European Offshore Wind Deployment Centre

Environmental Research & Monitoring Programme

Socio-Economic Study

Oxford Brookes University

Interim Report 2018

VATTENFALL

Contents

This summary report of the first 9 months of the project draws on a presentation made by Prof. John Glasson to the EOWDC Scientific Panel in Aberdeen in November 2017.

Research Team and contacts

Dr. Bridget Durning (management/admin lead)
Prof. John Glasson (research lead)
John Carnie
Tokunbo Olorundami
Kellie Welch
bdurning@brookes.ac.uk
jglasson@brookes.ac.uk

1. Introduction: why research the socio-economic impacts of major projects, and of offshore wind farms in particular?

Until recently, socio-economic impacts have been seen as the 'poor relations' in the assessment of the impacts of major projects, in contrast to bio-physical impacts which have had more coverage. Giving them more emphasis is long overdue ….' from the perspective of the social impact agenda, this meant "valuing people as much as fish"… (according to the US academic, Bronfman, in 1991).

The inclusion of both socio-economic and bio-physical impacts in the assessment of the potential impacts of major projects provides for a much more integrated and comprehensive assessment for all stakeholders involved and especially for decision makers. It also responds to the contemporary push for developers to have a 'Social Licence to Operate' from the impacted community, from agencies such as the International Finance Corporation/World Bank Group, with its required *Environmental and Social Sustainability Performance Standards* (2012), and the International Association for Impact Assessment (IAIA) with its *Guidelines for Social Impact Assessment (2015).*The revised EU Environmental Impact Assessment (EIA) Directive (2014) also gives a higher profile to population and health impacts.

There is some history of assessing socio- economic impacts of onshore wind farms, especially in relation to landscape, noise, jobs and community benefits. However there is much less for offshore wind farms - out of sight out of mind? Yet, there are onshore elements to offshore projects, and some offshore projects may be highly visible. There are now many UK Offshore Wind Farm (OWF) projects with significant economic and social impacts (e.g. jobs, supply chain, community benefits) at various spatial scales (from local to national and beyond). The UK OWF industry is now very substantial (see Figure 1 which shows OWF installed capacity in Gigawatts) in Europe in 2015).

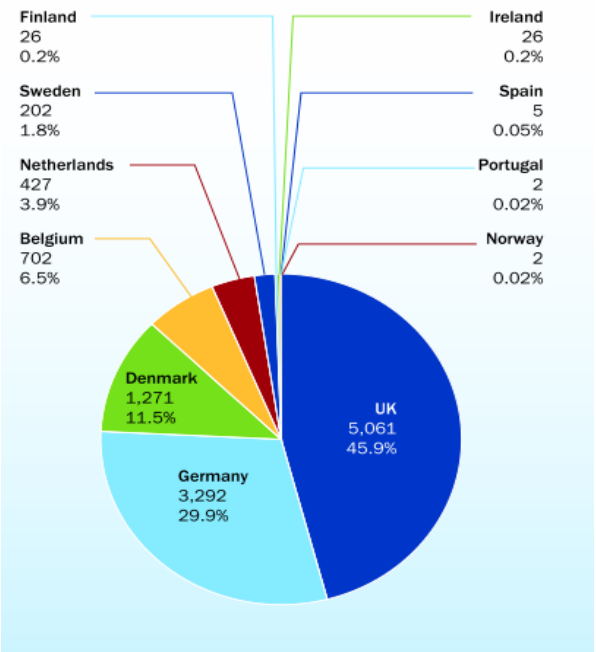


Figure 1: European OWF installed capacity in GW, and percentage of total.
Source: EWEA 2016

2. The aims and methods of this EOWDC research project

Aims – to:

- Explore methods used to predict socio-economic impacts
- Compare predicted impacts with actual impacts
- Enhance understanding of OWF socio-economic impacts
- Highlight best practice in how to maximise local benefits

Methods –4 parallel elements, to:

- Examine evolving socio-economic impacts literature, especially on OWFs
- Monitor the European Offshore Wind Deployment Centre (EOWDC) over the project lifecycle
- Compare EOWDC socio-economic impacts with other studies of OWFS: Beatrice and Hornsea
- Review the socio-economic content in recent OWF Environmental Statements (ES)

3. Examining the evolving literature and reports

A comprehensive literature review of socio-economic impacts of major projects, and especially OWFs, has been undertaken.

Some initial messages on generic socio-economic impacts of major projects

Socio-economic impacts include a growing range of impact types: direct economic; wider indirect/induced economic; demographic; housing; other local services; socio-cultural; and distributional (who gains/who loses from developments?). The focus tends to be on the more quantifiable economic impacts, especially on local employment content, local supply chain procurement, and other potential impacts on local businesses (e.g. on tourism). There can be issues in prediction, with uncertainties about the actual nature of the project. The enhancement of socio-economic benefits is evolving fast (e.g. promoting local supply chain and local employment), but there is very little monitoring of predictions and on what socio-economic impacts actually happen in practice.

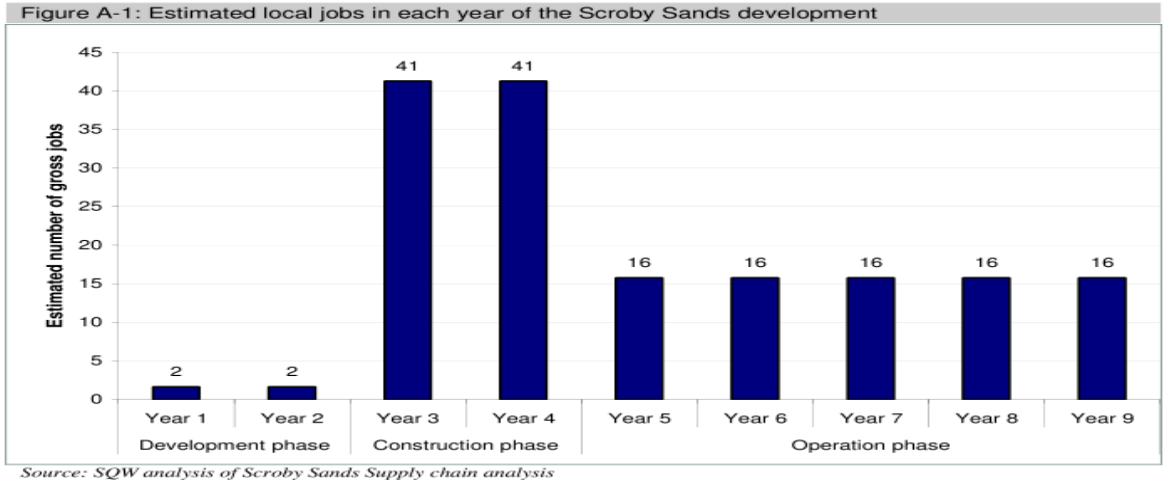
Some initial messages on the socio-economic impacts of OWFs

There is a focus on the economic impacts, especially local jobs and local Gross Value Added (GVA) of the offshore element of the construction stage. There is little coverage of the onshore element of OWFs, and very little coverage of social impacts. There are major local economic leakages from OWFs; much of the offshore work is outsourced from well beyond the local area. There is more local economic potential from the onshore element of projects (e.g. sub-station comnnections; local port improvements).

Also, do not underestimate the local significance of the Operations and Maintenance (O&M) stage, which can bring more stable and long-standing impacts. The impacts of multiple OWFs developments can be cumulative, and can be a catalyst for port development and other supply chain activities (e.g. set down areas, assembly and, in some cases, fabrication facilities).

There is some good practice work on enhancement measures – especially the promotion of local supply chain opportunities and on early community engagement – with the growing role of often substantial Community Benefits Agreements. However there is very little hard evidence on socio-economic impacts from monitoring studies. The graph below (Figure 2) shows the local job years for East Anglia over the development stages from monitoring data for the small (60 MW) Scroby Sands OWF. Robin Rigg provides another example. Table 1 shows the range of average UK-scale economic content for recent UK OWF projects for the devex, capex and opex stages, with the highest UK content % for the Opex (O&M) stage.

Figure 2: SQW analysis of Scroby Sands OWF supply chain analysis
Source: SQW 2011



	UK content		
	Lower	Upper	Weighted average
TOTEX	30%	57%	43%
DEVEX	16%	90%	57%
CAPEX	12%	32%	18%
OPEX	64%	82%	73%

Table 1: The UK content of operating OFWs
Source: BVG Associates 2015

Although there are similar attitudes and perceptions to onshore and offshore wind developments, recent studies suggest that the meaning of the marine context and a community's attachment to the sea and seascape should be considered when assessing the social impact of OWF. Research findings indicate that OWF overall can have a positive impact on well-being. Other findings show that early community engagement in the development of an OWF can alleviate fears and uncertainty, which in turn has a positive effect on the social impacts of an offshore development. Similarly, engagement throughout the development process also contributes to equity and justice issues, with communities feeling that they are engaged in decision-making about their future. Mitigation and enhancement methods, such as offering community benefits are also seen as positive, although they have also been interpreted by some commentators as 'bribes' to the community.

4. Monitoring the Aberdeen OWF project lifecycle

The Aberdeen OWF is a relatively small OWF with 11 turbines/c 92.4MW, and with total expenditure (Totex) of more than £300m. It is located 2.4km. It is also an innovative project in terms of technology. It has offshore and onshore elements; the latter includes a sub-station at Blackdog, and a 7.5 km cable connection to SSE's Dyce sub-station. The ES predicted c300 local (c750 Scotland) construction stage job years, and c650 local (c750 Scotland) O&M job years. It also predicted c£16m local GVA (c£40m Scotland) for the construction stage and c£20m local (c £23m Scotland) for the O&M stage. The research uses various impacts study areas – from Scotland (Figure 3a) to Aberdeenshire/Aberdeen (Figure 3b), to local Community Council (Figure 3c) areas as set out below.

The research approach includes the following activities:

- Regular meetings/telecoms with Vattenfall project staff
- Regular workshops with representatives of local authorities/agencies and with the local Belhelvie Community Council to explore evolving project impacts and responses
- Various surveys through the lifecycle of the project to identify actual socio-economic impacts, including:

  - Workforce data from tier 1 and tier 2 contractors
  - Contracts data from Vattenfall and from tier 1 contractors (J. Murphy & Sons Limited, MHI Vestas Offshore Wind and Boskalis)
  - Local community benefits projects information from Vattenfall
  - Tier 1 contractors' workforces' surveys; and possible sampling of lower tiers
  - Local businesses surveys

Figure 3a: Scotland study area

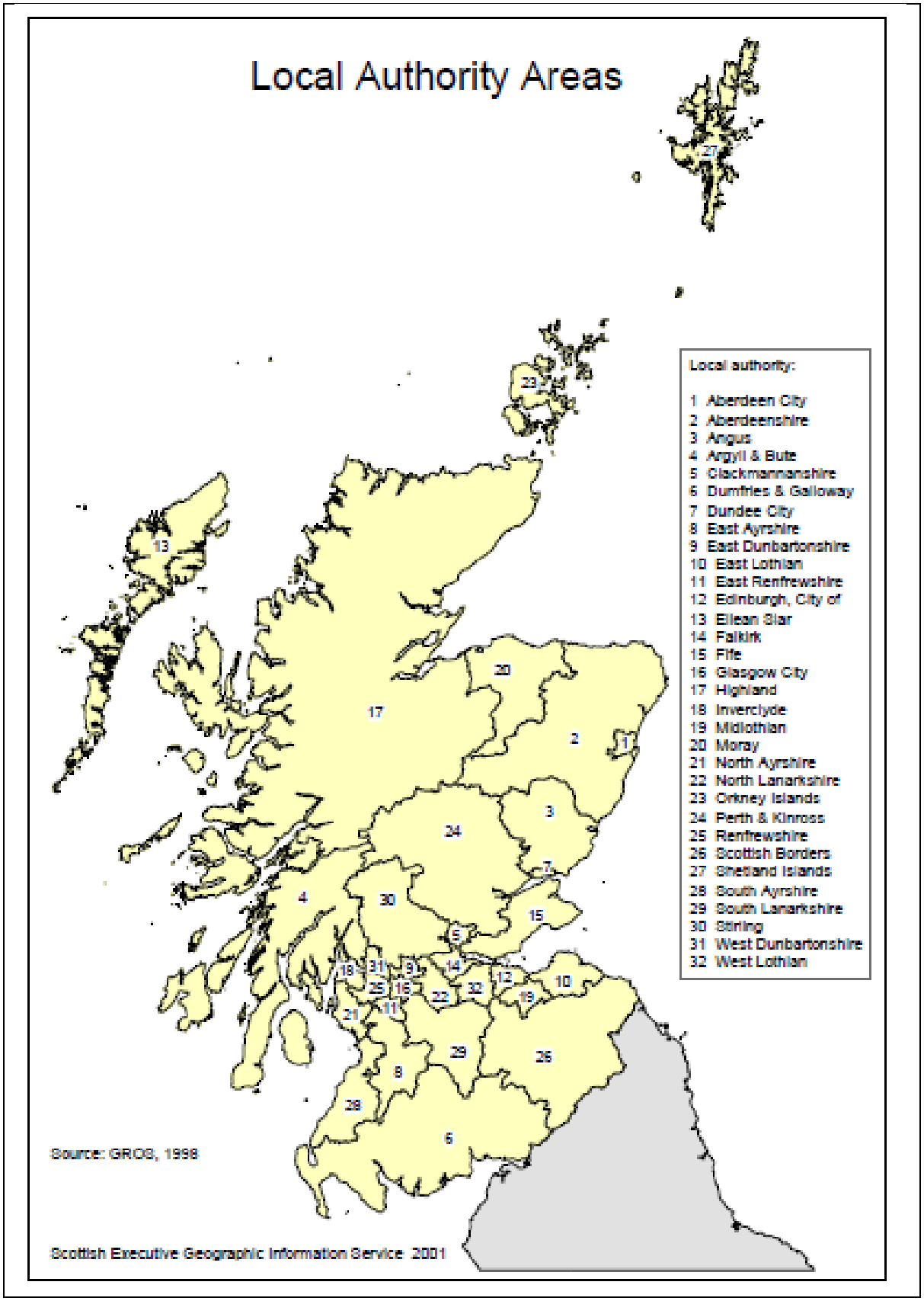


Figure 3b: Aberdeenshire and Aberdeen study areas

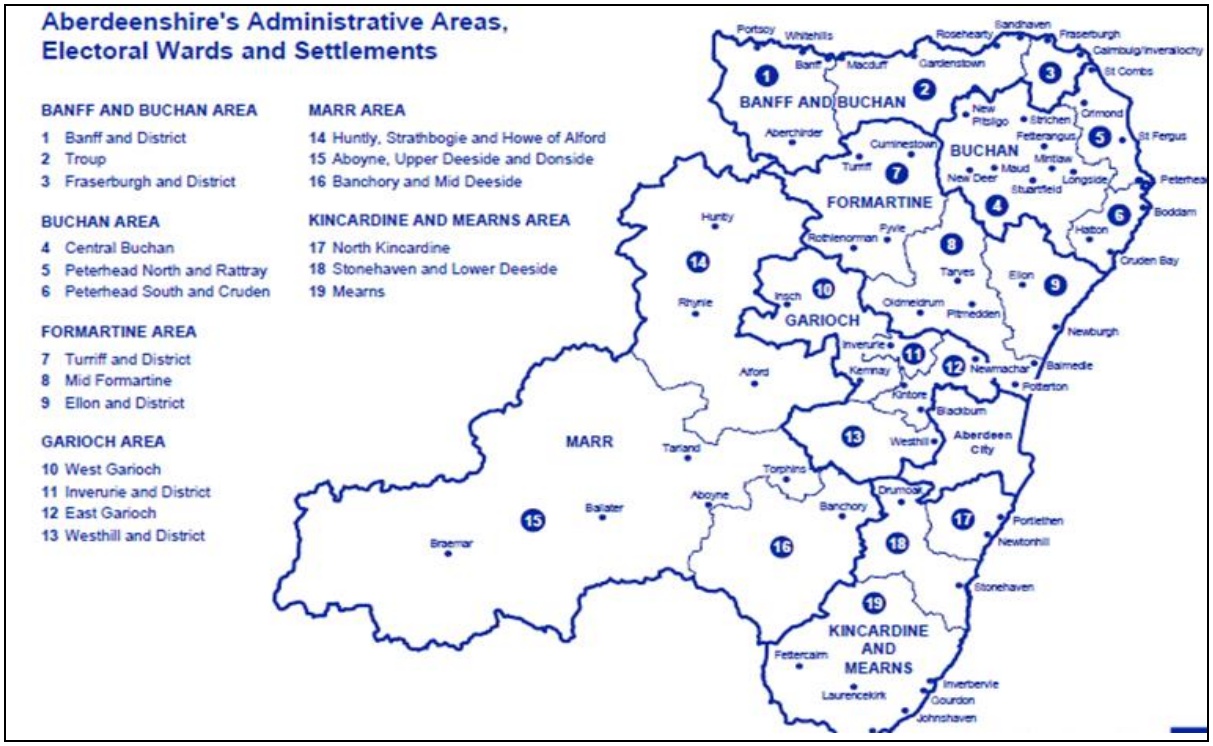
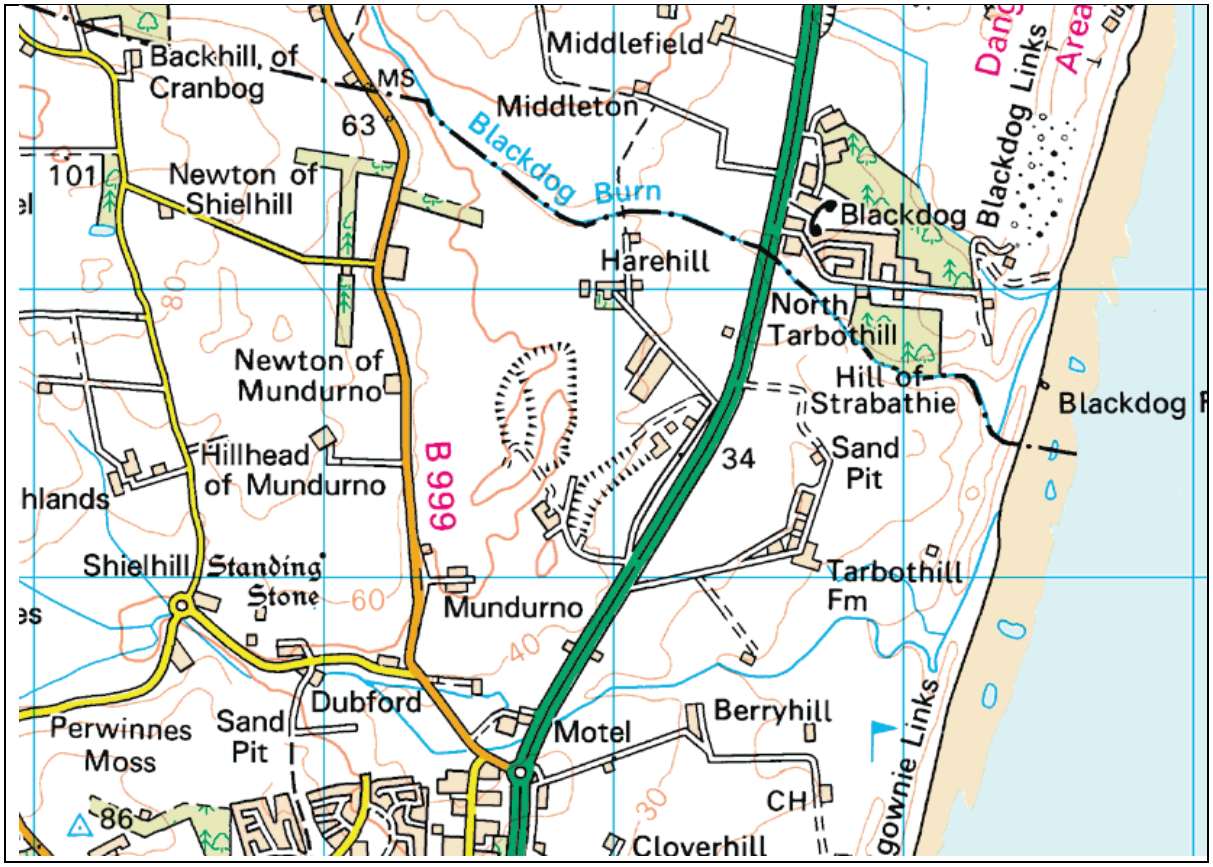


Figure 3c: Local study area



Some socio-economic impacts findings to date

An engagement/social interaction programme with the local community has been successfully led by Natalie Ghazi (Vattenfall), involving monthly meetings with Belhelvie Community Council, meetings with the Blackdog Residents' Association and newsletters etc. Over £50k in funding has been provided to date for a variety of local causes including the Aberdeen Science Centre, Aberdeen Football Club, Belhelvie Girl Guides, Aberdeen and Grampian Chamber of Commerce, and various other local groups. Future substantial funding will come from a Community Benefits Fund (CBF) of £150k pa over the life of the project. The distributional approach to be adopted is subject to consultation with the local community/stakeholders in early 2018.

Vattenfall have provided some data on project expenditure. Table 2 below shows Contractors with contracts of a value totalling around £3m for the pre-construction stage.

Baker Tilly UK Audit	Brown & May Marine	Cathie Associated	emapsite.com	FGDS	Fugro GeoConsulting	Fugro GEOS
Hayes McKenzie Partnership Ltd	IOM Consulting	Kelly Services	LDA Design Consulting	Nordtek	Ove Arup & Partners	Savills (UK)
Serco	SgurrEnergy	SLR Consulting	Structural Soils	The Big Partnership Group	Xero Energy	Mwaves
Pelagica Environmental Consult	Babcock Marine (Rosyth).	Donside Safety	TVP Studios	Maersk Training	Archer Marketing	

Table 2: Aberdeen OWF pre-construction contractors
Source: Vattenfall 2016

We are currently seeking to spatially disaggregate details of over 250 construction stage contracts, from a similar number of contractors, and £350m of commitments to date. Local employment data is reliant on the completion of workforce returns by the tier 1 contractors.

A survey of the socio-economic characteristics of the onsite Blackdog workforce, at the sub-station site, has been succesfully carried out with a direct worker questionnaire survey. Results show that at least 60% of the workforce come locally from within Aberdeenshire; of the remaining in-migrants, about 80% come from Scotland, with some making a daily commute of over 2 hours. Most workers travelled to the site by car. Further details will be available in a subsequent report. We will undertake similar questionnaire surveys for the offshore workforce in Spring 2018. The local businesses survey will also be carried out in the Spring.

5. Comparative studies of OWF projects.

The project is taking two comparative OWF studies to provide examples of larger projects and the cumulative impact of several projects. These are Beatrice, located in the Moray Firth, and the Hornsea projects, which are part of a cluster of North Sea OWF projects off the coast of Humberside. Our work to date has focused on the Beatrice project. The more limited cumulative studies will include both the Aberdeen coast and Moray Firth developments, and the Humber/Hornsea cluster, as far as is possible from available data.

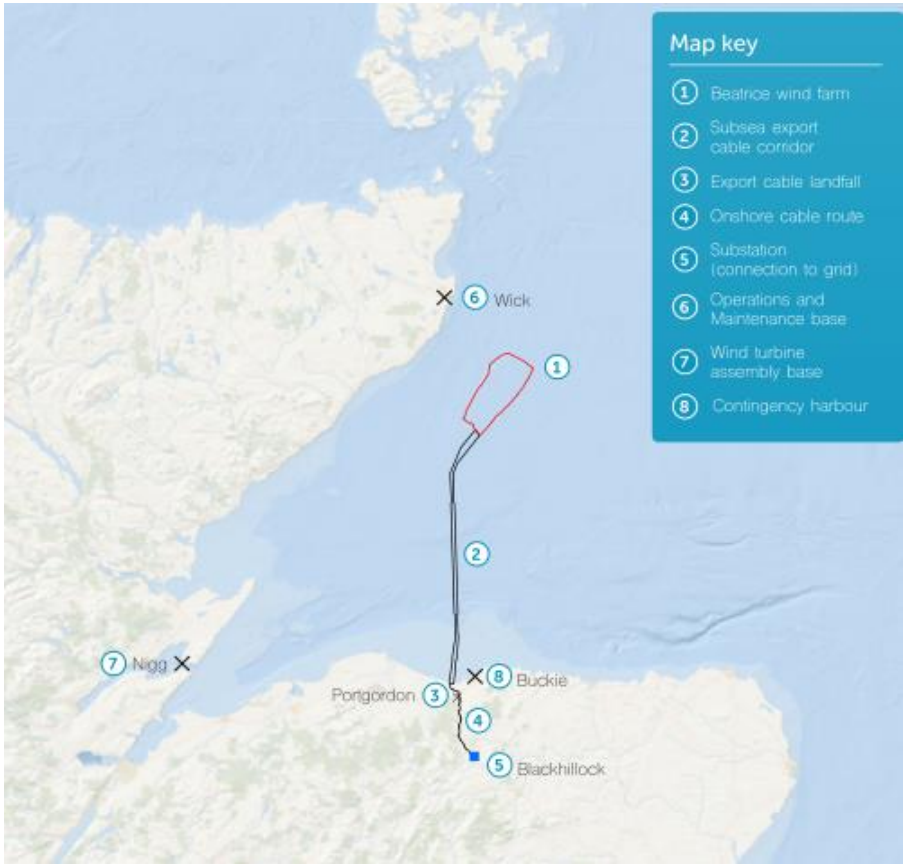


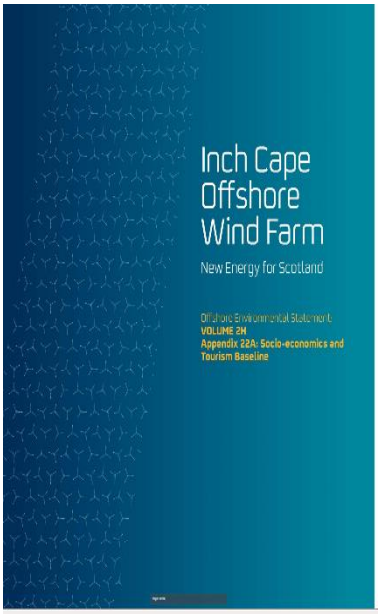
Figure 4: Key elements of the Beatrice OWF project
Source: Beatrice OWF website

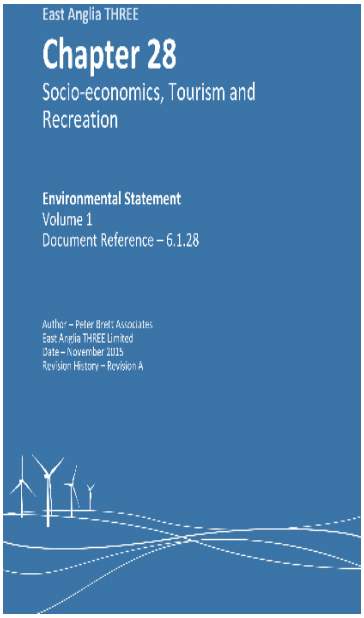
Beatrice is a 588MW project, with 84 turbines and capex of £2.6 bn. It lies 13.5 km off the Caithness coast, and will be connected to the grid via a 65 km cable route to Portgordon on the Moray coast, and then onland to a new sub-station at Blackhillock, Keith (Figure 4). The construction project is roughly on the same timetable as the Aberdeen project. The Beatrice ES predictions use very wide 'low-to-high case' socio-economic scenarios. For example, local area job years predictions vary from 400-1800 for the construction stage, and from 3200-6000 for the O&M stage.

Some interim conclusions on the Beatrice socio-economic study show a strong focus on economic impacts, especially GVA and employment, with very little on social impacts until the advent of the £6m CBF. The economic leakages out of the study area/Scotland are however high at 80% capital expenditure (Capex). The local study area is likely to gain most from the O&M stage, and the development of the ports at Wick and Buckie,to service the project appear to be meeting local expectations for the project. Beatrice Opex figures are not yet available.

The project does have some good practice socio-economic impact lessons. For example, there is an attempt to monitor the actual economic impacts using an Input-Output model, and to estimate the wider impacts of the CBF using a Social Return on Investment model.There is also an innovative two tier approach to the distribution of the CBF, although there were some local queries about the nature of the process used to arrive at the size and nature of the fund. The project also exemplifies the significant cumulative impacts from the project: sustaining a Scottish supply chain and enhancing key infrastructure, especially a network of Scottish port sites which may be of considerable significance for future offshore renewable energy projects.

6. Recent socio-economic content in OWF Environmental Statements.





The fourth element of the research is a review of the nature of the socio-economic content of all aspects of ESs and relevant decision documents for OWF consent applications since the start of 2010 – for developments with a minimum capacity of 50 MW. We have assembled electronic versions of ESs for 27 UK projects, and c10-15 non-UK projects (Netherlands, Denmark, Sweden and Germany).

The purposes of the review are to document the extent and nature of the soci-economic coverage; trends over time; new issues; evolving methodology; and to explain variations in predicted socio-economic assessment impacts (e.g. variations by size of project; developer; country; location in relation to the coast etc). A standard pro-forma is being used to aid the comparisons. We are still in the early stages of this work, but reviews to date indicate that all the UK ESs have a section on socio-economic effects. However there is considerable variation in depth of socio-economic impacts coverage in the ESs (e.g. from 4pp to over 150 pp).There is a focus on the construction stage, but the inability of developers to specify the construction port base greatly weakens the utility of many of the assessments.

7. Challenges of the research and next steps

The key challenge to date is accessing, and disaggregating, employment and contract spend data for the construction stage of the Aberdeen project. This involves a working relationship with the tier 1 contractors, via Vattenfall. It is vital that we gain this data to meet the objectives for the research, as agreed with Vattenfall.

Other challenges include: gaining good responses for our various upcoming surveys, similar to our recent sub-station site workforce survey; maintaining workshop momentum; gaining access to the EU ESs (preferably in English); hopefully going beyond published/semi-published data, via SSE and Orsted contacts, for the Beatrice and Hornsea comparative studies; and searching out all relevant literature/ reports in this rapidly evolving field.

Ongoing research in Year 2 of the project will include: detailing the socio-economic impacts of the Aberdeen project, for both the construction and early operational stages, as far as Vattenfall and contractor data and survey results permit; undertaking the Orsted Hornsea socio-economic impacts comparative study, plus some updating of the Beatrice study into the operational stage; concluding the review of UK and other EU Environmental Statements, drawing out key findings; and updating the Literature Review and also drawing out key findings.There will also be a review of press coverage over the life of the project to date, and the project website will also be going live very soon.

References

BVG Associates (2015) *Offshore Wind Programme Board: The UK content of operating OFWs,* Swindon: BVG Associates

EWEA (European Wind Energy Association) (2016). *The European Offshore Wind Industry—Key trends and statistics 2015,* EWEA

SQW (2011) --- *Phase 2 Socio-Economic Report, Argyll Renewable Communities,* SQW

Vattenfall (2016). *Aberdeen OWF Supply Chain Event.* September 2016.