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Sofia Offshore Wind Farm

Socio-Economic Research Study



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List of abbreviations

Acronym	Description
AC	Alternating Current
bn	Billion
Capex	Capital Expenditure
Devex	Development Expenditure
EPCI	Engineering, Procurement, Construction, and Installation
EHS	Environment, Health, and Safety
FE	Further Education
FTE	Full Time Equivalent
GVA	Gross Value Added
GW	Gigawatt
HDD	Horizontal Direct Drilling
HVDC	High Voltage Direct Current
MoU	Memorandum of Understanding
MW	Megawatt
O&M	Operations and Maintenance
OCS	Offshore Converter Station
OEM	Original Equipment Manufacturer
Opex	Operational Expenditure
SEND	Special Educational Needs and Disabilities
SGRE	Siemens Gamesa Renewable Energy
STEM	Science, technology, engineering, mathematics
TSA	Turbine Supply Agreement
TVCA	Tees Valley Combined Authority
TVCF	Tees Valley Community Foundation
WTG	Wind Turbine Generator

Executive Summary

Sofia Offshore Wind

The **Sofia Offshore Wind Project** is a 1.4 gigawatt (GW) wind farm located on Dogger Bank, currently under construction approximately **195 kilometres off the north east coast of England**. It will reach landfall at the connection point located between **Marske-by-the-Sea and Redcar**, in Tees Valley. Upon completion, it will be one of the largest offshore wind farms in the UK.

The site consists of **100 wind turbine generators** (WTGs), each with 14 megawatt (MW) capacity and each at 252 metres tall. The turbines are supplied by **Siemens Gamesa Renewable Energy** (SGRE).

Sofia Offshore Wind Farm is owned 100% by RWE. Monitoring, maintenance, and operational servicing will be centred at **RWE O&M Hub** in Grimsby, currently used for Triton Knoll Wind Farm, and now extended to serve Sofia.

Background to the study

This report considers the potential socio-economic impacts of the investment in construction and operation of the Sofia Wind Farm.

The estimated total cost of Sofia Wind Farm is **£6.08 billion**. The study considers the long-term economic impacts of **£3.09 billion** investment in the development (devex) and construction (capex) phases. This economic activity includes both those directly employed by RWE and its contractors, as well as principal contractor companies in the supply chain (Tier 1s), their lower tier supply chain spend (Tier 2s), and spending of wages by workers in the wider economy.

The Sofia Project has particularly benefitted companies in the engineering and construction sectors. Principal contractors to the Sofia Project are:

- **SGRE** – supply and installation of the 100 x WTGs
- **Prysmian** – supply and installation of export cables
- **GE** (consortium with Seatrium) – High Voltage Direct Current (HVDC) onshore and offshore converter stations (OCS) and platform
- **Jones Bros** – enabling construction works for OCS site
- **JMS Murphy** – civil construction works for onshore cables
- **Van Oord** –Engineering, procurement, construction, and installation (EPCI), foundations and array cables (supply and installation), and scour protections

Methodology

The study analysed the economic and employment impacts generated by the principal contracts and their lower supply chains through a desk-based assessment of contracts awarded and employment figures of employees working from the Sofia construction site, included employment generated directly as a result of the Sofia contract.

A review of the supply chain was required to support the development of a model which estimated the GVA and employment impacts of the project across differing geographical impact areas, namely local benefit in North East England, Yorkshire and Humber, and the wider UK. Stakeholder engagement with the principal contractors (six in total) was used alongside data on supply chain expenditure supplied by RWE.

Modelling outputs are provided as proportions of direct development and construction expenditure from the project, used to calculate Gross Value Added (GVA) and full time equivalent (FTE) person years of employment created. Alongside inputs from the principal contractors around their direct activities and supply chain spending, multiplier effects are then applied to capture how these impacts generate lower tier supply chain impacts for a total impact at the three geographical impact areas.

To support the economic modelling a review of the additional social and community impacts was conducted to provide insight on the wider local area benefits of Sofia. This data has primarily been gathered from consultations with RWE, desk review of their skills and local engagement plan, and supported by data shared by the six principal contractors on investments in upskilling and training, equipment, and infrastructure.

Findings

Taking cost inputs from RWE for the Sofia site, broken down by development and construction phases, provides the model inputs as shown below.

Table 1: Cost inputs by phase for Sofia Offshore Wind Farm

Lifecycle phase	Expenditure
Development phase	£89.7m
Construction phase	£3.00bn
Total Devex and Capex	£3.09bn¹

Source: Figures provided by RWE

¹ Note that for the purposes of the economic modelling, Wavehill have rounded the figures up to the three significant figures (e.g. £3.09bn). This approach was taken for ease of readability and clear presentation. The full, unrounded values are available upon request.

In terms of impacts on GVA and employment, the main findings can be summarised as follows:

Table 2: GVA and employment impacts of Sofia Offshore Wind Farm

	Direct		T2		T3+		Total	
	GVA	Jobs ²	GVA	Jobs	GVA	Jobs	GVA	Jobs
North East	£53.3m	410	£8.8m	80	N/A	N/A	£62.2m	490
Yorkshire and Humber	£149.6m	1,420	£31.3m	180	N/A	N/A	£180.9m	1,600
Whole UK	£321.3m	3,290	£216.0m	1,990	£222.5m	3,530	£759.8m	8,810

Source: Wavehill's modelling

The GVA and employment impacts for Yorkshire and Humber and the North East are subsets of the total impacts for the UK, i.e. of the **£759.8m** in GVA generated for the UK, £180.9m of this is attributed to Yorkshire and Humber, and £62.2m of this is attributed to the North East. Similarly, of the **8,810 FTE person years of employment** generated for the UK, 1,600 are estimated to be located in Yorkshire and Humber and 490 are estimated to be located in the North East.

The lower supply chain (Tier 3+) figures are included in the UK impacts, but the regional impacts include only supply chain tiers 1-2.

GVA

Total GVA impact for the UK generated in the development and construction phases by Sofia Offshore Wind Farm is estimated to be **£759.8m**.

- Of this total **£759.8m** in GVA for the UK, internal devex and capex outlay has made a considerable contribution, estimated at £263.0m.
- **Yorkshire and Humber** has contributed **£180.9m** in GVA, with the largest contribution arising from the supply and installation of the turbines (£170.3m GVA), centred around SGRE's base in Hull³.
- **The North East** has contributed **£62.2m in GVA**, primarily arising from onshore cable works (£11.3m GVA), and internal devex/capex outlay (£8.3m GVA)
- Most of this value will be generated through the construction period, which will be delivered over a five year period (2021-2026).

² Person years of employment, full time equivalent (FTE). This is a unit of measurement to quantify the amount of work an individual does in one year.

³ Note that this GVA calculation only assesses the impact of economic value generated within the region and only associated with the Sofia Wind Farm Project contracts, so does not capture ongoing future GVA or employment associated with other projects.

Employment

Total FTE person years of employment for the UK generated in the development and construction phases by Sofia Wind Farm is estimated to be **8,810**.

- The total 8,810 FTE person years of employment for the UK are largely driven by internal devex/capex outlay (3,380), the HVDC converter stations and platform (2,040), and supply and installation of the turbines (2,010).
- 1,600 FTE person years of employment are expected to be generated for **Yorkshire and Humber**, mostly arising from the turbine supply and installation (1,500) and the associated local supply chain.
- The **North East** is estimated to create 490 FTE person years of employment, with civil construction works for onshore cables contributing 110 FTE person years of employment and internal development and construction support (for example, project management) estimated to contribute 80 FTE person years of employment.
- The civil and construction works for onshore cables has had a positive impact at the local areas of benefit, generating 110 FTE person years of employment in the North East and 40 in Yorkshire and Humber.

Company impacts

RWE's commitment to local employment is illustrated by their apprenticeship scheme linked to the Sofia wind farm project. By recruiting 3-4 new apprentices each year, RWE ensures a steady pipeline of highly skilled wind turbine technicians as the project moves into O&M phase. These apprentices receive comprehensive training and professional qualifications, enabling them to transition into permanent roles within the company. This contributes to both local job creation and long-term project sustainability.

The Sofia project has also led to the investments by the principal contractors in **upskilling** for staff working on the contracts. Examples include specialist training in blade production methods at SGRE's Hull blade factory to accommodate the larger turbine blade size required by the Sofia project, as well as general EHS training undertaken by staff at Van Oord, and Jones Bros. In addition, Prysmian, GE, and Murphy have invested in specialist equipment for staff to operate equipment and machinery related to construction activities for the Sofia project.

Some investments in infrastructure enhancements and equipment were also generated by the Sofia project. This includes upgrades to the SGRE blade factory in Hull and purchase of new moulds to produce the turbine blades for the Sofia project. Similarly, GE invested in factory unit upgrades at the HVDC production facility in Stafford to accommodate production for Sofia, as well as research and developing in a new generation of valves. It is expected that these will sustain longer term impacts to support future large-scale offshore wind projects in the UK.

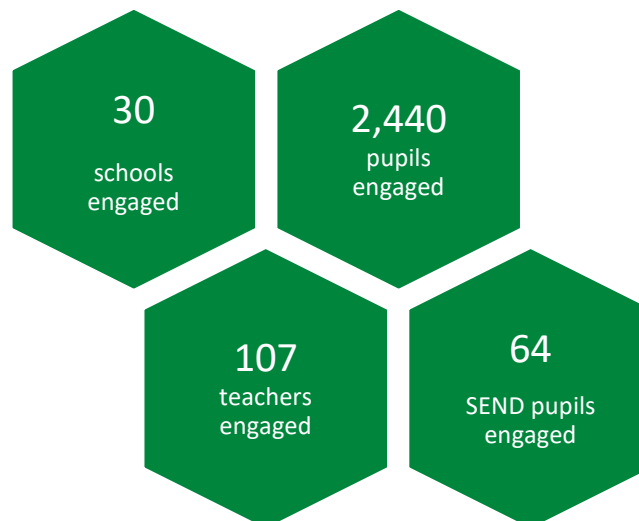
Social benefits

The Sofia project has provided important social and economic benefits for the local supply chain and local communities in the North East, Tees Valley, and Yorkshire and Humber. RWE have undertaken three strands of activities to engage with the local communities to generate social value. This includes (1). Education and skills, (2). Apprenticeships, and (3). Sponsorships and the Sofia Offshore Wind Construction Fund.

Educational engagement

Working with local schools, Further Education colleges, universities, and training providers, RWE have undertaken extensive activity to support and encourage careers in offshore wind. This includes visits to local primary and secondary schools. In total, RWE have engaged with **30 primary schools**.

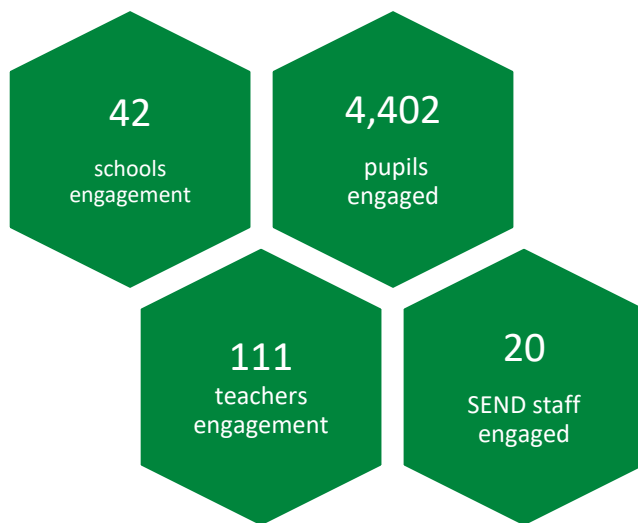
Figure 1: RWE's primary school engagement in numbers



Source: Documentation provided to Wavehill by RWE

RWE have also engaged with **42 secondary schools** and **5 Further Education Colleges**, primarily to provide careers talks and presentation on the RWE apprenticeship scheme, and running science competitions. RWE also provided training for science, maths, geography, business studies, and history teachers to support them in developing curriculum materials and to support the Champions For Wind programme.

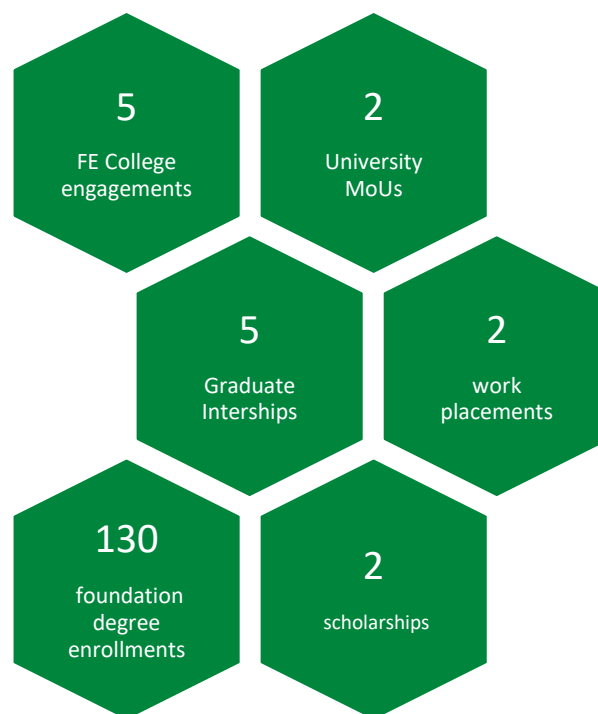
Figure 2: RWE's secondary school engagement in numbers



Source: Documentation provided to Wavehill by RWE

RWE have signed **Memorandums of Understanding (MoUs)** with Teesside University and Newcastle University, setting out commitments to support careers development for engineering, maths, and social sciences graduates.

Figure 3: RWE's FE college and university engagement in numbers



Source: Documentation provided to Wavehill by RWE

Apprenticeships

RWE provide apprenticeships on the Sofia project for T-Level students as part of their wider apprenticeship scheme covering onshore and offshore wind, and IT roles. The scheme supports training of service technicians and project engineers, with a particular focus on increasing the number of women entering technical roles in the offshore wind industry.

Construction Fund and Sponsorships

RWE provide sponsorship support (both in-kind and through grants) for local organisations and events that help tackle poverty, deprivation, and social isolation, as well as those organisations that are focused on sustainability and enhancing the natural environment. Recent sponsorship activities include volunteering days and beach clean-up days near the Sofia landfall site in Redcar, sponsorship of the Offshore Wind North East conference, and a SGRE supplier engagement event in Hull.

In addition to the sponsorship activities, RWE also provide the £150,000 Construction Fund which provides grants to local organisations in East Cleveland who undertake activities to benefit the local community. Example projects that the Construction Fund has supported include a free countryside festival, Nature Comes to Grangetown, hosted by Tees Valley Wildlife Trust, renovation works at the Marske Community Centre, and providing upgrades and illumination to the coastal path between Redcar and Marske to benefit local runners and walkers. RWE staff also took part in the Redcar Run, raising £6K for a local charity which focuses on suicide prevention, which in Teesside is higher than the national average.

Summary and conclusion

Wavehill's modelling highlights the contribution of Sofia to the UK's economy, as well as local impacts in Yorkshire and Humber and the North East. Beyond the modelled GVA and employment impacts, qualitative assessment of stakeholder consultations with Tier 1 suppliers and RWE highlight investments in infrastructure, skills development, and supply chain growth. The report finds that Sofia Offshore Wind Farm is expected to deliver long-term economic benefits while strengthening links to the local community, particularly through the outreach work with young people and community development activities.

Economic benefits

The construction and development phases of Sofia Offshore Wind Farm is estimated to generate a total GVA of **£759.8m for the UK**. This is generated by spend by RWE and the six Tier 1 suppliers through the supply chain. Particularly for those suppliers in the lower tier supply chain (Tier 2 and Tier 3+), the economic impact modelling highlights increased business activity as a result of Sofia. Of this total **£759.8m** in total GVA estimated for the UK, **£180.9m** is estimated to be generated for Yorkshire and Humber, and **£62.2m** for the North East.

In terms of employment impacts, the construction and development phases of Sofia Offshore Wind Farm is estimated to generate a total of **8,810 FTE person years of employment for the UK**. Of this total 8,810 person years of employment, **1,610** are expected to be generated for Yorkshire and Humber, and **490** for the North East.

In addition to GVA and employment impacts, the development and construction activities of Sofia Offshore Wind Farm have led to investments in infrastructure, which will bring long-term benefits to the UK in terms of future large-scale offshore wind projects. This includes physical infrastructure upgrades to the Port of Tyne, and improved capacity at the Port of Blyth. The Tier 1 suppliers have also highlighted examples of skills and training developments for their workforce, as well as new equipment purchased, arising from their involvement in Sofia.

Social benefits

The report finds that through activities related to the Sofia Offshore Wind Farm, RWE has provided considerable social benefits to the North East of England. This includes educational outreach, apprenticeships, and contributions to community development. These activities have helped to provide long-term benefits both for the local communities in Tees Valley and the wider North East, as well as the offshore wind sector.

Educational impacts

RWE have undertaken considerable educational outreach activity with local schools (primary and secondary, as well as FE colleges and universities) in Tees Valley, South Tyneside, and Blyth. By engaging children from primary school to university level, RWE has highlighted the diverse career opportunities within the offshore wind industry, connecting children and young people in the North East to future career pathways in STEM and offshore renewable energy.

The Educational Outreach programme's activities range from classroom sessions for younger pupils to apprenticeships and internships for those in higher education. This has helped to promote the offshore wind sector as a career path, as well as helping to strengthen the local skills base, which is likely to bring benefits over the longer term.

Through these initiatives, RWE have demonstrated strong commitment to both education and community development in the North East.

Apprenticeships

RWE offers apprenticeships as part of the Sofia Offshore Wind Farm project, which provide practical career routes for T-Level students in further education. In 2023, the first cohort of offshore wind turbine apprentices (4 in total) joined the three-year programme at the Grimsby Ops Hub, combining practical training with desk-based study at RWE's Renewables Academy at Coleg Llandrillo in North Wales. This practical training will continue throughout Sofia's construction phase. In addition to RWE's in-house apprenticeships, stakeholder consultations with the Tier 1 suppliers also highlighted that they have recruited their own apprentices to gain hands-on experience working on various aspects of the construction of Sofia Offshore Wind Farm.

Community impacts

Community impacts have been generated primarily in two ways: the Sofia Construction Fund, and sponsorships.

Construction Fund: The Sofia Offshore Wind Construction Fund provides up to £150,000 in grants to local charities and community groups near the project, including Marske, Redcar East, Grangetown, and others. These charities and community organisations are selected according to alignment with RWE's core values: improving community health (including mental health), tackling loneliness and poverty, and contributing towards environmental sustainability. The fund is managed by the Tees Valley Community Foundation (TVCF), and to date the fund has supported a range of projects seeking to address social isolation, poverty, deprivation, and environmental sustainability. Some examples of funded projects include a countryside festival by Tees Valley Wildlife Trust, renovations at Marske Community Centre, cycling initiatives, school sports programs, suicide prevention and mental health support for youth.

Sponsorships: The Sofia project sponsors a broad range of community, charitable, and business activities. Community initiatives include volunteering days, beach cleanups in Redcar, and the Wilton Community Calendar featuring artwork from local school children.

In terms of supporting the renewable energy sector, Sofia sponsors networking events that strengthen the local offshore wind supply chain and sectoral cluster in the North East. Examples include Business Breakfasts at Energy Central, the Offshore Wind North East (OWNE) conference, and supply chain events in Tees Valley and Hull. One such example was the supplier engagement event hosted in Hull by SGRE and Cadeler, which engaged over 200 potential suppliers to the Sofia Offshore Wind Farm project.

Summary

In summary, Sofia Offshore Wind Farm has delivered a range of socio-economic benefits through the development and construction phases, both within the wider UK as well as at a regional scale in Yorkshire and Humber and the North East. With a total estimated **GVA of £759.8m** and **8,810 FTE person years of employment** generated during the development and construction phases, Sofia has had a positive economic impact. Beyond these modelled economic impacts, the project has also contributed to longer-term infrastructure improvements and skills development, which contributes to strengthening the UK's offshore wind sector and national capacity in delivering future large-scale offshore wind projects.

RWE's commitment to community and social development has been an important component of the Sofia project, particularly through educational outreach, apprenticeships, and community investments. The positive social impacts seen in Tees Valley and surrounding areas, from fostering STEM career pathways to supporting local charities and sustainability projects, highlight RWE's recognition of the role of offshore wind projects in providing longer-term impacts for both local communities and the renewable energy sector.

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