*Guidance on assessing the socio-economic impacts of offshore wind farms (OWFs): a brief summary**

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Purpose of the report: Offshore Wind is a major, dynamic, and rapidly evolving renewable energy industry. This is particularly so in Europe, and especially in the UK. Offshore Wind Farms (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 local and regional coastal communities adjacent 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.

* **The full report is available at --- https://doi.org/10.24384/ax1s-jr48**

The lack of knowledge on the impacts of OWFs on human interests can greatly hamper case management. There is a need for adequate planning and assessment tools for the key stakeholders – developers, consultancies, governments (local, regional and national), development agencies and the general public—who are the audience for this report. *The focus of this document is to provide an array of good practice guidance for stakeholders on the under-assessed socio-economic implications and opportunities emanating from the growth in this dynamic renewable OWF energy industry*. Key guidance points draw on the findings and good practice examples in the Technical Reports underpinning this research programme.

Context: a dynamic OWF renewable energy industry: The UK is the global leader in offshore wind energy generation. At the end of 2019, the UK had c10 GW in 40 operational OWFs, making the country the nation with the single largest operating capacity in the world (Wind Europe). This capacity is forecast to grow to 40GW by 2030, with up to £50bn infrastructure spend (UK Queen's Speech Dec 2019). Such growth provides important potential socio-economic opportunities for the UK, and for regions and local areas adjacent to the OWF sites, in terms of employment, supply chain and other socio-economic benefits. *Yet there is a concern that as an industry, the UK offshore wind energy sector should take the delivering of UK content and UK economic success, at all levels, more seriously.*

Table 1: Number of offshore wind farms, MW capacity and turbines connected at end of 2019, per country

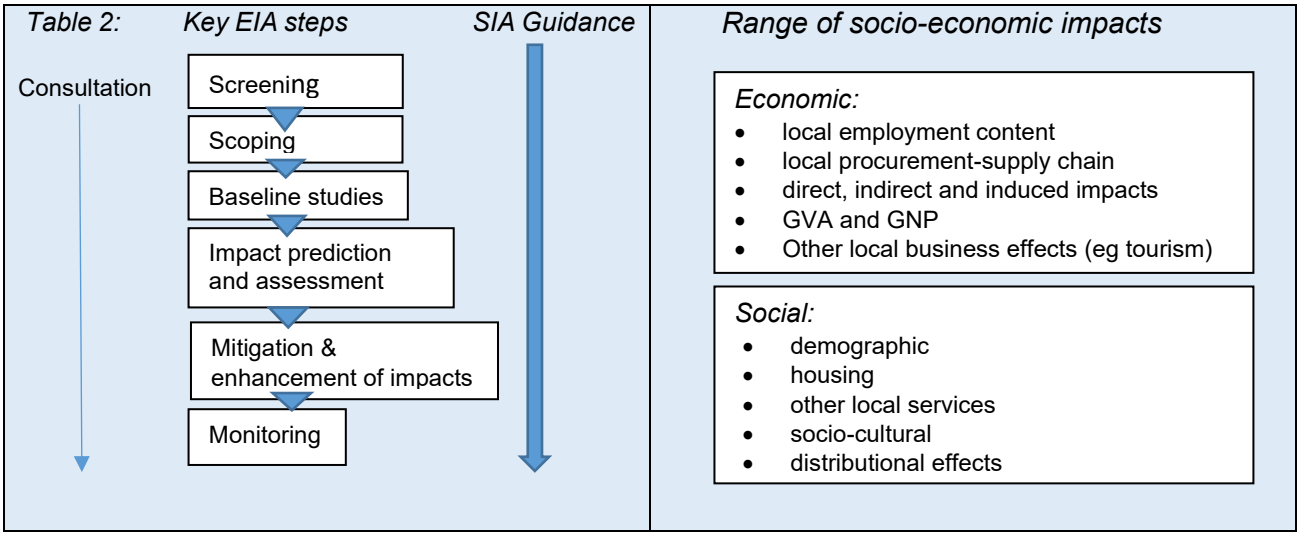
Country	Number of Wind Farms Connected	Cumulative Capacity (MW)	Number of Turbines Connected	Net Capacity Connected in 2019	Number of Turbines Connected in 2019
UK	40	9,945	2,225	1,760	252
Germany	28	7,445	1,469	1,111	160
Denmark	14	1,703	559	374	45
Belgium	8	1,556	318	370	44
Netherlands	6	1,118	365	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)

An overview of the procedures for planning and assessing the socio-economic impacts of major OWF projects: Socio-economic impacts are of growing importance in the planning and assessment of OWFs, especially in the UK. International drivers include for example IFC/World Bank Performance Standards and the 2014 amended EIA Directive. Major projects have special assessment procedures. For example, in England, OWFs greater than 50MW come under the 2008 Planning Act which identifies a subset of Nationally Significant Infrastructure Projects (NSIPs), with impacts examined by the Planning Inspectorate, National Infrastructure Division (PINs/NID). There is a growing recognition by practice of the importance of a *social licence to operate* from the community, and of local content. However, to date, from a review of UK OWF ESs, there has been a predominance of assessment of economic impacts, with much less consideration of the assessment of social impacts. There is also a concern that many of the economic benefits of major projects may leak out way beyond the local area.

A consideration of socio-economic impacts needs to clarify the type, duration, spatial extent and distribution of impacts. In other words, the analyst need to ask what to include, over what period, over

what area, and for whom. A socio-economic impact assessment (SIA) examines these questions through the various steps in the assessment process - screening; scoping; baseline studies; prediction and assessing impact significance; mitigation and enhancement of impacts; and monitoring. There is consideration of the steps separately for economic impacts and for social impacts in the main guidance report. The research focus is on *local impacts.* The research suggests there is merit in differentiating between local area (eg 60 minutes local commuting catchment area) and wider regional context for the construction stage, and in using a narrower local authority area definition of local for the operational stage, with the highlighting of very specific impact hotspots (eg onshore sub-station and cable connection locations).



Impact assessment process -- some *economic* impact findings and recommendations: Economic impacts will normally include employment, Gross Value Added (GVA) and specific sector impacts, for each project stage, time-period and spatial level. There are Direct impacts (eg project employment), Indirect impacts (eg supply chain), and Induced impacts (eg retail expenditure of employees). For the project, it is important to establish, as fully and accurately as possible, the investment/expenditure and the associated human resources plans for the key stages of the project lifecycle—especially for the construction (CAPEX) and O&M stages (OPEX).

Table 3: OWF lifecycle stages for socio-economic impacts

Main stages	Costs involved for a typical 1GW OWF
DEVEX(development expenditure)	Est c£120m (with c£50m for assessment and consenting); c £8m for the EIA/ES of which c £350,000 for S-E assessment.
CAPEX(capital expenditure)	Roughly estimated at c£2-3bn for a 1GW OWF. Major area for efficiencies. (IAU estimates from recent cases). May be c3years in the construction stage.
OPEX(operational expenditure)	Estimated at c£75mpa. O&M lifecycle is typically 20-25 years.
DECEX(decommissioning expenditure)	Estimated at c£300m. Further environmental surveys and management plans required under the Energy Act (2004)
TOTEX(total expenditure)	IAU roughly estimated at c£4-5bn (undiscounted) over full project life cycle

Source: Adapted from BVG (2019) *Guide to an Offshore Wind Farm, and IAU estimates from recent cases*

The prediction and assessment of economic impacts of an OWF project on various spatial areas is an inexact, but important, exercise. Methods used, such as scenarios, should seek to reduce uncertainty associated especially with port location, supply chain and technology. Use may be made

of a range of potential local and regional employment impact rules of thumb for total construction and for each O&M year, using a jobs per project MW size, and GVA £m per project MW size approach. These can provide broad orders of scale and ranges of potential economic impacts for the analyst.

Table 4: Key elements in economic predictions for OWF developments

Project stage	*Employment metric*	*GVA metric*
Development/pre-construction Construction offshore –peak Construction offshore –total Construction onshore --peak Construction onshore –total O&M – annual O&M -- total Decommissioning – total	For each project stage: -- direct employment -- indirect employment -- induced employment All in FTE person years	For each project stage: -- direct GVA -- indirect GVA -- induced GVA

For socio-economic impacts, and particularly for economic impacts, the focus in assessment is often more on enhancing beneficial impacts, rather than on mitigating adverse impacts. Examples of key enhancement measures are set out in Table 5. Good use can be made of an *Employment and Skills Plan*, or equivalent, in a planning permission to support effective implementation of socio-economic undertakings (predominantly economic). Monitoring is invaluable in learning from practice. It allows the comparison of predictions with actual outcomes, provides guidance on actual impacts for future OWF planning, and facilitates an adaptive approach to project implementation. Monitoring of recent projects shows in particular the currently underestimated economic value in ESs of onshore construction and especially the O&M stage for local areas, and the need to increase the currently over-estimated (in ESs) local and regional economic benefits from offshore construction.

Table 5: Examples of types of economic enhancement measures

Type of measure	**Key elements, and examples**	
Supply chain websites	Developer websites provide vehicles for local firms to check out supply chain opportunities and to register their interest.	Build requirement for an *Employment and Skills Plan into the planning permission* *eg Hornsea 2 DCO Requirement 17 (PINS 2015)* --- No part of the authorized development may be commenced until an employment and skills plan has been submitted to and approved by the Lincolnshire local authorities and the Humber LEP
Supply chain events	Developers provide open events setting out the project supply-chain opportunities, well in advance of the project start..	
Skills training programmes	Working with local education and training providers to provide appropriate training to equip local people with appropriate skills to work on the project. Provision of apprenticeships.	
Local recruitment targets	In addition to overall local recruitment targets, there may also be specific targets for employment from disadvantaged groups.	

Impact assessment process--some *social* impact findings and recommendations: Social impacts of OWFs include impacts on the demography, housing, other local services, and socio-cultural/quality of life of the host coastal area. Some social issues – such as attitudes to change in seascape, way of life and implications for marine environment-- are important but qualitative and more difficult to assess. Key tasks in assessing social impacts follow the main steps for EIA, particularly highlighting the importance of participatory approaches to engage communities. Social impacts should be covered whatever the distance from the coast of the OWF, for there is always onshore construction, the substantial offshore construction workforce may have onshore impacts (eg temporary housing), and there is the important O&M stage. Affected communities should be involved and engaged at the earliest stage possible, to achieve the social licence to operate. This will hopefully minimise negative social impacts and maximise local community benefits.

Table 6: Key steps for developer to achieve community engagement include:

- *Appoint a Local Community Liaison Officer*
- *Participate early in community workshops / focus groups to scope potential key issues*
- *Engage regularly with the community throughout project stages*
- *Utilise engagement opportunities provided by community groups (eg community councils)*
- *Fund support for engagement activities in development and construction stages, and a Community Benefits Agreement (CBA) for the O&M stage*
- *Survey community views of development impacts at key stages in the project lifecycle*
- *Monitor media coverage of views on project impacts*
- *Produce regular publicly available monitoring reports on project and its local and regional impacts.*

Prediction methodology for social impacts is largely descriptive and qualitative. While various methods can be employed (eg. scenarios), predicting impacts for social issues is not a precise science, and an element of assessor judgement, informed by stakeholder consultation, is necessary. Mitigation and enhancement measures are likely to focus on local area education and skills training initiatives. Monitoring of social impacts, including views on wellbeing, local services, community cohesion and landscape, plus wider views on renewable energy, is important, and use can be made of direct surveys of the affected communities, and from media coverage. Community Benefits Agreements (CBA) are becoming an established element in OWF practice and the main report includes some good practice CBA lessons.

Table7 : Community Benefits Funding—Aberdeen EOWDC good example

- Built on *Good Practice Principles for Community Benefits from Offshore Renewable Energy Developments* (Scottish Government, 2014)
- Vattenfall LCLO followed up with discussions with local stakeholders, and online survey of the local community on various options/priorities for the Aberdeen fund.
- Positive outcome is a fund of £150,000 pa for 20 years. It applies to the whole of Aberdeen City and Aberdeenshire, but with 10% pa ringfenced for Blackdog projects.
- Two levels of application—small projects (up to £2000), and large projects (up to £15000). A part-time community development officer appointed to offer support to communities to develop ideas and approaches to make the most of the funding and achieve maximum impact.
- Applications invited---***Unlock our Future*** fund --- administered by Foundation Scotland

Summary practice guidance: some key recommendations for future OWF projects

Socio-economic impacts are important, however distant from the coast is the OWF project, and should receive due consideration in the EIA/ES.

Use an integrated ES chapter approach, including both social and economic impacts for bot onshore and offshore infrastructure, for key project stages and spatial levels: local/regional/nation-wide.

Establish, as accurately as possible, investment/expenditure and human resources plans for th project lifecycle—especially for CAPEX and OPEX stages.

Seek to minimise uncertainty in impact predictions.

Use an Employment and Skills Plan, or equivalent, to support effective implementation of socio-economic undertakings.

Commit to early and continuing community engagement as a way to engage with a local community; use of a Local Community Liaison Officer is recommended.

Community Benefits Agreements (CBAs) should be initiated at an early stage of the project, and should be developed in consultation with the community.

Monitoring of actual impacts is essential to check on implementation.

Underpinning research and documents

The research for this guide was part of a Vattenfall scientific research programme to understand the environmental impacts of offshore wind projects; the European Offshore Wind Deployment Centre (EOWDC) in Aberdeen funded and facilitated the research. Believed to be the largest research programme of its kind, the programme has funded in-depth scientific research and monitoring in a real-time environment on four biophysical impacts topics, plus this socio-economic impacts topic. A scientific panel, made up of specialists in the field, advised on the selection of research projects to receive funding; panel members included Vattenfall, Aberdeen Renewable Energy Group, Marine Scotland Science, Scottish Natural Heritage, the Scottish Environment Protection Agency, RSPB Scotland, the Joint Nature Conservation Committee, Whale and Dolphin Conservation, and The Crown Estate. The socio-economic impacts project ran over a period from 2017-2020. A team from the Impact Assessment Unit (IAU) at Oxford Brookes University undertook the research.

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