



23rd January 2018

**Joint Committee on Communications, Climate Action and Environment
*Meeting Ireland's targets under the 2020 Climate and Energy Package***

Opening Statement of Stephen Wheeler, Managing Director, SSE Ireland

Chairperson, members,

I'm pleased to have the chance to address the Committee on the opportunity presented by offshore wind energy towards meeting Ireland's 2020 climate action targets.

In particular, I'd like to speak on behalf of one of the companies that, as my colleagues in NOW Ireland have outlined, is ready-to-go to deliver an offshore energy project in the Irish Sea.

My company, SSE, is the largest renewable energy developer and generator in Ireland. In the ten years since we entered the Irish energy market, we've invested almost €2.5 billion in the deployment of low carbon technology. As a result, we now have over 700MW of installed renewable capacity at our onshore wind farms including output from Ireland's largest wind farm, the 169MW Galway Wind Park, which we co-developed with Coillte.

We're also a leading developer and operator of offshore wind energy – between projects in development, construction and operation we are involved in over 8,000MW of capacity, and have invested £1billion alongside a number of other partners. 900MW of that total is already powering energy consumers with large-scale renewable generation and is significantly contributing to Great Britain meeting its own climate change targets.

Closer to home in Irish waters, we have the distinction of having co-developed Ireland's first and only operational offshore wind farm, the 25MW Arklow Bank Phase 1. Built in 2004 with our partners GE Energy, the current Arklow Bank comprises seven turbines generating power daily for Irish consumers. It was delivered at the time as a 'demonstrator project' to prove the opportunity that offshore energy could represent for Ireland. But, nearly 15 years later, that opportunity has not been seized.

In Ireland, we have one of the strongest offshore wind resources in the world; yet we are the only country in Northern Europe not currently developing offshore capacity. Offshore wind can deliver consistent and predictable power to our national grid, and along simpler and fewer grid connections providing significant system demand benefits.

At SSE we believe that offshore wind is a key part of the mix to bridge the gap to Ireland's 2020 targets. Onshore technologies have served us extremely well to date, but we must be realistic that social acceptance to onshore energy developments is challenging, and greater grid and planning constraints are now in place. What has been successful for us in the past, does not guarantee future success.

If we are to make up ground on 2020 – and we believe we can – then we need to fast-forward the build-out of large-scale renewable energy capacity. Offshore wind energy can deliver large volumes of renewable electricity in the short term. And in the Irish Sea, there are a number of projects ready to swiftly and efficiently develop offshore infrastructure.

As NOW Ireland has pointed out, a number of companies, including SSE, are well advanced in plans to develop 2,500MW of capacity through four projects in the Irish Sea. For our part at SSE, we're actively progressing plans to fully develop our Arklow Bank Wind Park project. This would represent an investment of over €1bn and deliver a minimum of 520MW of capacity.

Like the other Irish Sea projects, Arklow Bank's location close to the coastline minimises subsea cable connection distances. It can bring power via subsea cable directly to where it's needed most – the large demand centre on the East Coast. When completed this project will be capable of generating almost 2TWh of renewable electricity annually.

That output won't just help meet targets, it will meet customer demand – and as a company that operates one of the largest supply businesses in the market, we know the appetite that customers have for renewable energy supply. The green electricity that Arklow can generate will power almost half a million of our customer's homes or easily meet the significant energy demands of our large-scale green-tech data centre clients.

Most importantly, our projects can be delivered in a timescale from construction through to commercial operation that will qualify towards Ireland's 2020 targets. And they will significantly bridge the gap to our 16 per cent renewable electricity target – offsetting and potentially eliminating any fines.

That's why Arklow Bank, and the other Irish Sea projects, are an efficient and realistic way to take the big strides we need to hit our targets. Looking beyond 2020, we are very excited that new floating offshore wind turbines will allow Ireland to harness the resource off southern and western coasts and thereby stimulate very significant regional development.

However, we can only do this as a sector if the right market conditions are in place. Those conditions include having a support scheme that supports offshore wind, an effective connection policy, and a timely and clear consents process.

As this committee knows, the Department has consulted recently on the design of a new Renewable Electricity Support Scheme. In our response SSE called for the inclusion of offshore wind as a separate category in the first of the new Support Scheme Auctions – this is critical in order to provide a clear signal to both investors and to the supply chain.

The technology-neutral approach proposed will not provide the investment clarity in the timeframe that we need. We fear that it will result in an over-reliance on a particular technology, onshore wind, and as I have mentioned we have doubts that a sufficient quantity of that technology can be delivered. A technology neutral approach will block offshore energy's ability to help Ireland deliver renewable energy at scale to meet our targets.

A technology neutral approach also fails to capture the diversification benefits of offshore wind. Offshore wind has significant benefits including

- rapid decarbonisation through large scale built out of capacity,
- energy security through an increase in indigenous generation, and
- overall system benefits by providing consistent, predictable power to the grid.

From a consumer cost perspective, following several years of innovation, and de-risking, offshore wind is now a scalable, proven and maturing technology which offers considerable societal benefits to consumers. Costs continue to fall and I believe Ireland should be part of this story. In addition, it should in future lower the wholesale cost of electricity and deliver system service benefits, putting downward pressure on overall costs for consumers.

The development of an offshore wind sector can bring considerable local economic benefits, particularly in coastal regions. Offshore wind creates new business opportunities in the supply chain and stimulate innovation. A technology neutral approach overlooks the need to put in place the supply chain infrastructure and skills base for offshore wind, for example at ports.

On connections, the Commission for the Regulation of Utilities is currently consulting on the next connection policy; we believe that the new policy should facilitate large scale offshore development.

And finally, as the Maritime Area Foreshore Amendment (or MAFA) Bill passes through these houses and transfers powers from the Department of Housing Planning and Local Government to the Department of Communications, Climate Action and Environment we must ensure the processing of licences is not stalled. This is a risk at present.

We have a window of opportunity right now to transform the way in which we generate power in Ireland, and to do so in a way that reaffirms Ireland's commitment to our EU targets and accelerates the deployment of new and diverse energy technology. Aside from the climate imperative, we can also avoid unnecessary costs to the exchequer from failure to meet our targets domestically.

In so doing we can restore our reputation as a leading low carbon economy in Europe and the world, proudly supporting greener energy, and attracting inward investment from across the globe to support jobs and our economy as a result.

Ladies and gentlemen of the Committee, I'd ask you to support our efforts in this regard.

Thank you.



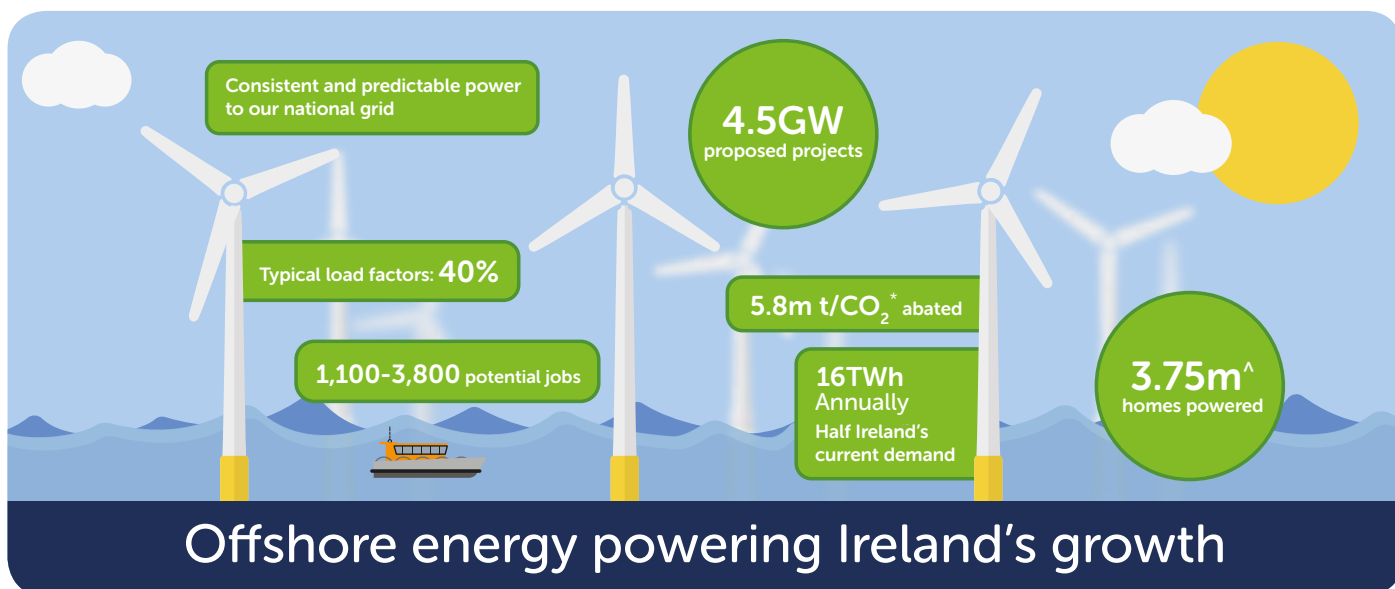
Powering Ireland's future: offshore wind key to meeting our low-carbon energy targets

We're at a critically important point in our continued low carbon energy transition, and face multi-million euro EU fines for missing our 2020 RES targets

Achieving our energy ambitions will be based on policy environment that supports a diversified mix of energy technologies to deliver large-scale renewable power

Clear energy policy signals and mechanisms are needed to stimulate the investment required to meet our low carbon 2030 ambitions

The new RESS needs to include a specific auction category for offshore wind energy from the outset



Ireland has one of the strongest offshore wind resources in the world; yet we are the only country in Northern Europe not currently developing offshore capacity.

Typical load factors are in excess of 40%, considerably higher than most other renewable electricity sources. That means for every megawatt of offshore wind generating capacity we install, more MWh units of renewable electricity are produced. There are a number of significant offshore wind projects at different development stages in Irish waters from developers, including SSE, which can deliver up to 4.5GW of offshore energy in the coming years – enough installed capacity

to generate 16TWh of power annually, half the current electricity demand on the island.

Offshore wind can deliver consistent and predictable power to our national grid, and along simpler and fewer grid connections providing significant system demand benefits.

The potential scale and strategic location of current offshore wind energy projects can easily meet the future energy demands of clean-tech multinationals, particularly large-scale load from data centres.

Potential job creation at Irish Ports from offshore renewable energy sector by 2026 (Category A&B Ports); Irish Maritime Development Office 'Report on Irish Ports Offshore Renewable Energy Services', 2012. ^Total annual TWh and homes powered quoted based on installed capacity, typical load factor of 40%, and typical annual consumption (4,200kWh). *Quoted CO₂ emissions abated based on Average CO₂ Emissions (t/MWh) in 2016 in the All-Island Single Electricity Market, and published by the CRU in its Fuel Mix Disclosure and CO₂ Emissions for 2016, October 2017.

Can we meet our 2020 climate change targets?

Since 1990 carbon emissions from electricity generation in Ireland have been cut by 50% from 1990 levels, thanks mostly to onshore wind. However, latest analysis indicates that Ireland we will miss its EU emissions targets by a wide margin - putting Ireland at risk of EU fines totalling hundreds of millions of euro. According to SEAI, Ireland is going to miss its total 2020 Renewable Energy

target by almost 20% at current rates of delivery, while EirGrid estimates that we will need accelerated delivery of between 800 and 1200MW of renewable capacity if we are to meet our 40% electricity target by 2020. Offshore wind energy can drive that accelerated delivery capacity to help meet our 2020 climate change targets.



What renewable technologies are best for post-2020?

The Department of Communications, Climate Action & Environment (DCCA) consultation into the design of a new renewable energy support scheme will set the future course of how we will meet Ireland's decarbonised energy goals.

One of the debates in the consultation is whether we should set specific support categories in the auction process for different renewable technologies – such as onshore wind, offshore wind, solar and biomass – or whether all technologies should compete against each other, which is described as a 'least cost' solution.

This purely price-based, technology neutral approach risks pitting the technologies that are best placed to deliver future large-scale renewable energy capacity –

especially onshore and offshore wind – against each other on a pure cost per MWh basis.

'Least-cost' technologies such as onshore wind and solar will not deliver our overall targets on their own – especially in a world where social acceptance to onshore energy developments is not what it was, and where greater grid and planning constraints have been imposed as a result.

If we are to make up ground on meeting our 2020 targets and medium-term 2030 renewables targets, then we need to fast-forward the build-out of large-scale renewable energy capacity – and offshore energy is ready to deliver.

SSE leading the development of offshore wind energy

SSE is a leading developer and operator of offshore wind energy. The company has invested over £1bn so far in developing 871MW of offshore wind farms now in operation in waters around Great Britain. SSE has plans to develop over 9,000MW of offshore wind farms, including

the 588MW Beatrice project currently under construction and the circa 500MW Arklow Bank Wind Park which is at development stage.

For more, visit ireland.sse.com

50% carbon emissions reduction quoted from PwC's Transitioning to a low carbon energy system report, May 2017; Almost 20% gap (17.5%) quoted to 2020 16% RES target based on current rate of measures delivering 13.2% RES in 2020, SEAI Ireland's Energy Projections, October 2017; EirGrid estimates quoted from DCCA National Mitigation Plan, July 2017.

Arklow Bank Wind Park – a world-class offshore energy opportunity



SSE is progressing the development of Arklow Bank Wind Park located off the coast of Arklow, Co. Wicklow. Arklow Bank Wind Park has a consented capacity of at least 520MW.

The project is the second phase of development at Arklow Bank. The 25.2MW Arklow Bank Phase 1 was co-developed in June 2004 by Airtricity and GE Energy as a demonstrator project and remains the first and only operational offshore wind farm in Ireland.

Now, in 2018, SSE is proposing to invest over €1bn in capex to develop Arklow Bank Wind Park to its full potential.

The Arklow Bank project will be capable of generating around 1.75TWh of renewable electricity annually – enough green energy to power 420,000 homes and offset 640,000t/CO₂ annually[^].

SSE plans to bring this world-class project from construction through to commercial operation by 2021, subject to market conditions.

Delivery in this timescale will qualify towards Ireland's 2020 climate change targets, significantly helping to meet our obligations through this single large-scale project investment.



[^]Total annual TWh, homes and data centres powered quoted based on installed capacity, typical load factor of 40%, and typical annual consumption (4,200kWh); 50MW data centre demand assumes 75% load requirement. ^{*}Quoted CO₂ emissions abated based on Average CO₂ Emissions (t/MWh) in 2016 in the All-Island Single Electricity Market, and published by the CRU in its Fuel Mix Disclosure and CO₂ Emissions for 2016, October 2017.

Arklow Bank – ready and uniquely placed to meet Ireland’s power demand

SSE’s Arklow Bank foreshore lease area is situated 13 km offshore the Co. Wicklow coastline, to the east of Arklow, and covers an area approximately 27 km long and 2.5 km wide.

Arklow Bank is a shallow water sandbank in the Irish Sea, making SSE’s foreshore lease area ideally suited to the efficient development of offshore energy infrastructure.

SSE’s existing foreshore lease provides consent for up to 200 wind turbines with a minimum total installed capacity of 520MW. Advances in turbine technology over the past 15 years mean that the equivalent 520MW output can be achieved through the development and installation of around 85 turbines in the same foreshore lease area.

The location of Arklow Bank Wind Park close to the coastline minimises subsea cable connection distances. The project will require fewer grid connections than equivalent onshore energy developments of matching scale to bring power via undersea cable to strategically-located substations to where it’s needed most – including the East Coast’s large demand centre.

As a result, Arklow Bank Wind Park is a more efficient renewable energy development option compared with several smaller and more decentralised onshore energy projects.

Offshore wind powering Ireland’s maritime sector and ports

Offshore wind energy can be an enabler to unlock new infrastructure investment in Ireland’s ports and maritime businesses. Irish ports are important nodes where future renewable and offshore energy projects could be based to stimulate new employment and investment opportunities.

Growth in a burgeoning offshore wind energy sector will not only maximise regional economic benefits and create local sustainable jobs, it can also unlock focused community participation in the sector, particularly around port towns. Offshore wind energy can create

Arklow Bank Wind Park Foreshore Lease Area



industry sub-sectors delivering output and jobs across overlapping skill sets – from new roles in engineering

operation and maintenance (O&M) and offshore turbine servicing to new opportunities for existing maritime businesses to provide supply chain services to the offshore energy industry.

SSE estimates that a development of the scale of Arklow Bank Wind Park could lead to the creation of around 60 sustaining jobs in (O&M) work. Typically, this could involve a range of companies within the O&M supply chain, including vessel services, water and fuel, technical inputs, and loading and unloading of project cargoes.

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Beatrice Offshore Windfarm
Limited project
Socio-economic impact report, July 2017



Assessing socio-economic impacts

At £2.6bn, the Beatrice Offshore Windfarm Limited (BOWL) project is one of the largest ever private infrastructure investments in Scotland.

After 8 years of careful development, refinement and consent awards, the green light for construction to proceed was given in May 2016.

Once fully operational in 2019, Beatrice will consist of 84 wind turbines located approximately 13.5km off the Caithness coast. It will be able to generate enough clean wind powered electricity to power around 450,000 homes.

SSE and its BOWL partners have undertaken an assessment of some of the most material social and economic impacts of the investment in BOWL, including SSE's first social return on investment (SROI) analysis and calculating the contribution of project expenditure to the UK and Scottish economies.

Quantifying the impacts of investment in large scale infrastructure projects, such as BOWL, is essential to better understand the wider implications (both positive and negative) to society and the economy.

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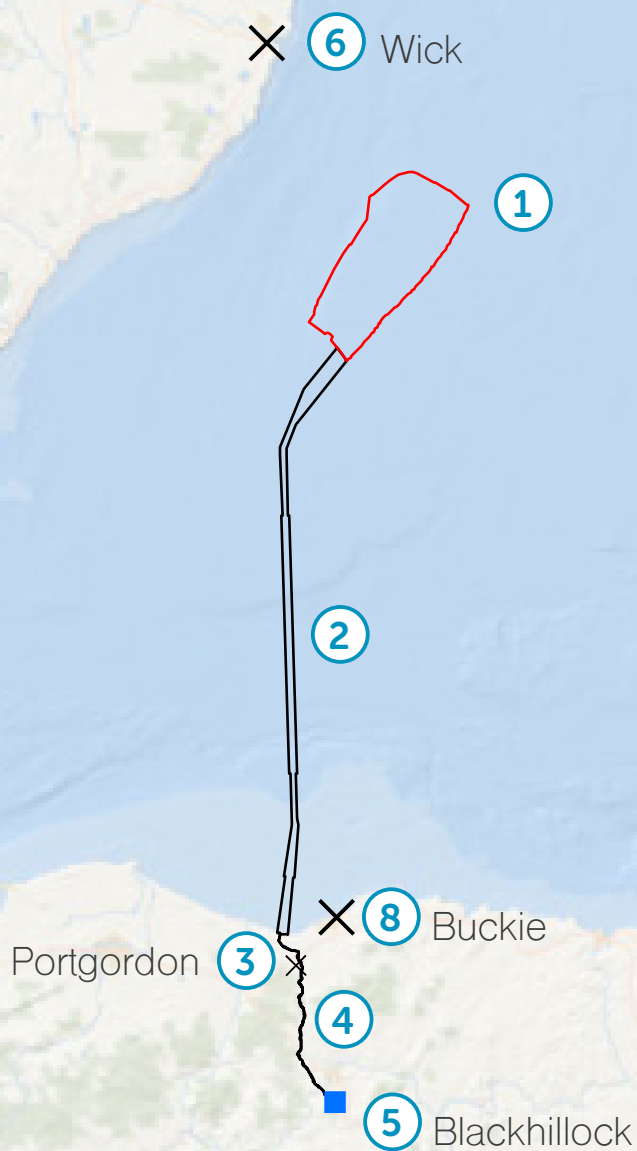
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Map key

- ① Beatrice wind farm
- ② Subsea export cable corridor
- ③ Export cable landfall
- ④ Onshore cable route
- ⑤ Substation (connection to grid)
- ⑥ Operations and Maintenance base
- ⑦ Wind turbine assembly base
- ⑧ Contingency harbour



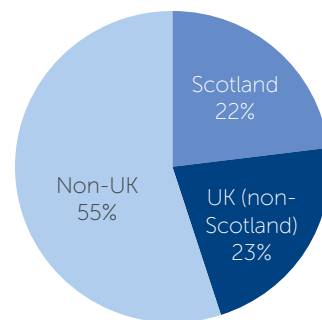
Economic impacts

When complete, BOWL will be one of the largest ever private infrastructure investments in Scotland. SSE, supported by NEF Consulting, has calculated the expected impact to the Scottish and UK economies from this project expenditure.

Contributing to the UK and Scottish economies

The total expenditure on BOWL will be approximately £2.6bn, with around 45% of this investment expected to be within the UK. Much of the non-UK expenditure will be spent on the procurement of goods that the UK does not currently manufacture.

**Total
BOWL
investment
= £2.6bn**



Adding value to GDP

It has been estimated that the construction of the project could add approximately £1.13bn of value to UK GDP, of which around £530m would be contributed to the Scottish economy.



Each £ sign represents £100m of value added to the UK economy, with the symbols in blue representing the contribution to the Scottish economy.

Supporting jobs

The impact on UK and Scottish jobs is also substantial, with BOWL construction investment supporting more than 18,100 years of full-time employment in the UK, of which around 5,800 would be in Scotland.



Each person represents 1,000 years of full-time employment in the UK, with the blue people representing the years of employment supported in Scotland.

Case study: Wick harbour

Wick harbour has been chosen as the operational base for Beatrice. Two historic derelict Thomas Telford buildings on Wick's harbour front have been purchased by BOWL for restoration and development into the operational headquarters.

The approximate £10m investment will transform the buildings and see them returned to maritime use. Around 90 employees will be based in the buildings once complete.

The image shows the condition of the buildings ahead of commencement of work.



Case study: Burntisland Fabrications

Burntisland Fabrications (BiFab), based in Scotland, was awarded a £100m contract to manufacture 26 wind turbine jackets by Beatrice Tier 1 contractor Seaway Heavy Lifting. Fabrication is being undertaken at all three BiFab sites: Burntisland, Methil and Arnish on the Isle of Lewis.

The contract award has protected around 200 jobs and requires in the region of 22,500 tonnes of steel fabrication.

The image shows preparations for upending the first complete jacket in June 2017.

Calculating the value of the BOWL project

The Input-Output (I-O) economic model was used to calculate this economic impact from project expenditure. The I-O model calculates the direct impact from project expenditure, as well as the ripple effect across the economy from supplier expenditure and employee wage spending throughout the supply chain. The model generates the economic impact through two key indicators – contribution to GDP and years of full-time employment supported. The full methodology for the calculation can be found online at www.sse.com/beingresponsible/reporting-and-policy/.

Social impacts

The investment in BOWL will result in many social benefits, including providing employment opportunities and community funding for local projects. This report focuses on the results of a Social Return on Investment (SROI) analysis for the Beatrice Partnership Fund, which SSE undertook with the assistance of NEF Consulting.

Community funds

The Beatrice Community Benefit Fund is worth a total of £34m over the lifetime of the wind farm. The largest proportion of the fund, £28m, will be distributed through the Coastal Communities Fund – a UK Government programme designed to support the economic development of coastal communities by promoting sustainable economic growth and jobs. The remaining £6m is being administered by SSE's Community Investment Team over a five-year period.

The £6m fund will be split between communities in Highland (£4m) and Moray (£2m). These will both then be divided equally between a local fund, for community council areas close to where project work is taking place, and a Partnership Fund, for communities in the wider region.

In December 2016, SSE launched the regional element of the Beatrice Fund, the Beatrice Partnership Fund. Worth a total of £3m over a five-year period, the Partnership Fund for Highland will cover the communities on the east coast of Caithness and Sutherland. In Moray, it will include all coastal communities and the four local communities, namely Buckie and District, Strathisla, Lennox and Keith. For more information please visit: www.sse.com/BeatricePartnershipFund.



Case study: Covesea Lighthouse

June 2017 saw the announcement of the first round of grant awards from the £3m Partnership Fund element of the Beatrice Fund.

Awards totalling £378,000 were made to 14 different projects across the north of Scotland, including £40,000 to the community-owned Covesea Lighthouse in Moray. The grant award will enable the community company to complete an Education and Heritage Centre, ensuring that future generations have the chance to enjoy learning about the heritage of this iconic landmark.

Social Return on Investment

With the assistance of NEF Consulting, SSE undertook a forecast Social Return on Investment (SROI) analysis for projects that applied to the first round of grant funding from the Beatrice Partnership Fund in 2017.

NEF Consulting and SSE found that for every £1 to be spent by the Beatrice Partnership Fund, the community projects are expected to generate £3.21 in wider value. The £6m Beatrice Fund could create nearly £20m of social value when fully distributed.



Social Return on Investment: £3.21 of wider value created for the local community for every £1 invested.

What is SROI?

SROI is a methodology that lets you understand the wider value created as a result of 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.

As this is the first SROI SSE has undertaken, it worked closely with local stakeholders to create the framework which informed the SROI calculation. For more information on the methodology used for this assessment, please refer to the methodology document on www.sse.com/beingresponsible/reporting-and-policy/.

Calculating the SROI of the Beatrice Partnership Fund is important as it provides a new qualitative and quantitative way of looking at the value of the funds, aiming to maximise the impacts and outcomes in the future.

Project overview

Beatrice Offshore Windfarm Limited (BOWL) is a joint venture partnership between SSE Renewables (40%), Copenhagen Infrastructure Partners (35%) and SDIC Power (25%).

Partners



SSE is one of the UK's leading energy companies, involved in the generation, distribution and supply of electricity and the extraction, storage, distribution and supply of gas. Its core purpose is to provide the energy people need in a reliable and sustainable way. It supplies energy to around 8 million customers throughout Great Britain and Ireland and is one of the UK's leading generators of electricity from renewable sources.

CIP

COPENHAGEN INFRASTRUCTURE PARTNERS

Copenhagen Infrastructure Partners (CIP) is a fund management company founded in 2012 by 5 partners with extensive experience from energy projects, including offshore wind projects. Copenhagen Infrastructure Partners currently manages three funds of approx. 3.5 billion Euros in total. Copenhagen Infrastructure Partners focuses on long term investments in energy and infrastructure assets, primarily in Northern and Western Europe and North America.



Red Rock Power is the UK subsidiary of SDIC Power Holdings Co. a power generation company listed on the Shanghai Stock Exchange. SDIC Power is primarily engaged in the investment, development, construction, operation and management of power projects. The company owns a total installed capacity of 33.1GW, and more than 60% of the portfolio is renewable energy capacities, including hydro power stations and wind farms.

Development timeline

2009
Development begins

2012
Consent application submitted

2014
UK Government awards planning consents

2016
Green light to start construction

2017
Offshore construction begins

2018
First generation of power

2019
Fully operational