF. The rough grading score in this table indicates the researchers' assessment of the relative significance of tourism and recreation projects in the array of community benefits projects to date for the particular OWFs (1 = small level of support found up to 4 = high level of support). A few cases are set out in more detail in Table 3.6 to provide a flavour of the variety of community benefits approaches and possibilities.

Table 3.5: Summary of inclusion of OWF tourism and recreation community benefits initiatives

OWF	Summary comments	Rough grading of input into tourism and recreation
Beatrice	Significant donations to ventures supporting tourism, heritage, culture and arts. Recognition of tourism in their funding allocation.	4
Aberdeen	Very few tourism/recreation ventures funded.	1
Teesside	Limited information found; however funding went towards a festival and a new coastal watchtower.	1
Humber Gateway	Evidence of some significant projects being supported that may impact on tourism and recreation.	3
Westermost Rough	Significant investment in to amphitheatre style seating on the Central Promenade.	3
Hornsea 1, and Race Bank	East Coast Fund supported a number of tourism/ recreation related projects.	3
Sheringham Shoal	Museum exhibition and range of small grants that contribute towards tourism.	3
Lincolnshire, Dowsing	The developer of the Lincolnshire OWF and the two adjacent offshore wind farms of Lynn and Inner Dowsing, made a substantial financial contribution to the redevelopment of a visitor centre of Gibraltar Point National Nature Reserve, which attracts 180.000 visitors annually and helped to boost tourist numbers in the area.	3
Triton Knoll	Early days but some of the Construction Fund went towards tourism/recreation initiatives.	2
Scroby Sands	Prominent visitor centre and sponsorship of a firework display and festival.	4
Galloper	Supports a number of tourism/ recreation related projects.	3
Thanet	Support to coastal renovation/bike race.	2

London Array	Significant donation towards a nature conservation trust and sponsorship of a regatta.	3
Kentish Flats Extension	Funds supported Herne bay Pier trust and Herne Bay Coastal Community Team in their work to develop Herne bay as a Tourist destination and Whitstable, Nature's Gym.	4
Rampion	Visitor centre and support for many tourism/recreation ventures.	4
Burbo Bank	Supports a number of tourism/ recreation related projects.	3
Gwynt y Mor	Gwynt y Môr Offshore Wind Farm Tourism Fund, plus Community Fund with additional grants.	4+
Rhyl Flats	A few indirect tourism and direct recreation related ventures.	2
North Hoyle	Unable to find much detail on line but evidence of some funding towards recreation.	1
Ormonde	Sponsored bike races, golf clubs in Barrow and Furness area.	2
Walney	Supports a number of tourism/ recreation related projects	3
Robin Rigg	Supports a number of tourism/ recreation related projects.	3

Table 3.6: More detailed examples of community benefits approaches and possibilities

OWF	Tourism and recreation community benefits initiatives – project examples
Beatrice	The Beatrice Partnership Fund (BPF) includes provision for a category of support for tourism, culture heritage and the arts. Two examples of such projects include: • £40,000 awarded in March 2017 to Covesea Lighthouse Community Company. After purchasing the Covesea Skerries Lighthouse in Lossiemouth in 2012, the Covesea Lighthouse Community Company has developed an ambitious project to protect the heritage of the site. It will provide a quality educational and heritage experience attracting 4,500 visitors each year. • £29,918 awarded to Garbh Allt Community Initiative to purchase four crofting townships near Helmsdale and develop tourist opportunities on the land.
Hornsea and Race Bank	• King's Lynn Norfolk Boat Trust, The restoration and re-launch of the 1900 fishing boat Baden Powell – £14,451 • Withernsea Town Council, Withernsea promenade & slipway lighting – £5,000 • Withernsea Pier and Promenade Association Ltd, the Withernsea pier viewing platform – £38,618 • Anderby Parish Council, Anderby Creek disabled beach access improvements – £17,000 • Spurn Bird Observatory Trust Ltd, Easington little tern protection scheme – £22,880 Sussex Pavilion Community Group C.I.O., Sussex pavilion disabled toilet provision – £18,072 • We'll Meet Again Museum C.I.O., Avro Lancaster virtual reality experience – £12,200 • Grimsby in Bloom, garden cafe – £5,000
Sheringham Shoal	• Museum Of The Broads, to contribute to the cost of a new, all-weather, accessible electric trip boat. • North Walsham Town Council, to contribute to the cost of electricity generating exercise equipment at the Memorial Park as part of a wider outside gym facility. • Hawk and Owl Trust, to install air source heating, electric vehicle charging points and an off-grid solar PV system • The Norfolk Charitable Trust, to provide powerboat for disabled people to access to the north Norfolk marine environment • Cromer Town Council, to purchase equipment to enable regular beach litter picks to take place. • Wells Harbour Maritime Trust, for Installation of a 'Gilly Station' on Wells Quay • Sheringham Museum Trust, to replace halogen and metal halide spotlights with LED lights • Wells Maltings Trust, funding towards the costs of architects design fees.

Burbo Bank Extension	• Wirral Metropolitan Borough Council, New Brighton's Mermaid Trail – £10,935 Tourist Attraction Visit New Brighton Visit New Brighton - New Brighton Attractions & Activities - New Brighton Mermaid Trail • The Wildlife Trust for Lancashire, Manchester and North Merseyside, Our Precious Resources – £20,000 • The Rhyl Little Theatre, Fly-Tower Roof Repair – £4,947 • Pirates at Art, The Black Pearl New Brighton – £500 The Black Pearl New Brighton - 2021 All You Need to Know Before You Go (with Photos) - New Brighton, England | Tripadvisor • Wirhalh Skip Felagr, The Winds of Time – A Viking boat for Wirral – £22,000 Wirhalh Skip Felagr (wirralvikings.org.uk) • Vale of Clwyd Angling Club, Riverside Maintenance and Improvements for River Elwy St Asaph – £1,795 • North Wales Little Tern Group, Volunteer and Visitor Reception Hut – £1,140 • Friends of Hilbre Island, Interpretation Plan – £5,000 • The Docklands Trail, Collingwood – £18,338 New Docklands Trail brings Liverpool's shipping history to life (explore-liverpool.com) • All Afloat, Sailability Rhyl Marine Lake – £15,376 • Friends of Waterloo Seafront Gardens, Wheeled Wagon – £2,500 • The Gateway Collective, Bootle, Making North Park Community Garden Disability Friendly – £11,475 • North Wales Wildlife Trust, Boosting Big Pool Wood – For People and Wildlife Alike – £11,434
Gwynt-y-Mor (GyM)	The North Wales GyM project provides an excellent example of Community Benefits funding for local area tourism and recreation projects, via the main Community Fund (£19m over the lifetime of the project), and a specific GyM OWF Tourism Fund of £690,000 delivered during the construction of the project (Gwynt y Môr Fund (rwe.com)) The Community Fund is helping coastal communities of Conwy, Denbighshire and Flintshire. Consultation with the public in 2013 showed that 49% of respondents supported *'regeneration of tourism areas and tourism infrastructure'* Consultation_on_fund.pdf (cvsc.org.uk). The Community Fund has supported well over 60 tourism and recreation projects to date, with over £600,000 of grants, as set out in the list below. The Tourism Fund has: • helped to make major improvements to the Victorian pier at Llandudno so cruise liners such as the Waverly can once again dock in the town; • supported replacement of the slipway onto Llandudno Beach to enable National Championships to be hosted and small lifeboats to be launched; • contributed to the re-development of Rhyl Harbour. GyM also provided practical support, by providing a specialist vessel to help; and kick started with £170,000 the Green Links project Green Links Project to promote walking and cycling opportunities, nature reserves and other attractions between Llandudno and Prestatyn. Find out more about the Green Links project here: www.greenlinks.org.uk Further details of the array of tourism and recreation projects supported in relation to the Gwynt-y-Mor project are set out in Appendix 2.

The detailed studies in Table 3.6 give some indication of the scope of projects, and the level of funding going into these recreation and tourism initiatives. This is a previously hidden and unreported dimension to the impacts of OWFs on local recreation and tourism. It also indicates that local recreation projects are probably at least as significant as tourism projects, although of course there are many overlaps between projects in terms of local and visitor beneficiaries, for example with renovation of piers, provision of coastal trails, festivals etc.

As for the OWF capital/infrastructure investment, the initial funding into these community benefits projects can also generate significant additional/multiplier effects for the communities. The Beatrice OWF project has undertaken a wider analysis of the potential impact of the community benefits funds for that project using a Social Return on Investment (SROI) approach for the

projects that applied to the first round of grant funding from the Beatrice Partnership Fund (BPF) in 2017. "*SROI is a methodology that lets you understand the wider value from investing money. It considers the social, economic and environmental impacts of an investment. Critically, all impacts are valued in monetary terms, enabling a direct comparison between impacts and investment. The approach considers the value created for all stakeholders impacted by an investment, not only the intended beneficiaries"* (BOWL, 2017). The project used a guidance document on the application of the SROI approach to Beatrice, produced by the New Economics Foundation (NEF, 2017). This draws on a Guide to Social Return on Investment produced by central government (Cabinet Office, 2009). Crucial to the approach is the interrogation of stakeholder grant applications to identify anticipated impacts of potential successful applications and the valuation of these impacts over the lifetime of the successful projects. For the first round of the BPF, an estimate was that for every £1 spent by the fund, there would be £3.21 generated in wider value. On this basis, the £6m fund would create almost £20m of social value when fully distributed.

3.4.2 EU initiatives

Community benefits delivered by OWF developers/companies follow the legislation (where present) of the country in which the OWF is being built and is coming ashore. Benefits schemes vary in kind, including benefit funds and/or community share participation in the project, and whether they are mandatory or voluntary. Voluntary schemes, as found in England, Scotland, the Netherlands and the USA, are to date largely flexible according to the circumstances of particular projects. Mandatory schemes, for example, as found in Denmark and Germany, are more rigid, but also more predictable. Both types of schemes have a variety of stakeholder objectives, including being a good neighbour, sharing rewards, supporting community engagement, providing compensation and delivering fair reparations. For example, the major OWF developer Orsted distributes benefits funds grants under its Grantscape scheme on a voluntary basis in the UK, but in Denmark community ownership of an OWF is or has been key, and there have been more mandatory schemes. Legislation varies across the EU, and continues to evolve. This can affect the nature of community benefits, size/location/distribution, which in turn can affect the extent to which local tourism and recreation activities receive support. Some EU states approaches are set out in Table 3.7.

Table 3.7: Examples of some EU States Community Benefits schemes

EU country	Community Benefits scheme (s)
Denmark	Denmark has experimented with, and changed several times, its approach to community benefits. • The Green Scheme seeks to enhance local scenic and recreational values. The Danish Promotion of Renewable Energy Act (2008) introduced a green scheme for the financing of projects that enhance the scenery and recreational opportunities in municipalities. Under the scheme, Energinet.dk pays DKK 0.004 (0.04 pence sterling) per kWh for the first 22,000 full-load hours, for wind turbine projects connected to the grid since 2008. According to the Danish Energy Agency, this could work out at DK 200,000 (£21,325) per turbine depending on their size. Money goes to the given municipality, with the amount depending on the number and size of turbines connected to the grid in that municipality. The green scheme may part or fully finance development works for enhancing scenic or recreational values in the municipality and support municipal cultural and information activities aimed at promoting acceptance of the use of renewable energy sources. However, this legislation has changed four times (twice in 2020), since 2008 when it was introduced. • Any citizen, 18 or over, living within 4.5km of new wind turbines has the option to buy shares in local turbine projects. Priority is for those living closest, however any shares not bought will be offered to permanent residents in the rest of the municipality. The developer must announce the project in the local papers. The shares on offer must equate to at least 20% of the cost of the turbines; a single share is around DKK 3,000-4,000 (£320-£427). Shareholders share the costs, revenues, risk and influence on equal terms with the developer who must hold an information meeting advertised by local newspapers. The

	meeting must include a run through of sales material to give an indication of the nature and financial conditions of the project. Following this meeting, local citizens have four weeks to make a purchase offer. Energinet.dk must approve the sales material as a condition for the wind turbine erector obtaining the subsidy provided for in the Danish Promotion of Renewable Energy Act. This scheme ended in June 2020, primarily due to a lack of uptake of buying shares, and the increasing size of developments. • At the Middelgrunden OWF, private sector companies may take over the groundbreaking, community-owned offshore wind park once its 20-year contract expires in 2021. Local officials say the costs of renovating or replacing the wind park's 20 turbines are simply too great for the co-op that brought it to life two decades ago as the world's first community-owned offshore wind park. Located just two miles off Copenhagen, the wind farm is half-owned by the 10,000 investors of the Middelgrunden Wind Turbine Cooperative and half by the municipal utility.
Germany	• In Germany, the federal state is in charge of the distribution of tax income from offshore renewables. The business tax income from wind farms is usually split between the community within whose borders the wind farm is located (70%) and the community where the headquarters of the developer is situated (30%), which leaves some legal ambiguities to the taxation of offshore wind farms. This is because the offshore space of the EEZ (Exclusive Economic Zone) is not municipalised which constrains the legal activities of coastal communities in this area, and negates their right to levy business taxes. • Since the federal constitution in Germany does not make arrangements for the allocation of income from business trade taxes from the EEZ to particular communities, the coastal federal states of Lower Saxony, Schleswig-Holstein and Mecklenburg-Vorpommern determine how taxes from offshore renewables are raised and distributed within their jurisdictions. Therefore, the allocation of tax revenues is at the discretion of the three coastal federal states, which issue decrees as to how tax revenues are levied and handled. • In one scenario, the small island community of Helgoland would have the biggest deal of tax revenues from the offshore wind industry in the North Sea, as the island is located closest to many wind farm sites in the EEZ; it also accommodates operation and maintenance hubs. However, the authority of levying taxes from offshore renewables in the EEZ have not yet been fully settled and requires a legislative decision which takes the constitutional order of allocating business taxes to communities into account.
Belgium	• To ensure that community energy continues to thrive, Europe's Green New Deal has established a goal of "active consumer participation, individually or through citizen energy communities, in all markets, either by generating, consuming, sharing or selling electricity." To this end, the EU says that residents and community energy co-ops should have equal access to the same incentives, financial supports and advanced technologies as corporations. The Green New Deal also says that the EU and its member states should help clean energy co-ops develop innovative financing schemes, procedures for bidding on wind and solar projects should be simplified for co-ops, and local community benefits should be considered when awarding bids for renewables projects.
France	• France uses a tax system similar to that used in Germany. The public domain concession agreement defines the fees that the concessionaire has to pay to the government for setting up a wind farm on the maritime public domain. For OWFs, these fees have two components: a fixed part, related to the facility's ground surface, and a variable part based on revenue drawn from the wind farm. Under the conditions set out in Decree n° 2008-851 of August 26, 2008, half of the proceeds of this tax go to the municipalities from which the wind farm is visible, and the other half goes to the Departmental Council (Conseil Général) which places it in a local fund for fishing and sailing.
EU	• To ensure that community energy continues to thrive, the EU's Green New Deal has established a goal of "active consumer participation, individually or through citizen energy communities, in all markets, either by generating, consuming, sharing or selling electricity." To this end, the EU says that residents and community energy co-ops should have equal access to the same incentives, financial supports and advanced technologies as corporations. The Green New Deal also says that the EU and its member states should help clean energy co-ops develop innovative financing schemes, procedures for bidding on wind and solar projects should be simplified for co-ops, and local community benefits should be considered when awarding bids for renewables projects.

Sources*:* Northern Ireland Assembly (2014); ClimateXchange (2014, 2015); EU (2021).

3.5. Some conclusions

3.5.1 Nature of tourism and recreation impacts in ESs

- Tourism is an important impact topic in almost all of the UK ESs reviewed. It is usually included with socio-economic factors, with visual impact at the forefront.
- The UK ESs largely predict no impact or minor/negligible impact concerning both tourism and recreation, although there are a few examples of predicted positive impacts. The majority of ESs separate impacts by project stage and onshore and/or offshore impacts are considered; again, there is little variation in the nature of predicted impacts.
- Assessment in UK ESs is largely desk based with research utilising baseline data, pre-existing research studies relating to perceived impacts on tourism, and consulting with local partners. There was some recognition that there is limited up to date information regarding impacts on tourism associated with OWFs.
- Coverage of tourism and recreation in EU States' ESs is sporadic, yet important where evidence is available. This may partly be a function of the near coastal location of many projects.
- Where there is coverage of tourism and recreation In EU States' ESs, impact findings are similar to those in the UK; that is, on balance largely benign and of low significance, although there is somewhat more coverage of potential tourism and recreation opportunities.

3.5.2 Mitigation and enhancement responses in ESs and practice

- About two thirds of the reviewed UK ESs had some coverage of mitigation and/or enhancement measures in relation to predicted tourism and /or recreation impacts.
- Most UK mitigation measures related to the possible onshore construction impacts on tourism and recreation, including for example: temporary redirection of Public Rights of Way (PRoWs); careful planning of cable routes to avoid key recreation and tourism sites; landscaping of onshore substations; and some impact monitoring requirements.
- For UK project enhancement measures*,* there are only a few examples of visitor centres associated with OWFs; those identified include Sheringham Shoal, Lincolnshire, Scroby Sands and Rampion. There is evidence of some pre-existing boat tours incorporating offshore wind farms into their routes for the Aberdeen, Scroby Sands, Thanet and Rampion OWFs. Not all ventures survive; overall, it appears that those that do provide a service paid for by the public (e.g. boat tour) or are financially supported or owned by the OWF operator (e.g. visitor centre). There are some examples of measures linking with other tourism attractions (e.g. museums) and a few examples of monitoring of tourism provisions.
- The review of EU ESs indicates limited provision of enhancement and mitigation measures. There are some good examples, as covered in the EU/South Baltic 2016 report, with a focus on '*Bringing together tourism and offshore wind energy',* which emphasises various protection and promotion measures. These include engagement strategies to get locals on board at an early stage, green tourism, boat tours and links with other activities (e.g including nature tourism, and industrial tourism–with linked visits to OWF supply chain locations). However, initiatives may have a short life if not economically viable.
- The European MSP (Marine Spatial Planning) approach strongly advocates using MSPs to minimise conflicts between key stakeholders and maximise benefits from OWF developments (see Table 2.9 of literature review section). An important element of an MSP is a Tourist Impact Statement (TIS) by the developer on the likely impacts of the development on the local tourist industry. TISs also set out the methods to minimise any costs on local tourism and maximise any benefits).

3.5.3 The use of Community Benefits initiatives

The research shows that, certainly for UK OWFs, the use of Community Benefits initiatives is a previously hidden and unreported dimension to the impacts of OWFs on local recreation and tourism. Our research on community benefits and tourism and recreation initiatives found that

approximately half of all UK OWFs since 2000 have included such initiatives to varying degrees. Many of the other half are at too early a stage of development to have such initiatives. Such funding can be locally significant, especially when the additional/multiplier effects for the communities are included.

- UK OWF Community Benefits initiatives are probably at least as significant for local recreation as for tourism projects, although of course there are many overlaps between projects in terms of local and visitor beneficiaries, for example with renovation of piers, provision of coastal trails, festivals etc. There has been support for a vast range of projects in the UK by such funds. These usually come from funding initiatives which have much wider scope than just tourism and recreation, but occasionally there is a specific tourism fund, very well exemplified by that for the Gwynt-y-Mor OWF in North Wales.
- Community benefits delivered by OWF developers/companies follow the legislation (where present) of the country in which the OWF is being built and is coming ashore. Benefits schemes vary in kind, including benefit funds and/or community share participation in the project, and whether they are mandatory or voluntary. Our research on such schemes in the EU Member States shows a range of approach.
- On the continent, Denmark has been a pioneer of both benefit funds and community share participation in the project. The Danish Green Scheme may part or fully finance development works for enhancing scenic or recreational values in the OWF related municipality and support municipal cultural and information activities aimed at promoting acceptance of the use of renewable energy, via a mandatory fixed payment to the local municipality based on per Kwh generated.
- There are also schemes in Denmark and other EU states where the developer must offer shares in the project to the local community; in Denmark the offer must equate to at least 20% of the cost of the turbines. Shareholders share the costs, revenues, risk and influence on equal terms with the developer. However, in recent years there has been some waning of such schemes primarily due to a lack of uptake of buying shares, and the increasing size of developments.

3.5.4 Some summary points and gaps in research

Whilst there is a drive towards much larger OWFs located much further out to sea in the UK and EU, plus new technology such as floating OWFs, developers continue to fund onshore/coastal enhancement and community benefits initiatives.

- Distance, or how much visual impact there is from the shore, seems of greater importance than OWF MW size.
- There is little or no ES content on the differences, if any, between impacts of OWF projects on tourism and recreation activities.
- There appears to be little or no ES content on the potential differential impacts of OWFs on the various tourism and recreation user and provider stakeholder groups.
- The link between a specific OWF and local impacts may not be clear. Whilst there are smaller (MW) windfarms nearer the coast, these are now rarely solo ventures as additional phases or extensions tend to be in the pipeline, and there may be larger OWFs further out at sea.
- Starting points for tourist and recreation initiatives vary. Mitigation measures may be most useful during the disruptive construction stage; Gwynt-y-Mor for example initiated their tourism fund during OWF construction.
- Whilst there is some general coverage, there is typically little detail on cumulative impacts.
- Much tourism impacts data in ESs is dated and does not draw on monitoring of actual impacts. The coverage of monitoring of tourism and recreation impacts in the ESs reviewed is thin.
- Overall, the growing community benefits initiatives may be at least as significant for local communities as any direct enhancement measures associated with the OWF (e.g. visitor centres and boat tours). There is also the major under-researched issue of to what extent OWFs can be an additional generic attractant of tourists to a coastal area.

Tourism impact of offshore wind farms – case study surveys

4.1 Survey approaches

The research included two levels of surveys: *a macro-survey* of key onshore agencies for a wide set of OWF locations. The key agencies included local authority planning, economic development and tourism departments; chambers of commerce; tourism bodies; and relevant local councillors (e.g., as chairs of tourism committees). The short online survey involved questions on any perceived positive and/or negative impacts of the local OWF/s on local tourism and recreation activities, on any associated infrastructure developments (e.g., visitor centres, boat trips) and any data sources. The survey went to over 100 contacts in relation to 30 OWF developments around the UK coast.

The *micro-survey* focused on a small sample of relatively near-coast OWF locations across the British nations with: Aberdeen (Scotland), Scroby Sands (Great Yarmouth, England), Rampion (Brighton, England) and Gwynt-y-Mor (North Wales). Aberdeen, as the key location from previous research, was the main study. The other locations provided examples of locations that had taken some important tourism initiatives associated with OWFs (e.g., visitor centres, boat trips, and community benefits project funding). The survey approach involved an extensive snowball approach via initial contacts of the study team, and contacts from previous research (e.g., Aberdeen community benefits fund consultees). The questions were largely as for those in the macro-survey. A review of social media in relation to local tourism and recreation impacts was also undertaken. This involved a review of Facebook postings of local tourism and community groups in the four locations.

The macro-survey was in May and June 2021; the micro survey was mainly in July 2021. Overall, the levels of response to both macro and micro surveys were very disappointing, as detailed in the following sections. There may be several reasons for this. The surveys overlapped Covid-19 lockdowns, many policy changes and the slow emergence of the tourism industry from a very difficult business period. In this context, it is likely that survey responses were a very low priority for those contacted. It may also be that, as will be seen below, almost no respondents saw the impacts studied as constituting major local issues for tourism and recreation.

4.2 Brief agency findings

There were only nine responses from key agencies, spread across six OWF coastal locations. This was a less than 10% response, with little/no-statistical significance, although it may indicate that this was not a current issue of any significance. The responses themselves are summarily set out in Table 4.1.

Table 4.1: Summary of agency responses to survey questions

Survey question	Summary of responses
From your experience, has the presence of the OWF had any negative impacts on tourism activities (e.g. on visitor numbers/categories, activities?) in your authority area? If any, please describe.	• *No impacts; no perceived impacts; nothing obvious; nothing in my experience.* • *We have not had any feedback around offshore wind impacting on visitor numbers (Chamber of Commerce).* • *I think it is recognised as part of the landscape, we do not specifically use it for publicity shots, but we do not avoid them either, they are part of the landscape (Tourism Board).*
From your experience, has the presence of the OWF had any positive impacts on tourism activities (e.g. on visitor numbers/categories, activities?)	• *I haven't seen any evidence of increased visitor numbers directly due to offshore wind farms, but the energy sector is a key employer for the region and bringing people to work in the region would encourage people to explore the North East.*

in your authority area? If any, please describe.	• *There are companies that offer trips to Scroby Sands to see wildlife and the turbines up close. There is a case that the OWF supports and reinforces a strong maritime industry in Great Yarmouth. While historically this would have been fishing or deliveries into Norwich, OWF is increasingly the most recognised maritime industry. Parts of the tourism industry may build on this.* • *I think the novelty value of viewing a large windfarm has long gone so I am sure nobody comes especially to the Solway Firth to view it.* • *The array is too far offshore for tourists to see, but there is a lot of activity with support vessels to be seen using the Harbour at Lowestoft.* • *It will have generated a small amount of businesses tourism-linked to the OWF.* • *Yes, anecdotally visitors are fascinated by it and several boat tours to the wind farm are now operating, which are very popular. Rampion has a visitor centre on the seafront with information and is offering educational events for schools etc.*
Have there been any initiatives taken to promote OWF associated tourism (e.g. such as information boards/ viewpoints, leaflets for TIC, visitor centre, boat trips etc)? If so, please describe.	• *Not that I am aware of.* • *There is the 'Scroby Sands Offshore Windfarm Visitor Centre' that is adjacent Britannia Pier. The turbines are highly visible from this section of the beach.* • *Not that we are aware of; our business is also the town tourist-information centre so we would probably know of any such initiative.* • *This has been discussed but nothing formalised as far as we are aware.* • *There was an OWF study centre for visitors on the seafront in Great Yarmouth, but this has now closed.* • *Visitor centre, boat trips, leaflets.* • *Limited availability of boat trips to Kincardine OWF. Not open to public, but some stakeholders.*
From your experience, has the presence of the OWF had any negative impacts on local recreation activities in your authority area? If any, please describe.	• *Not that I am aware of. No negative impact that we are aware of. Not in our experience. No impacts from experience.* • *I cannot think of any. The tourist & recreation industry largely remains separate from the OWF.* • *No, the wind farm is too far out and does not impact on any activities.* • *It has changed the seascape and view, and replaced a natural environment with a more industrial one.*
From your experience, has the presence of the OWF had any positive impacts on local recreation activities in your authority area? If any, please describe.	• *Not that I am aware of. I am not aware of any direct recreational links to OWF. Not yet assessable. No. No impacts from experience.* • *Anecdotally the sea angling fraternity (we also have a fishing bait & tackle outlet as part of this business) report hugely increased catches of Rays, mainly Thornbacks, which started within a year or two of Robin Rigg establishing in the Solway Firth. It is quite a reasonable supposition that the 'no fishing zone' for commercial trawling created by the wind farm has resulted in a significant benefits to some of the fish species that use this area as a 'nursery' for juveniles. There may be benefits to the numbers other bottom living species such as Plaice, Turbot, and Brill similar to those we would expect from the creation of Marine Nature Reserve*. • *More boat trips on offer.*
Are you aware of any proposed initiatives in relation to tourism or local recreation activities that you can provide us with information about? If so, please describe.	• *Not aware of. N/A. Not aware of any. Nothing yet decided. No. None.*
Are you able to share with us any studies or reports that have been done in relation to the impact of the OWF in relation to tourism and recreation that have not been put into the public domain?	• *I am not aware of any specific reports. Not aware of any. All relevant assessments in published Local Plans. No. We have not conducted any specific research. N/A - all information public on our website.*

If you have any other comments in relation to tourism and recreation and OWF that we have not addressed in the above questions, please add them here.	• *None. N/A. N/A.* • *I think that the negative impacts of OWF originally envisaged were overstated by a vociferous minority and not borne out in reality. There is a big difference between offshore and land based WF in terms of public attitudes. I live with 6 large land based turbines nearby that impact on near neighbours in terms of noise, visually (flickering from blades shading direct sun). In addition, people realise increasingly with every year passing the crucial importance of lowering CO2 emissions by all means possible so are less likely to object than say 5 years ago.* • *The reason for having OWF is well understood by visitors, they are a renewable source of energy, and I think most visitors feel quite positive towards renewable energy.*

From this very limited set of responses there is little evidence of any negative impacts of OWFs on either tourism or recreation activities. Indeed, there are a few more comments on positive impacts, including on boat trips, visitor centres and angling. All is set in the wider context of the importance of such developments in the transition towards renewable energy. Interestingly, there is no mention of the local impacts of various community benefits schemes on local recreational activities.

4.3 Aberdeen public findings

The snowball survey of Aberdeen public contacts resulted in 24 responses. The findings are summarised in Table 4.2.

Table 4.2: Summary of Aberdeen residents' responses to survey questions

Survey question	Summary of responses
From your experience, has the presence of the OWF had any *negative impacts* on tourism activities (e.g. on visitor numbers/categories, activities?) in your authority area? If any, please describe.	• *All (20 responses) –no; none at all; nope; none; no negative impacts.* • *Others -- I think they are nice to look out at sea; if anything it is an attraction; I enjoy watching the turbines; possibly a negligible effect on tourism.*
From your experience, has the presence of the OWF had any *positive impacts* on tourism activities (e.g. on visitor numbers/categories, activities?) in your authority area? If any, please describe.	• *All (10 responses) – no; none; none noticed; no impacts.* • *Yes, people like to come to the beach and look out to sea at the wind turbines* • *We enjoy looking at the wind farms from the beaches we go to. When they first appeared we took the kids to see them and one of our teenagers has just completed a ˜Girls in Energy" course at school where they made model wind turbines. We watched them constructing them and took part in an art project at Balmedie beach with an artist who was making some art for the Vattenfall offices.* • *Harbour tours and stuff are better.* • *It looks good. It helps to tell quickly what direction the wind is at sea.* • *Positive renewable energy helps to shake the Oil and Gas industry label for the city. Symbol of energy transition in the eyes of people that is otherwise invisible.* • *Yes, I enjoy admiring the turbines emerging from the sea; to me it signifies man's ambitions. Although sometimes it appears too abstract view over the horizon, it is beautiful at the same time.* • *Yes. Having been in lockdown for a long time, removal of restrictions allows more viewing of the wind farm.* • *Yes, it is a clear symbol of the progress towards a fully renewables energy future.*

	• *Have seen a few people stopping to take photographs. Some I think have made special trips to do it from Blackdog as they are parked just off the road but not in the village.* • *It is positive to show visitors the windfarm.* • *They are certainly an attractive talking point and as a keen photographer, I know of many other photographers that have used them as a subject, or in the background.*
Have there been any initiatives taken to promote OWF associated tourism (e.g. such as information boards/ viewpoints, leaflets for TIC, visitor centre, boat trips etc)? If so, please describe.	• *All (17) – no; not that I am aware of; not that I know of; none to my knowledge; not in Blackdog.* • *The Harbour boat trip tours to the windfarm have been positive.* • *Leaflets, involvement at the local school and presentations. Also interactive experiences at the local library, which was interesting.* • *Leaflets, local news + local energy centre.* • *The art project with the artist Sheila Swanson.* • *Would be welcomed; visited Norfolk a few years back and they had a visitors' centre used by tourists and locals alike.*
From your experience, has the presence of the OWF had any negative impacts on local recreation activities in your authority area? If any, please describe.	• *All (24) – none; no; none at all; none whatsoever; not to my knowledge; no it has not.*
From your experience, has the presence of the OWF had any positive impacts on local recreation activities in your authority area? If any, please describe.	• *All (14) – no; nope; not to my knowledge; none; I do not think so.* • *Yes, something to look at on the horizon.* • *I am sure boat trips are more interesting as a result.* • *Yes, via the Vattenfall "Unlock our Future" fund.* • *An added site to visit potentially for old and young people. Becoming an attraction to marine life i.e. dolphins and seals.* • *Yes, it is giving more options for our local schools to talk about climate change. The point is that the younger generation have a greater opportunity to learn about the environment by the very presence of OWF.* • *I see the OWF regularly as I travel around the area and I feel very proud it is there.* • *I like seeing the turbines while I am out running/ walking.* • *Yes - good to see tourism boat trips taking place.*
Are you aware of any proposed initiatives in relation to tourism or local recreation activities that you can provide us with information about? If so, please describe.	• *All (16) – no; not aware of any; not yet; do not know.* • *New harbour with tourist potential for cruises, a marine visitor centre.* • *I know that Aberdeen City Council have recently been consulting on plans to develop the town centre, beachfront and links between the two.* • *The children in the community were very interested to learn about them and watch them being erected. Providing information to residents and especially the children is key to acceptance from some people who think they are unsightly.* • *Aberdeen Beach Masterplan is approved and is positive step for the area.*
If you have any other comments in relation to tourism and recreation and OWF that we have not addressed in the above questions, please add them here.	• *All (16) – no response; no; I don't know; none; N/A.* • *Just to reiterate that a visitors' centre would be welcomed by many, and could be used for school visits.* • *The dunes here at Blackdog are in a perilous condition from erosion and suffer contamination from an old rubbish dump, so attracting more people here to inform, educate and or view the OWF would certainly not help our local environment.* • *It would be appropriate if boat trips could be organised to get closer to the turbines to understand construction and mechanism of operation/ generation of power.* • *I would definitely go on a boat trip to see the turbines up close if it was on offer.*

	• *I feel the wind farm is an addition but it is not yet really highlighted as a tourist attraction. It would be good to show interaction with wildlife, how it affects it and the likely creation of artificial reefs in the turbine towers.* • *As a resident near a windfarm, I think you get used to the new adjusted view.*

The responses of local residents are either neutral or positive, with very few negative comments about the impacts on local tourism and recreation. Positive comments cover several themes: visually attractive OWF; positive symbol of/ local pride in renewable energy initiative; local/school educational links and potential; plus harbour/boat tours. There is recognition of some local tourism and recreation initiatives, including the boat trips, links to local energy centre; information leaflets and links with local schools. Some respondents also see a visitor centre as another desirable initiative, plus more boat tours -- all potentially associated with various current Aberdeen harbour and beach initiatives. There was also one mention of the Vattenfall "Unlock our Future" fund.

A review of Facebook postings over quite a long period (August 2014 – July 2021) reinforced many of the Aberdeen survey responses, with many likes and very few dislikes reactions. For example, the posts of the *Balmedie and Surrounding Area Community Group* were largely positive with just a couple posts concerned about the fog warning noise coming from the OWF (which led on to some negative comments about the windfarm). The *Sandbothy Group* had many positive posts about the OWF and various local initiatives. Re harbour tours, there were also plenty of likes (thumbs up) for photos of the OWF. There were few/no other mentions of the OWF on other Facebook groups, including *Visit Aberdeenshire, Better Balmedie* and *Balmedie Wheelchairs*.

4.4 Brief public findings from other case studies

Table 4.3 provides some examples of responses both from local businesses and from local residents from the other case study locations: Scroby Sands, Rampion and Gwynt-y-Mor. In all cases, the number of responses was very low at 2-3 each for businesses, and for residents. As such, these are illustrative only, rather than representative, of local business and residents perceptions at these locations.

Table 4.3: Examples of business and resident/visitor responses to survey questions

Survey question	Summary of responses
From your experience, has the presence of the OWF had any *negative impacts* on tourism activities (e.g. on visitor numbers/categories, activities?) in your authority area? If any, please describe.	• *None – (beach café)* • *I appreciate the benefit of renewable energy - I am sad at the loss of an uninterrupted sea view and I would change my destination to a place where offshore turbines could not be seen from the shore – (Scroby Sands/Yarmouth visitor).* • *Yes - large areas of our fishing grounds taken up by the windfarm, fish catch rate has declined, customers are moving away to areas not impacted. We are not permitted to anchor in the farm and the restrictions with regard to distances we must remain from pylons/sub-station make drift fishing hazardous – essentially, it is now a no-go zone – (Rampion/Brighton local fishing charter business).* • *None detrimental, to my knowledge – (Brighton local resident)* • *Not really - if any, it is positive. I know from experience some windfarm workers stay in local accommodation, so perhaps this has happened over the years.-- Gwynt-y-Mor (local business)*

From your experience, has the presence of the OWF had any *positive impacts* on tourism activities (e.g. on visitor numbers/categories, activities?) in your authority area? If any, please describe.	• *My cafe overlooks the windfarm and it is often a subject of conversation with customers, both tourists and locals alike. The vast majority approve of it, it can be mesmerising at times with the individual units appearing to change colour in the light, children like to count them, and the idea of green energy is very popular – (beach café)* • *I believe the information centre has had a small positive impact on tourism, although I have not visited – (Scroby Sands/Yarmouth resident/visitor).* • *Yes, benefited from the OWF community fund – (Rampion/Brighton local sailing club).* • *Yes, delightful boat ride out to the wind farm from local fisherman running day trips. Very informative. --- (Brighton local resident).* • *Yes fishing has improved along the coast line.—(Gwynt-y-Mor local business)*
Have there been any initiatives taken to promote OWF associated tourism (e.g. such as information boards/ viewpoints, leaflets for TIC, visitor centre, boat trips etc)? If so, please describe.	• *There is a visitor centre on the seafront -- (beach café)* • *None -- (Scroby Sands/Yarmouth resident/visitor).* • *None – (Rampion/Brighton local businesses)* • *Not to my knowledge.—(Gwynt-y-Mor local business)*
From your experience, has the presence of the OWF had any negative impacts on local recreation activities in your authority area? If any, please describe.	• *None – (Scroby Sands beach café)* • *None -- (Scroby Sands/Yarmouth resident/visitor)* • *As for tourism -- (Rampion/Brighton local fishing charter business).* • *None – (Brighton local resident).* • *Not to my knowledge.—(Gwynt-y-Mor local business)*
From your experience, has the presence of the OWF had any positive impacts on local recreation activities in your authority area? If any, please describe.	• *None – (Scroby Sands beach café)* • *None -- (Scroby Sands/Yarmouth resident/visitor).* • *As for tourism -- (Rampion/Brighton local sailing club).* • *The wind farm footings etc. have created an excellent reef like environment for local inshore fish to feed and breed--(Brighton local resident).* • *When out walking by the sea, the OWF is a focus of interest. If I am walking with someone or several people, it can be a shared focus of interest and spark conversation--(Brighton local resident).*
Are you aware of any proposed initiatives in relation to tourism or local recreation activities that you can provide us with information about? If so, please describe.	• *None – (beach café)* • *None -- (Scroby Sands/Yarmouth resident/visitor).* • *None – (Rampion/Brighton local businesses)*
If you have any other comments in relation to tourism and recreation and OWF that we have not addressed in the above questions, please add them here.	• *A very positive asset to the City, the Sea, the wildlife and the Planet—(Brighton local resident).*

The responses in Table 4.3 show a generally positive perception of the local OWFs, with some recognition of associated activities (e.g. visitor centre, boat trips) plus the presence of the wind farm as a visual attraction and a symbol of renewable energy. For Gwynt-y-Mor, the lack of reference to the extensive array of community benefit projects noted in Table 3.6 may reflect some disconnect between community benefit improvements, local residents and tourism businesses. The responses are also of course business specific, with for example mixed views

on the impacts on local fishing. Facebook postings were also almost wholly positive. For example, for one *Parish Council site* postings were wholly positive right back to 2016. Another community site had 99% positive responses to its postings showing photos of the OWF. A *Wind Farm Tours site* had 75 positive responses, over 500 likes and just 2 negative comments.

4.5 Summary

Overall, from this very limited set of agency and local business and residents survey responses, there is little evidence of negative impacts of OWFs on either local tourism or recreation activities. Indeed, there are considerably more comments on positive impacts, including on boat trips, visitor centres and angling. All is set in the wider context of the importance of such OWF developments in the transition towards renewable energy. Surprisingly, given the incidence of the use of community benefits funds noted in section 3.4 of this report, there is very little mention of the local impacts of such funds on local recreational activities.

Aberdeen provides an interesting case study, where there are more responses of local residents to analyse. Again, the responses are either neutral or positive, with very few negative comments. The positive comments cover several themes: visually attractive OWF; positive symbol of/local pride in renewable energy initiative; local/school educational links and potential; plus harbour/boat tours. There was one mention of the Vattenfall “Unlock our Future” fund! A review of postings on a number of Aberdeen Facebook sites, dating back to 2016, reinforced the Aberdeen survey responses.

The responses in the other locations also show a generally positive perception of the local OWFs, with some recognition of associated activities (e.g. visitor centre, boat trips) plus the presence of the wind farm as a visual attraction and a symbol of renewable energy. There were very few posts regarding offshore windfarms on community group Facebook pages for these other locations. Boat tour Facebook pages, which regularly post pictures of OWFs, had nearly all positive responses. There were odd negative comments but largely OWFs were not high profile and, when highlighted, were regarded favourably, with plenty of likes.

5. Research conclusions and recommendations

5.1 Conclusions – some key research findings

5.1.1 Balance of impacts

- Comparative findings from research literature on UK *onshore* wind farms indicate little or no evidence to demonstrate that any windfarm development has resulted in any adverse impact on tourism; indeed, in some cases the impacts may be positive. Whilst impacts vary from stakeholder to stakeholder, findings from the literature also indicate that the overall impact of *offshore* wind farms on tourism appear relatively benign, and in some cases positive. The literature on the impact on tourism and recreation of distance of OWFs from the coast is mixed; however, with relative consistency, researchers find that stakeholder concerns about visual impacts of offshore wind farms decrease as distances of the wind farm from shore are increased. As OWFs become larger and more distant, the perception by visitors, negative and positive, may decline.
- In some cases, OWFs may be a tourism attractant by virtue of their modern, innovative and novelty factors, and have a positive impact on tourism. OWF- led tourism can provide a niche market for an area to stand out in the competitive tourism market. However, with more of such developments, the novelty may wear off.
- There are very few examples of actual hard evidence of the impacts of OWFs on tourism and recreation (eg. quantitative evidence on changes in tourism in an area with a coastal OWF, measured for example by changes in number of visitors, and tourism employment, relative to local/regional trends), but see for example Biggar (2020) for a very useful study.
- Tourism is an important impact topic in almost all of the UK ESs reviewed. It is usually included with socio-economic factors with visual impact at the forefront. The UK ESs largely predict no impact or minor/negligible impact concerning both tourism and recreation, although there are a few examples of predicted positive impacts. Where there is coverage of tourism and recreation in EU States' ESs, findings are similar to those in the UK; that is on balance largely benign and of low significance, although there is somewhat more coverage of potential tourism and recreation opportunities.
- Overall, from the admittedly limited set of agency and local business and residents' survey responses there is little evidence of negative impacts of OWFs on local tourism and recreation activities. Indeed, there are considerably more comments on positive impacts, all set in the wider context of the importance of OWF developments in the transition towards renewable energy.
- The Aberdeen case study provides an interesting example of either neutral or positive responses, with very few negative comments. The positive comments cover several themes: visually attractive OWF; positive symbol of/local pride in renewable energy initiative; local/school educational links and potential; plus harbour/boat tours. There was one mention of the Aberdeen project community benefits fund! The review of Aberdeen Facebook postings over quite a long period reinforced the Aberdeen survey responses.

5.1.2 Focus of impacts

- The focus of literature studies is on the perceived impacts of operational OWFs on tourism, with much less on the construction stage, on recreation impacts and on hard evidence of actual impacts.
- The majority of ESs do separate impacts by project stage and onshore and/or offshore impacts are considered; there is little variation in the nature of predicted impacts by stage. There is little evidence of separation of local recreation and tourism impacts, and indeed of distinguishing of impacts by stakeholder groups.
- Assessment in UK ESs is largely desk based with research utilising baseline data, pre-existing research studies relating to perceived impacts on tourism, and consulting with local partners.

- Surprisingly, given the increasing incidence of the use of community benefits funds especially in relation to UK OWF projects, there is very little mention of the impacts of such funds on local recreational activities, both in the literature and from our case studies.

5.1.3 Mitigation and enhancement

- About two thirds of the reviewed UK ESs had some coverage of mitigation and/or enhancement measures in relation to predicted tourism and/or recreation impacts. Most UK mitigation measures related to the possible onshore construction impacts on tourism and recreation, including for example: temporary redirection of Public Rights of Way (PRoWs); careful planning of cable routes to avoid key recreation and tourism sites; landscaping of onshore substations; and some impact monitoring requirements.
- For UK project enhancement measures, there are several examples in practice of attempts to use initiatives to promote the virtues of OWFs, although hard evidence on their effectiveness is limited. There are a few examples of visitor centres associated with OWFs, and evidence of some pre-existing boat tours incorporating offshore wind farms into their routes. Not all ventures survive; overall, it appears that those that do, provide a service paid for by the public (e.g. boat tour) or are financially supported or owned by the OWF operator (e.g. visitor centre). There are some examples of measures linking with other tourism attractions (e.g. museums) and a few examples of monitoring of tourism provisions.
- The review of EU ESs indicates limited provision of enhancement and mitigation measures. There are some good examples, as covered in the EU/South Baltic 2016 report, with a focus on '*Bringing together tourism and offshore wind energy',* which emphasises various protection and promotion measures. These include engagement strategies to get locals on board at an early stage, green tourism, boat tours and links with other activities (e.g including nature tourism, and industrial tourism–with linked visits to OWF supply chain locations). However, initiatives may have a short life if not economically viable.

5.2 Some gaps in research

- There is little research on the differences, if any, between impacts of OWF projects on tourism and recreation activities and on variations in tourism impacts between the construction and O&M stages of the OWF project life. Further, there is little work on differential impacts of OWFs on the various key tourism and recreation user and provider stakeholder groups (including for example different tourist categories, such as day/overnight, age, socio-demographic background).
- The potential costs and especially benefit opportunities to tourism for depressed areas appear under-researched.
- There appears to be little research on the effectiveness of tourism and recreation impact mitigation and enhancement measures.
- Distance, or how much visual impact there is from the shore, seems of greater importance than OWF MW size.
- The link between a specific OWF and local impacts may not be clear. Whilst there are smaller (MW) windfarms nearer the coast, these are now rarely solo ventures as additional phases or extensions tend to be in the pipeline, and there may be larger OWFs further out at sea.
- Starting points for tourist and recreation initiatives vary. Mitigation measures may be most useful during the disruptive construction stage; Gwynt-y-Mor for example initiated their tourism fund during OWF construction.
- Although there is some coverage of cumulative issues, there is typically little of detail in the ESs.
- Much tourism impacts data in ESs is dated and does not draw on monitoring of actual project impacts. The coverage of monitoring of tourism and recreation impacts in the ESs reviewed is thin.

5.3 Some recommendations

These are of relevance to most stakeholders, including especially OWF developers, host coastal local authorities and agencies, local community groups, and tourism and recreation businesses.

- Early engagement and planning to both mitigate negative impacts on tourism and enhance potential positive impacts is important, and can be part of a planning and assessment approach, possibly via Marine Spatial Planning. An important element of an MSP is a Tourist Impact Statement (TIS) by the developer on the likely impacts of the development on the local tourist industry. TISs also set out the methods to minimise any costs on local tourism and maximise any benefits (e.g. access arrangements).
- It is important to identify key tourism and recreation user and provider stakeholder groups, who may have differing and sometimes conflicting perceived and actual impacts of OWF developments.
- Whilst OWF-led tourism initiatives (e.g visitor centres, boat trips) can provide niches for an area to stand out in the competitive tourism market, this requires significant commitment in terms of personnel, finance, networking and partnerships, especially between the OWF developer and local authorities/agencies.
- It is important to be aware of the potential changing attraction dynamics of OWFs. Visitor perceptions of the impacts of OWFs, both generally and for particular locations, may change overtime with perhaps, for example, the waning of the innovative attraction of OWFs.
- There may be potential for enhancement initiatives which link OWF promotions with other activities, including for example nature based tourism and supply chain businesses.
- Community benefit schemes, now associated with many UK OWFs, provide the potential to support local tourism and especially recreation facilities, with a focus on sustainability initiatives. Overall, they may be at least as significant for local communities as any direct enhancement measures associated with the OWF (e.g. visitor centres and boat tours). However, to date, they appear largely hidden from public and other stakeholder perceptions in terms of their role in tourism and recreation impacts, and would benefit from a much higher profile from developers and local authorities/agencies.
- The monitoring of changing tourism and recreation impacts over time, and their auditing against predictions, is important for better managing impacts and for improving predictions for future projects.

Research Team at Impacts Assessment Unit (IAU), Oxford Brookes University:
Professor John Glasson (research lead), Dr Bridget Durning (management lead), and Kellie Welch (research associate).

Contacts:
Prof. John Glasson email: jglasson@brookes.ac.uk
Dr. Bridget Durning email: bdurning@brookes.ac.uk

Vattenfall:
The research team gratefully acknowledge the funding support of the EOWDC research programme, and the role of Robin Cox as our key Vattenfall link person.

References

Aitchison, C. (2012) *Tourism Impacts of Windfarms.* Submitted to Renewables Inquiry Scottish Government. Edinburgh: The University of Edinburgh.

Aitchison, C. (2012) *Tourism impact analysis - Garreg Lwyd Hill Windfarm Proposal.*

Biggar Economics. (2017). *Windfarms and tourism trends in Scotland.* Penicuik: Biggar.

Biggar Economic (2020). Offshore Wind Farm Construction and Tourism. Penicuik: Biggar.

BOWL (Beatrice Offshore Wind Farm Ltd), 2017, *Calculating the Economic Contribution of Beatrice Offshore Wind Farm Ltd,* BOWL/SSE.

(BWEA) British Wind Energy Association (2006). *The impact of windfarms on the tourist industry in the UK.*

Broekel, T., Alfken, C., 2015, Gone with the wind? The impact of wind turbines on tourism demand. *Energy Policy*, Vol. 86, pp. 506-519.

Cabinet Office 2009, *Guide to Social Return on Investment*, London: HMG.

Carr-Harris, A, and C. Lang (2019). Sustainability and tourism: the effect of the United States' first offshore wind farm on the vacation rental market. *Resource and Energy Economics,* 57, 51-67.

ClimateXchange (2012). *The Impact of Wind Farms on Scottish Tourism.* Edinburgh: Climate Xchange.

ClimateXchange (2014). *Community Benefits from Offshore Renewables: Good Practice Review.*

Climate Xchange (2015). *Comparative Review of Methodologies for Assessing Wind Farms' Impact on Tourism.* Edinburgh: Climate Xchange.

Crown Estate (2019). *Offshore Wind Operational Report 2018.* London: Crown Estate.

EU (2014) *Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment,* Brussels: Official Journal of the European Union, L 124.

EU Marine Spatial Planning Platform (2018, 2019) *Conflict fiche 1: Maritime tourism (incl. local communities) and offshore wind.* Brussels: EU.

EU (2021). *Green New Deal.* Brussels: EU.

Firestone J, Kempton, W and A, Krueger (2008). *Delaware opinion on offshore wind power*. Univ. of Delaware.

Firestone J, Kempton W, Lilley M B and Samoteskul K (2012a). Public acceptance of offshore wind power across regions and through time, *Journal of Environmental Planning and Management*, 55, 10, pp1369-1386

Firestone J, Kempton W, and Lilley M B and Samoteskul K (2012b) Public acceptance of offshore wind power: does perceived fairness of process matter. Journal of Environmental Planning and Management, 55, 10, pp1387

Frantál, B and J, Kunc (2011). Wind turbines in tourism landscapes: Czech experience. *Annals of Tourism Research*, 38(2), 499–519.

Gee, K (2009). Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy* 27(2), 185-194.

German Offshore Wind Energy Foundation (2013). *The impact of offshore wind energy on tourism -- Good Practices and Perspectives for the South Baltic Region.*

Glasson J, Durning B, Olorundami, T and Welch, K (2020). *Guidance on assessing the socio-economic impacts of offshore wind farms (OWF).* Impact Assessment Unit (IAU) Oxford Brookes University and Vattenfall.

Glasson, J and Olorundami, T (2019). *Technical Report 2: Socio-economic impact assessment in Environmental Statements (ESs) for UK Offshore Wind Farms*. Impact Assessment Unit (IAU) Oxford Brookes University and Vattenfall.

Glasson, J (2021). Community Benefits and UK Offshore Wind Farms: Evolving Convergence in a Divergent Practice. *Journal of Environmental Assessment Policy and Management* (online April 2021).

Kuehn, S (2005). Sociological Investigation of The Reception of Horns Rev and Nysted Offshore Wind Farms In the Local Communities. ECON Analyse.

Ladenburg, J (2009) Visual impact assessment of offshore wind farms and prior experience, *Applied Energy*, 86, 3, pp 380-387.

Lolland Falster (2013) Offshore Wind Farms and Tourism Potentials in Guldborgsund Municipality. EU: Interreg S. Baltic Programme.

Landry, C. E., Allen, T, Cherry, T, Whitehead, J. C. (2012), Wind turbines and coastal recreation demand., Resource and Energy Economics, Vol. 34, No. 1, pp. 93-111

Lilley, M., Firestone, J. and Kempton, W. (2010) *The Effect of Wind Power Installations on Coastal Tourism*. Energies, 3(1), pp.1-22.

Lutzeyer, S. Phaneuf, D. and Taylor, L. (2017) *The Amenity Costs of Offshore Windfarms: Evidence from a Choice Experiment.* N. Carolina State University: Centre for Environmental and Resource Economic Policy Working Paper Series: No. 17-017.

Mordue, T. Moss, O. and Johnston, L (2020). *The impacts of onshore windfarms on a UK rural tourism landscape: objective evidence, local opposition, and national politics.* Journal of Sustainable Tourism, Vol 28 (11), 1882-1904

NEF (New Economics Foundation) Consulting (2017), *SSE—Beatrice Social Return on Investment (SROI) framework*, NEF: London.

NFO World Group for Wales Tourist Board. (2003) *Investigation into the potential of windfarms on tourism in Wales.*

Noblet, C et al (2016). *Potential tourism impacts of an OWF near Moneghan Island: Technical Report*. University of Maine.

Northern Ireland Assembly (2014). *Research and Information Service Briefing Paper: Onshore Wind Power in Denmark.*

Parsons, G. Firestone, J. 2018. *Atlantic Offshore Wind Energy Development: Values and Implications for Recreation and Tourism.* Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-013. 52 p.

Regeneris and The Tourism Company (2014). *Study into the potential economic impact of windfarms and associated grid Infrastructure on the Welsh tourism sector.* Manchester: Regeneris.
Renewables UK (2016). *Offshore Wind Turbines: Part of Danish Touristic Offer*.

Rudolf, D, Haggett, C and M. Aitken (2018) Community benefits from offshore renewables: The relationship between different understandings of impact, community, and benefits. *Environment and Planning C,* 36(1) 92-117

Scottish Power Renewables. *Whitelee Visitor Centre* (website).

Scottish Power Renewables (SPR) (2019) *East Anglia ONE North Offshore Wind Farm: Appendix 30.1; Literature Review of Wind Farm Impact on the Tourism Industry.* SPR: Preliminary Environmental Information Report

Shamsuzzoha, A, Grant, A and J. Clarke (2012). Implementation of renewable energy in Scottish rural area: A social study. *Renewable and Sustainable Energy Reviews* 16(1), 185 -191.

Smith, H et al (2018). The social dynamics of turbine tourism and recreation: Introducing a mixed-method approach to the study of the first U.S. offshore wind farm. *Energy Research and Social Science,* 45, 307-317

Smythe, T, Smith, H, Moore, A, Bidwell, D and J. McCann (2018). *Methodology for Analysing the Effects of Block Island Wind Farm (BIWF) on Rhode Island Recreation and Tourism Activities.* U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 84 pp.

Smythe, T, Bidwell, D, Moore, A, Smith, H, and J. McCann (2020). Beyond the beach: Tradeoffs in tourism and recreation at the first offshore wind farm in the United States. Energy *Research and Social Science, 70.*

Soma, K and C. Haggett (2015*).* Enhancing social acceptance in marine governance in Europe. *Ocean and Coastal Management,* 117, 61-69

Stiftung Offshore Windenergie (2016), *The impact of Offshore Wind Energy on Tourism: Good practices and perspectives from the S. Baltic Region.* S. Baltic Programme/EU

The Tourism Company. (2012) The impact of wind turbines on tourism - a literature review.

Tourism Society (website). http://www.tourismsociety.org/page/88/tourism-definitions.htm

UNWTO (United Nations World Tourism Organisation) (2010). *Tourism Statistics Technical Guidelines.* New York: UN.

Walter, C (2012). Incentives-based planning policy: a clash of rationalities. *Journal of Environment and Planning Law,* 6, 647-657.

Westerberg, V., Jacobsen, J. B., Lifran, R., 2013, The case for offshore wind farms, artificial reefs and sustainable tourism in the French Mediterranean., Tourism Management, Vol. 34, pp. 172-183.

Wind Europe (2020). *Offshore Wind in Europe – key trends and statistics 2019.* Brussels: Wind Europe.

Appendix 1: UK Environmental Statements (ESs) references

Atkins (2016) *Kincardine Floating Offshore Windfarm: Environmental Statement*. Available at: https://marine.gov.scot/data/kincardine-offshore-windfarm-environmental-statement-and-appendices (Accessed: 10 July 2021).

Atkins (2016) *Kincardine Floating Offshore Windfarm: ES Additional Information Addendum*. Available at: https://pilot-renewables.com/wordpress/wp-content/uploads/2020/03/KOWL_ES_Addendum_23-09-2016_Issued.pdf (Downloaded: 08 July 2021).

Barrow Offshore Wind Ltd (2008) *Barrow Offshore Wind Farm, Post Construction Monitoring Report.* Available at: https://tethys.pnnl.gov/sites/default/files/publications/Barrow_Offshore_Wind_Monitoring_Report.pdf (Downloaded: 8th June 2021).

Beatrice Offshore Windfarm Ltd (2012) *Environmental Statement, Non Technical Summary*. Available at: https://marine.gov.scot/data/beatrice-offshore-wind-farm-environmental-statement-non-technical-summary (Downloaded: 08 July 2021).

Dong Walney Ltd (2006) *Walney Offshore Windfarm, Environmental Statement Non Technical Summary*. Available at: https://www.eib.org/attachments/pipeline/20090322_nts3_en.pdf (Downloaded: 8th June 2021).

Dong Energy (2009) *Westermost Rough Offshore Wind Farm, Non Technical Summary*. Available at: https://www.eib.org/attachments/registers/53897501.pdf (Downloaded: 23rd June 2021).

Eclipse Energy Company Limited (2005) *Ormonde Project Environmental Impact Assessment, Non Technical Summary*. Available at: https://www.eib.org/attachments/pipeline/20090322_nts2_en.pdf (Downloaded: 10 July 2021).

ERM (2008) *Humber Gateway Offshore Wind Farm Non-Technical Summary of the Offshore Environmental Statement and Onshore Cable Route Environmental Statement*. Available at: https://uk-ireland.rwe.com/-/media/RWE/documents/03-unser-portfolio-und-loesungen/betriebsstandorte/humber-gateway/humber-gateway-non-technical-summary-environmental-statement.pdf (Downloaded: 08 July 2021).

Galloper Wind Farm Limited (2011) *Galloper Wind Farm Project, Environmental Statement – Non - Technical Summary*. Available at: http://www.galloperwindfarm.com/assets/images/documents/GWF%20Environmental%20Statement/ES_Non-Technical_Summary.pdf (Downloaded: 8th June 2021).

GoBe Consultants (2018) *Neart na Gaoithe Offshore Wind Farm Environmental Impact Assessment Report*. Available at: http://marine.gov.scot/sites/default/files/combined_document_-_revised.pdf (Downloaded: 08 July 2021).

Greater Gabbard Offshore Winds Ltd (2005) *Greater Gabbard Offshore Wind Farm Environmental Statement*. Available at: https://tethys.pnnl.gov/publications/greater-gabbard-offshore-wind-farm-environmental-statement (Downloaded: 08 July 2021).

Inch Cape Offshore Wind Ltd (2018) Inch Cape Offshore Windfarm (Revised Design) - EIA Report. Available at: https://marine.gov.scot/sites/default/files/volume_1b_chapters_12-18.pdf (Downloaded: 08 July 2021).

MacColl, Telford and Stevenson (2012) Offshore Wind Farms, Moray East Offshore Wind Farms, Outer Moray Firth. *Planning Statement.* Available at: https://marine.gov.scot/data/environmental-statement-maccoll-telford-and-stevenson-offshore-wind-farms-moray-east-offshore (Downloaded: 08 July 2021).

MacColl, Telford and Stevenson (2012) Offshore Wind Farms, Moray East Offshore Wind Farms, Outer Moray Firth. *Non -Technical Summary.* Available at: https://marine.gov.scot/data/environmental-statement-maccoll-telford-and-stevenson-offshore-wind-farms-moray-east-offshore (Downloaded: 08 July 2021).

Moray Offshore Windfarm (West) Limited (2018*) Environmental Impact Assessment Report.* Available at: https://marine.gov.scot/sites/default/files/00538033.pdf (Downloaded: 08 July 2021).

Royal Haskoning DHV (2013) *Dogger Bank, Creyke Beck Environmental Statement Non-Technical Summary* https://www.ekn.se/globalassets/vad-vi-gor/hallbarhet/arkiv/dogger-bank-wind-farm/6.36-non-technical-summary---application-submission-_-dvd_f-ofc-ch-103_issue-4.pdf/ (Downloaded: 8th June 2021).

Royal Haskoning DHV (2019) *East Anglia TWO Offshore Windfarm: Environmental Statement: Tourism, Recreation and Socio Economics*. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-001103-6.1.30%20EA2%20Environmental%20Statement%20Chapter%2030%20Tourism,%20Recreation%20and%20Socio-Economics.pdf (Downloaded: 08 July 2021).

RPS Group Plc (2007) *Gunfleet Sands 2 Offshore Wind Farm Environmental Statement*. Available at: https://tethys.pnnl.gov/publications/gunfleet-sands-2-offshore-wind-farm-environmental-statement (Downloaded: 08 July 2021).

RPS (2010) *Lincs Offshore Wind Farm: Non Technical Summary*. Available at: https://www.eib.org/attachments/registers/53221928.pdf (Downloaded: 10 July 2021).

RPS (2005) London Array *Environmental Statement, Non-Technical Summary.* Available at: https://londonarray.com/wp-content/uploads/2020/07/Non-technical-summary.pdf (Downloaded: 10 July 2021).

RSK Environmental Ltd (2012) *Rampion Offshore Wind Farm, Environmental Statement*. Available at: https://www.rampionoffshore.com/environmental-statement/ (Downloaded: 6th June 2021).

RSK Environmental Ltd (2012) *Rampion Offshore Wind Farm, Non-Technical Summary*. Available at: http://www2.westsussex.gov.uk/ds/cttee/ecs/ecs120713i4b.pdf (Downloaded: 7th June 2021).

RSK Environmental Ltd (2006) West of Duddon Sands Offshore Windfarm, Environmental Assessment, Non - Technical Summary. Available at: https://www.scottishpowerrenewables.com/userfiles/file/West%20of%20Duddon%20Sands%20Non%20Technical%20Summary.pdf (Downloaded: 15th June 2021).

RWE Group (2005) *Gwynt y Môr Offshore Wind Farm Environmental Statement*. Available at: https://tethys.pnnl.gov/publications/gwynt-y-mor-offshore-wind-farm-environmental-statement (Downloaded: 08 July 2021).

Scira Offshore Energy Ltd (2006) *Sheringham Shoal Wind Farm, Environmental Statement.* Available at:

http://sheringhamshoal.co.uk/downloads/Offshore%20environmental%20statement.pdf (Downloaded: 10 June 2021).

Scottish Power Renewables (2012) *Whitelee Windfarm Extension Phase 3, Non Technical Summary*. Available at: https://www.scottishpowerrenewables.com/userfiles/file/Non-Technical%20Summary%20-%20reduced%20size.pdf (Downloaded: 5th June 2021).

Sea Green Wind Energy (2012) *Environmental Statement, Chapter 19 Socio Economics, Tourism and Recreation*: Available at: https://marine.gov.scot/sites/default/files/chapter_19_-_socio_economics_tourism_and_recreation.pdf (Downloaded: 10 June 2021).

Statoil (2015) *Hywind Scotland Pilot Park Environmental Statement Non-Technical Summary*. Available at: http://marine.gov.scot/sites/default/files/hywind.pdf (Downloaded: 08 July 2021).

Vattenfall Wind Power Limited October (2010) *Kentish Flats Offshore Wind Farm Extension, Environmental Scoping Study*. Available at: https://tethys.pnnl.gov/sites/default/files/publications/Haskoning2010.pdf (Downloaded: 8th June 2021).

Vattenfall Wind Power Ltd (2018) *Thanet Extension Offshore Wind Farm Environmental Statement – Non-Technical Summary*. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010084/EN010084-000682-6.7.1_TEOW_NTS.pdf (Downloaded: 9th June 2021).

Vattenfall Wind Power Ltd (2018) *Thanet Extension Offshore Wind Farm, Environmental Statement Volume 3, Chapter 4: Tourism and Recreation*. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010084/EN010084-000615-6.3.4_TEOW_Tourism_&_Rec.pdf (Downloaded: 8th June 2021).

Appendix 2: Gwynt- y- Mor OWF --- recent examples of community benefits tourism and recreation support (2019-2021)

Organisation	Project	Date funded	Amount funded
North Wales Tourism	Training programme	Mar-19	£9,999
Blinc CIC	Digital arts training	Mar-19	£9,999
Clwyd Dragons Bowling Club	Travel, kit expenses, registration fees	Mar-19	£1,745
Colwyn Bay Cricket Club	Mixed ability team funding for kit	Mar-19	£7,900
Grays Gymnastic Club	Carpeting of new premises	Mar-19	£9,120
Rhuddlan Festival	Festival running costs	Mar-19	£1,400
Little Theatre Rhyl	Employment of theatre director	Mar-19	£9,999
Llandudno and Colwyn Bay Marksmen	Air rifle equipment and to support blind veterans groups	Mar-19	£8,000
Rhuddlan Bowling Club	Storage container	Mar-19	£3,780
Llandudno Victorian Extravaganza	Event costs	Mar-19	£8,765
Colwyn Bay Surf Life Saving Club	Equipment and training	Mar-19	£3,584
TV Wales	Free music festival- running costs	Mar-19	£8,500
Deganwy Friendship Club	12 months activities	Jul-19	£1,000
Gwyrch Castle	Project coordinator	Jul-19	£10,000
Craig y Don Tennis Club	Refurb of open access courts	Jul-19	£9,032
Conwy Feast	Festival running costs	Jul-19	£8,763
Rhuddlan Allotments Association	Fencing, gates and footpath	Jul-19	£10,000
River and Sea Sense	Water safety training in schools	Jul-19	£10,000
Upper Colwyn Bay Community Centre	Green heating system	Jul-19	£10,000
Colwyn Bay Rugby Club	Lighting	Jul-19	£10,000
National Coast watch Institution	Observation station and CCTV	Sep-19	£5,838
Rhyl Tennis Club	Resurface 8 tennis courts	Sep-19	£10,000
Conwy Chamber of Trade	Town annual pirates weekend	Sep-19	£10,000
Mochdre Bowling Club	New mower	Sep-19	£6,516.28
Copperfields Bowling Club	New shelter roof	Sep-19	£6,866
Deganwy Rovers (Conwy Yacht Club)	Purchase of Celtic long boat	Sep-19	£10,000
Rhyl Rugby Club - Floodlight Project	New floodlights	Dec-19	£10,000
Conwy Golf Club	Production of bilingual booklets for school kids to support Curtis cup event	Dec-19	£6,000
Prestatyn Carnival	Hiring of marquees, table and chairs for event	Dec-19	£3,305.75
Co-Options	Disability biking scheme	Mar-20	£8,740.62
Amgueddfa Cae Hen Museum	To enable planning permission to be sought	Mar-20	£8,969.05
Cor Meibion Colwyn	New keyboard	Mar-20	£1,562

All Afloat	Access to sailing project Llandudno	Mar-20	£7,008
East Parade Bowling Club	Upgrade to facilities	Mar-20	£6,416.40
St Asaph Football Club	Completion of new stand development	Sept 20	£2,480
North Wales Pilgrim Way	Signage for path	Sept 20	£2,626
Colwyn in Bloom	A sculpture trail	Sept 20	£9,874.50
Old Colwyn Bowling Club	Building an all ability path so all can access club	Dec 20	£7,380
Rhyl District Guides	Clearing and planting an outdoor usable space for guides	Dec 20	£8,742.05
Prestatyn Explorer Scouts	Set up costs including equipment and membership fund	Dec 20	£4,000
Friends Of Queen's Park	Repair/Improve Victorian Pillars and wrought ironworks to main park entrance	Mar 21	£10,000
Grove Bowling Club	Purchase of new mower and maintenance cassettes	Mar 21	£6,410.00
Rhyl & District Rugby Club	Construction of all ability pathway around main pitches	Mar 21	£10,000
Kinmel Bay Sports Association	Purchase of new mower for grounds maintenance and internal redecoration of Y Morfa leisure centre.	Mar 21	£9,695.00
Snowdonia Active	Outdoor activities for mums/baby during first 1,000 days. Development of online activities, locations and opportunities across Coastal Belt. Partnership with BETSI Cadwalwr Health Board	Jun 21	£49,400
Dyserth Town Council	Reclamation of old, historic Lime Pits, the creation of a small Heritage Park with info boards and picnic facilities	Jun 21	£5,780.00