

Bodinglee Wind Farm Initial Economic Impact Assessment

Based on Case Study Evidence

A report to

BANKSRenewables
development with care

7th September 2022





Contents

1. Executive Summary	1
2. Introduction	3
3. Approach	5
4. Kype Muir Wind Farm	10
5. Middle Muir Wind Farm	16
6. Bodinglee Wind Farm	22
7. Appendix: Impact per MW	31



1.

Executive Summary

Initial Economic Impact Assessment of Bodinglee Wind Farm

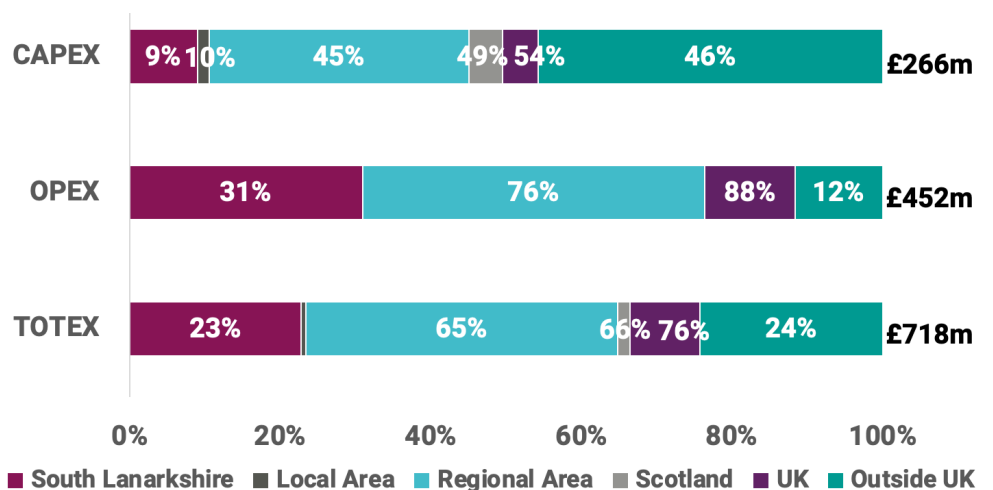
BiGGAR Economics was commissioned by Banks Renewables to assess the potential economic impact associated with its proposed Bodinglee Wind Farm in South Lanarkshire. This was built on economic impact assessments of two operational wind farms in South Lanarkshire: the 88.4 megawatt (MW) Kype Muir Wind Farm near Strathaven and the 51MW Middle Muir Wind Farm near Glentagart.

The initial economic impact assessment of Bodinglee Wind Farm has been based on a 40 turbine 264MW design, with an operational lifetime of 40 years from 2028 (it is recognised that this is subject to change as the environmental impact assessment is undertaken).

On this basis, it was estimated that the development and construction cost would be £266 million, and that the operation and maintenance cost would be £452 million. Over its lifetime the expected expenditure is around £718 million.

Overall, 23% of all expenditure on Bodinglee wind farm could be secured in South Lanarkshire and the local area (within 30km), while 65% could be secured in the regional area (within 60km), 66% in Scotland, and 76% in the UK. The local supply chain opportunities will be greatest during the 40 year operational phase.

Figure 1.1 Bodinglee Wind Farm – Contract Values and Shares by Stage



Using evidence from what has happened during the construction and operation of Kype Muir and Middle Muir Wind Farms, it was estimated that the economic impact associated with development and construction of Bodinglee wind farm could be:

- £13.5 million Gross Value Added (GVA) and 185 job years in South Lanarkshire;
- £17.8 million GVA and 238 job years in the local area (30km radius);



-
- £74.6 million GVA and 969 job years in the regional area (60km radius);
 - £88.3 million GVA and 1,129 job years in Scotland; and
 - £144.0 million GVA and 1,950 job years in the UK.

During development and construction, the main opportunities for local suppliers will be related to balance of plant contracts, including those related to the plant hire, civil engineering and construction, fencing, forestry and trades activities, such as electricals, joinery and metal fabrication.

During the operational lifetime of the Bodinglee Wind Farm, the annual economic impact could be:

- £2.1 million GVA and 23 jobs in South Lanarkshire;
- £2.2 million GVA and 24 jobs in the local area (30km radius);
- £6.1 million GVA and 53 jobs in the regional area (60km radius);
- £6.4 million GVA and 56 jobs in Scotland; and
- £7.5 million GVA and 74 jobs in the UK.

In total, over both the development, construction and operation phases of Bodinglee Wind Farm, it was estimated that it could contribute:

- £98.6 million GVA in South Lanarkshire;
- £105.9 million GVA in the local area (30km radius);
- £316.6 million GVA in the regional area (60km radius);
- £346.1 million GVA in Scotland; and
- £445.6 million GVA in the UK.

In addition, Bodinglee Wind Farm is expected to contribute £5,000 per MW in community benefits, which would be worth £1.3 million to the local area each year. In the first five years, part of this fund will be ring-fenced to focus on developing the skills of local people improving their job prospects, including in areas related wind farm construction. It is also expected to pay at least £1.8 million in non-domestic rates annually.



2.

Introduction

BiGGAR Economics was commissioned by Banks Renewables to undertake a socio-economic impact assessment of the proposed Bodinglee Wind Farm, based on case study evidence from two operational wind farms in South Lanarkshire.

2.1 Background

The study considered the economic impact of two operational wind farms in South Lanarkshire:

- Kype Muir Wind Farm, located approximately 5km south of the town of Strathaven in South Lanarkshire which became operational in 2019. It consists of 26 turbines and has a capacity of 88.4MW; and
- Middle Muir Wind Farm, located near Glentaggart in South Lanarkshire, which became operational in 2018. It consists of 15 turbines with a capacity of 51MW.

In addition, the study applied the findings of these case studies to assess the economic impact that could be associated with the proposed Bodinglee Wind Farm, also in South Lanarkshire.

Though this project is still in the development and therefore subject to change in its design during the environmental impact assessment process, this initial economic impact assessment has been based on 40 turbines with a combined capacity of 264MW, with an operational lifespan of 40 years, beginning in 2028.

2.1.1 Connect2Renewables

Bank Renewables has a strong commitment to maximising economic and employment benefits to the local area around its onshore wind developments.

The company works in partnership with a range of local partners to identify opportunities for increasing economic impact. This includes local authorities, Chambers of Commerce, local communities and suppliers.

For Kype Muir and Middle Muir wind farms this has included Connect2Renewables, which includes a commitment to:

- identify local businesses that can fulfil contracts;
- increase training opportunities for local people through apprenticeships and other schemes; and
- incentivising suppliers to increase local impact, by considering this as a criteria during the tendering process and encouraging the use of local subcontractors.



In addition, during the first five years of operation, part of the community benefit funds are being used to fund and deliver training scheme for local unemployed people. This includes grant funding to support them in apprenticeships, work-based learning programmes and further education.



3.

Approach

This section summarises the methodology used to estimate economic impacts arising from the case study wind farms and the proposed Bodinglee wind farm.

3.1 Types of Impact

Impacts have been measured across two different project stages: development and capital expenditure, and operational expenditure (over the lifetime of a development, assumed to be 40 years).

There are three significant types of economic impact associated with the wind farms:

- direct impact: associated with Tier 1 suppliers, which includes employing and paying staff, and generating profits;
- indirect impact: associated with spending in the supply chain of Tier 1 suppliers; and
- induced impact: from staff spending their wages in the wider economy.

This approach captures the wider economic activity associated with the construction and operation of the wind farms.

For example, if a hotel receives a significant level of custom for half a year from contractors working on one of the wind farms, then the jobs supported in this time at the hotel will be captured in this model. These will be in addition to the direct jobs of the contractors.

Similarly, if the wind farm procured the services of an equipment rental company the operator would be included in the jobs impact. A proportion of a mechanics job, who was paid to maintain the equipment would also be included in this model.

3.2 Metrics of Assessment

The primary metrics of assessment used in this report are:

- Gross Value Added (GVA): a measure of economic output, more specifically the economic value added by an organisation or industry. It is estimated by subtracting the non-staff operational costs from the turnover of an organisation; and
- Job years: a measure of the employment which is equivalent to one person being employed for an entire year and is used when considering short-term



employment impacts, such as those associated with construction and infrastructure projects; and

- Jobs: a measure of employment which considers the headcount employment in an organisation or industry.

3.3 Methodology

3.3.1 Study Areas

The study areas considered in this report are:

- South Lanarkshire, the local authority area;
- the local area, defined as within 30km of the wind farm;
- the regional area, defined as within 60km of the wind farm;
- Scotland; and
- UK.

The impacts in this study are reported inclusively unless otherwise stated. Therefore, the figures given for the impact in Scotland includes the impact in the regional area, and the impact for the UK includes the impact in Scotland.

3.3.2 Development and Capital Expenditure

Banks Renewables provided detailed financial data on transactions split across categories, including development and design, aviation, balance of plant, grid connection and turbines. For each of these categories of expenditure, the company undertaking the contract was identified and assigned to a study area depending on their location.

In some cases, this transactional data may not capture Tier 2 suppliers, who have been sub-contracted by Tier 1 suppliers and are more likely to be local. Therefore, in some instances it was necessary to make an adjustment for smaller study areas. For example, the main balance of plant contract was undertaken by RJ McLeod, which is based in Glasgow. However, based on previous experience, it is likely that they will also employ sub-contractors based in South Lanarkshire and therefore it was assumed that 33% of these contracts would take place there.

Similarly, though a high proportion of turbine contracts will be fulfilled by turbine companies based outside of the UK, transport and installation will be undertaken by companies based in Scotland or the UK., as will various other turbine-related contracts. Based on previous experience and available information on these contracts, assumptions were made about where these contracts take place.

Similarly, though the grid services contract was undertaken by a national provider, a share of grid contract work will have been undertaken by local and regional companies. Based on available evidence on grid connection contracts, assumptions were made about the share secured in each study area.



3.3.3 Input-Output Modelling

This data on transactions was then used as the basis of the input-output modelling exercise in order to estimate the economic impact associated with each project. As well as representing a cost to the developer, these transactions represent an increase in turnover to the company providing the service, supporting economic activity.

Transactions were then categorised to one of the industrial sectors used by the Scottish and UK Governments in official statistics, e.g. construction, architectural and engineering services etc. These sectors were used as the basis for estimating GVA and employment impacts. Information on turnover, GVA and employment is sourced from the UK Annual Business Survey (ABS), which is published by the Office for National Statistics (ONS)¹.

For each sector, GVA can be presented as a % of turnover and therefore, in order to estimate the direct GVA impact, turnover is multiplied by the GVA/turnover ratio. Similarly, to estimate the direct employment impacts, turnover in each contract is divided by turnover/employee in the relevant sector. A worked example of this is shown in Figure 3.1.

Figure 3.1 Direct Impact (Illustrative Worked Example)



Source: BiGGAR Economics

As well as direct GVA and employment impacts, there will also be indirect and induced impacts associated with spending in the wider supply chain and employees' spending. These impacts were estimated by applying sector-specific Type I (indirect) and Type II (indirect and induced) multipliers to the direct impact. These multipliers were sourced from the Scottish Government² and the ONS³.

Worked examples of how these wider multiplier effects have been calculated are shown in Figure 3.2 and Figure 3.3.

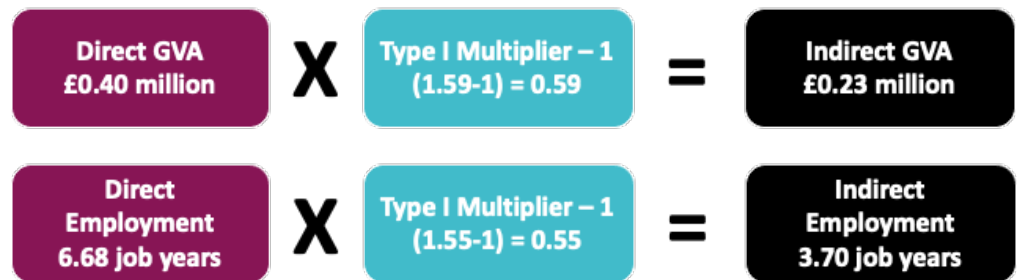
¹ Office for National Statistics (2020), Annual Business Survey – 2018 Revised Results

² Scottish Government (2021), Input-Output Tables 2018

³ ONS (2018), UK Input-Output Tables 2015

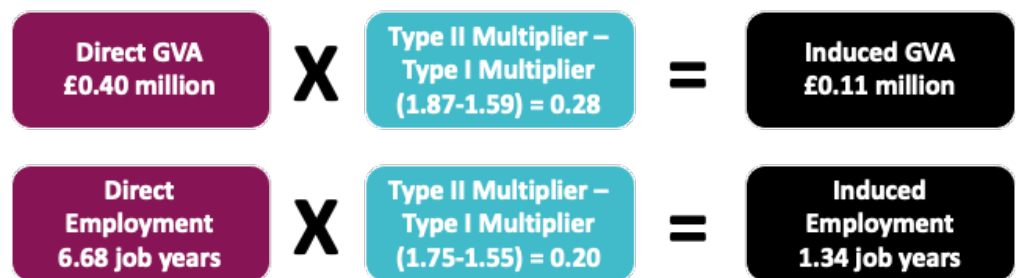


Figure 3.2 Indirect Impact (Illustrative Worked Example)



Source: BiGGAR Economics

Figure 3.3 Induced Impact (Illustrative Worked Example)



Source: BiGGAR Economics

The total impact associated with a project encompasses the direct, indirect and induced impacts, as shown in the worked example in Figure 3.4.

Figure 3.4 Total Impact (Illustrative Worked Example)



Source: BiGGAR Economics

3.3.4 Operational Expenditure

As with the construction phase, it was first necessary to establish the costs of operating the developments, which were projected over their lifetime. The basis of this was an internal financial modelling exercise by Banks Renewables, which considered components of spending such as land rents, turbine maintenance and utilities, which were then adjusted to take account of inflation.

A proportion of each category of spend was assumed to take place within each study area, and each category was assigned to one of the sectors. Direct GVA and employment impacts, as well as indirect and induced impacts were then estimated using the same method as outlined.



3.3.5 Net Present Value

The long-term operational impacts are also represented in terms of the net present value. This is an adjustment made to impacts that will be realised in the future to reflect that benefits which are realised in the future are valued less than those realised in the present.

To reflect this, impacts which are expected to be realised in the future are discounted at a rate of 3.5%, which is in line with the UK Government's Green Book⁴. This is applied to all impacts that will occur after 2022.

⁴ HM Treasury (2018), The Green Book: Central Government Guidance on Appraisal and Evaluation.

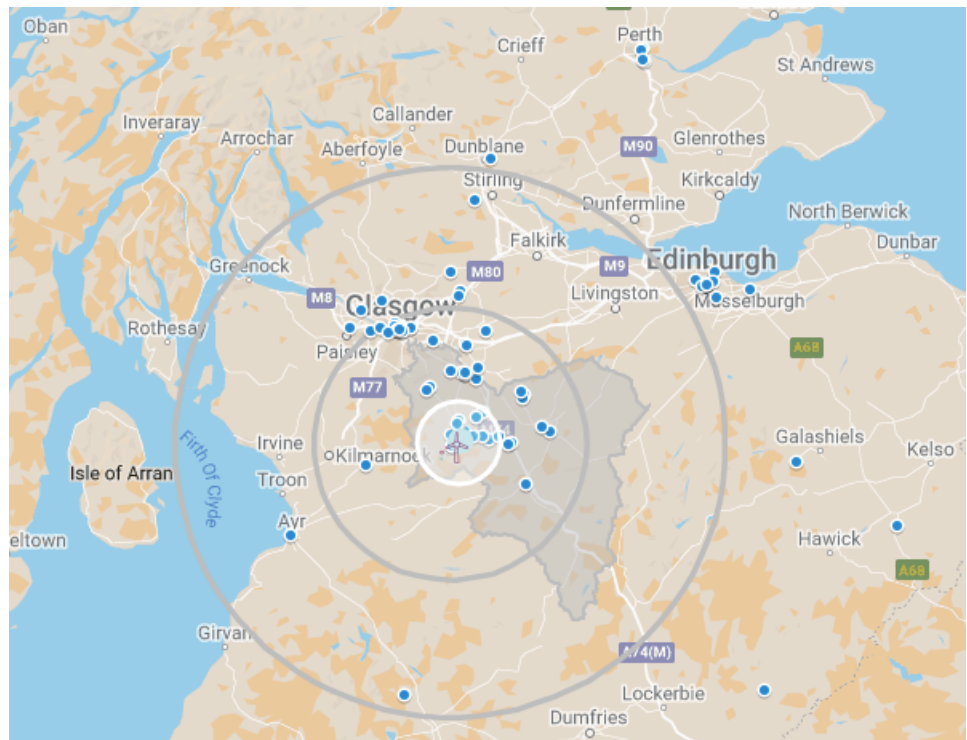
4. Kype Muir Wind Farm

This chapter considers the economic impact of Kype Muir Wind Farm during its development and construction and operational phases.

Kype Muir Wind Farm is located in South Lanarkshire around 5km south of Strathaven.

South Lanarkshire is highlighted in Figure 4.1, as is the local area within 30km of the wind farm, which encompasses part of Glasgow City, and the regional area within 60km, which encompasses the whole of Glasgow and the surrounding area. Individual transactions are highlighted as blue dots, showing where the supply chain is based.

Figure 4.1 Kype Muir Wind Farm Local and Regional Study Areas



Source: BIGGAR Economics

4.1 Development and Construction Impacts

4.1.1 Expenditure

Financial data provided by Banks Renewables shows that the total expenditure associated with development and construction of Kype Muir Wind Farm was £113.3 million, equal to £1.3 million per MW.



Of this, the largest contract area was turbines at £53.5 million (47% of total expenditure), followed by balance of plant (£26.3 million, or 23%), grid connection (£15.7 million, or 14%), development and design (9.4 million, or 8%) and aviation (£8.5 million, or 7%). The expenditure related to aviation was particularly high, in part because Kype Muir Wind Farm contributed to a new radar system at Glasgow Airport.

Based on the financial data and the assumptions outlined in the approach, it was estimated that £8.6 million of contracts (8% of the total) would be secured in South Lanarkshire, £38.9 million (34%) would be secured in the local area, £55.5 million (49%) in the regional area, £57.8 million in Scotland (51%), and £62.8 million (55%) in the UK.

The main opportunities locally are in balance of plant, which was estimated to contribute £6.2 million in South Lanarkshire and £18.1 million in the local area. However, part of the balance of plant expenditure related to forestry clearing, including an expenditure to the landowners who are based outside of the UK. As a result, the share of balance of plant in Scotland (£20.1 million, or 76%) is lower than might be expected.

Table 4.1 Capital Expenditure by Study Area, Kype Muir (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Development and Design	0.6	3.4	5.6	6.4	9.1	9.4 (8%)
Balance of Plant	6.2	18.1	19.5	20.1	20.1	26.3 (23%)
Grid Connection	1.0	7.8	14.5	14.5	15.7	15.7 (14%)
Turbines	0.8	2.2	8.4	8.4	9.4	53.5 (47%)
Aviation	-	7.5	7.5	8.5	8.5	8.5 (7%)
Total	8.6	38.9	55.5	57.8	62.8	113.3
Total (%)	8%	34%	49%	51%	55%	100%

Source: BiGGAR Economics Calculations.

4.1.2 Economic Impact

Each contract secured by a company represents an increase in turnover of that company, which will in turn generate an increase in its economic impact. For each transaction, an economic sector was assigned, for example construction, and turnover to GVA ratios were then applied to estimate the direct GVA created. Wider impact as a result of spending in the supply chain (indirect impacts) and spending by



staff (induced impacts) were captured by applying Type I and Type II economic multipliers to the direct GVA.

Therefore, it was estimated that during the development and construction phase Kype Muir Wind Farm supported £4.8 million GVA in South Lanarkshire, £22.0 million GVA in the local area, £35.1 million GVA in the regional area, £40.5 million GVA in Scotland and £62.2 million GVA in the UK.

Table 4.2 Economic Impact of Capital Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	3.4	14.3	20.7	21.8	23.9
Indirect Impact	0.6	4.2	8.6	11.9	22.7
Induced Impact	0.8	3.5	5.8	6.8	15.6
Total	4.8	22.0	35.1	40.5	62.2

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

The contracts also supported direct employment in these companies, which were estimated using turnover per employee ratios, and employment in the wider economy, which were estimated using employment multipliers. As the contracts are short term, the employment impact is measured in job years.

Therefore, it was estimated that during the construction and development phase, Kype Muir Wind Farm supported 66 job years in South Lanarkshire, 266 job years in the local area, 443 job years in the regional area, 513 job years in Scotland and 851 job years in the UK.

Table 4.3 Economic Impact of Capital Expenditure, Employment (job years)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	49	176	266	282	310
Indirect Impact	9	53	112	155	320
Induced Impact	8	37	65	76	221
Total	66	266	443	513	851

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

4.2 Operational Impacts

This section considers the long-term impact over the 25 year operational lifetime of Kype Muir Wind Farm. Over this period, the operational expenditure is expected to be £125.5 million after accounting for inflation.



As these impacts occur over a longer period of time, they are treated differently from the construction phase. As a result, the impacts are presented in three formats:

- average impact, which considers the average annual impact;
- undiscounted impact, which uses the gross figures provided by the financial analysis; and
- Net Present Value (NPV) impact, which applies a discount rate to the figures provided by the financial analysis.

4.2.1 Annual and Lifetime Operational Expenditure

The average annual operational expenditure was projected to be £4.8 million, with £0.7 million taking place in South Lanarkshire, £1.1 million in the local area, £2.6 million in the regional area, £2.6 million in Scotland and £3.4 million in the UK. Total expenditure is estimated to be £125.5 million.

A relatively low share (14%) is expected to be secured South Lanarkshire as the land is owned by a company based outside of the UK, to which annual rents are paid. The main opportunities in the local authority relate to turbine maintenance, land and civils maintenance and management.

Opportunities elsewhere in the local and regional areas will include those arising from the provision of utilities, management services, civils and turbine maintenance, as well general grid maintenance.

Table 4.4 Operational Expenditure by Study Area (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Annual	0.7	1.1	2.6	2.6	3.4	4.8
Lifetime	17.3	27.8	67.5	67.5	88.9	125.5
Turnover (%)	14%	22%	54%	54%	71%	-

Source: BIGGAR Economics Calculations.

4.2.2 Annual and Operation Lifetime Economic Impact

Based on the categories of expenditure provided by Banks Renewables and the share in each study area, the economic impact was estimated. This indicated that the expenditure could support an annual impact of £0.4 million GVA and 9 jobs in South Lanarkshire, £0.6 million GVA and 15 jobs in the local area, £1.7 million GVA and 29 jobs in the regional area, £1.8 million GVA and 31 jobs in Scotland, and £2.5 million GVA and 41 jobs in the UK.



Table 4.5 Economic Impact of Annual OPEX, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	0.3	0.5	1.2	1.2	1.6
Indirect Impact	<0.1	<0.1	0.3	0.4	0.5
Induced Impact	0.1	0.1	0.3	0.3	0.4
Annual	0.4	0.6	1.7	1.8	2.5
Lifetime	9.8	16.5	44.9	48.1	64.3

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

Table 4.6 Economic Impact of Annual OPEX, Employment (jobs)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	7	11	18	18	24
Indirect Impact	1	1	6	7	9
Induced Impact	1	2	5	6	8
Annual	9	15	29	31	41

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

4.2.3 Net Present Value Impact

Over 25 years, the NPV of operational expenditure was projected to be £92.5 million, with £12.4 million taking place in South Lanarkshire, £20.1 million in the local area, £50.3 million in the regional area and Scotland, and £62.3 million in the UK.

Applying appropriate economic ratios and multipliers indicated that this expenditure could support £7.1 million GVA in South Lanarkshire, £12.0 million GVA in the local area, £33.6 million GVA in the regional area, £36.0 million GVA in Scotland and £47.7 million GVA in the UK.

Table 4.7 NPV Economic Impact of Operational Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
<i>NPV Turnover</i>	<i>12.4</i>	<i>20.1</i>	<i>50.3</i>	<i>50.3</i>	<i>62.3</i>
Direct Impact	5.6	9.2	22.9	22.9	31.1
Indirect Impact	0.4	0.9	5.3	7.0	8.8
Induced Impact	1.1	1.9	5.4	6.0	7.8
Total	7.1	12.0	33.6	36.0	47.7

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.



4.3 Total Economic Impact

The total expenditure associated with Kype Muir Wind Farm, including the construction and operation phases, is expected to be £238.8 million. Of this:

- £25.9 million (11%) is expected to be secured in South Lanarkshire;
- £66.7 million (28%) is expected to be secured in the local area;
- £123.1 million (52%) is expected to be secured in the regional area;
- £125.4 million (52%) is expected to be secured in Scotland; and
- £151.7 million (64%) is expected to be secured in the UK.

As can be seen in Table 5.8, the main opportunity for the local authority is in operations and maintenance.

Table 4.8 Total Expenditure: Turnover by Study Area (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
CAPEX	8.6	38.9	55.5	57.8	62.8	113.3
OPEX	17.3	27.8	67.5	67.5	88.9	125.5
TOTEX	25.9	66.7	123.1	125.4	151.7	238.8
Total (%)	11%	28%	52%	52%	64%	-

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

Over the lifetime of the wind farm, total expenditure is expected to support:

- £14.6 million GVA in South Lanarkshire;
- £38.5 million GVA in the local area;
- £80.0 million GVA in the regional area;
- £88.6 million GVA in Scotland; and
- £126.5 million GVA in the UK.

Table 4.9 Total Expenditure: Economic Impact, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
CAPEX	4.8	22.0	35.1	40.5	62.2
OPEX	9.8	16.5	44.9	48.1	64.3
TOTEX	14.6	38.5	80.0	88.6	126.5

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

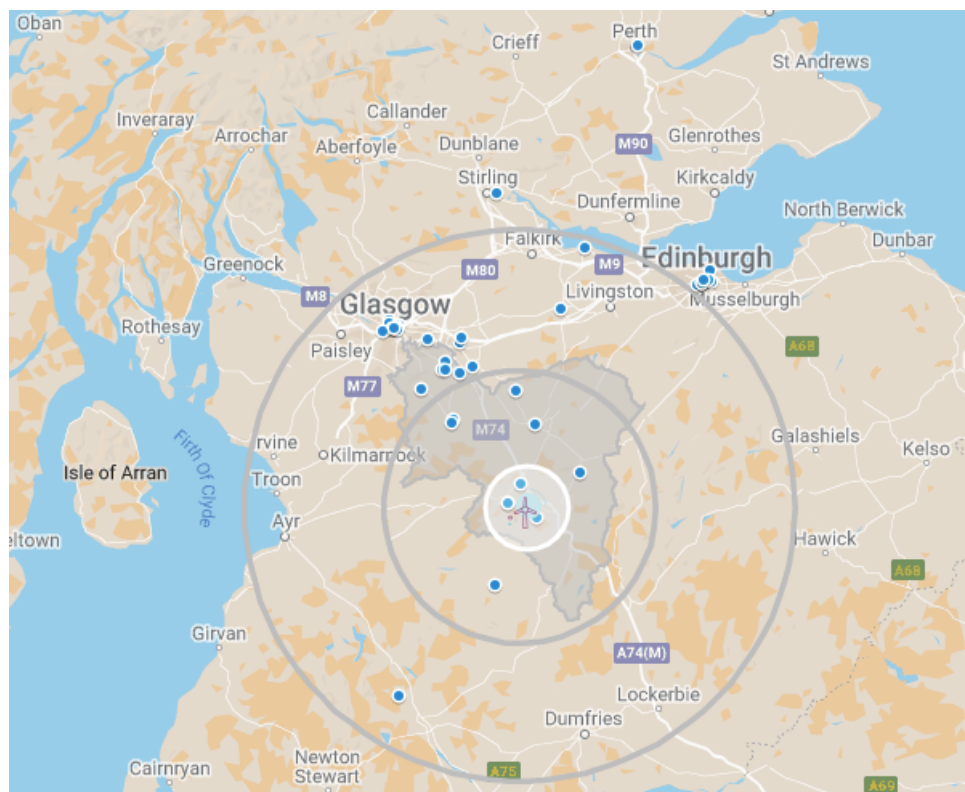
5. Middle Muir Wind Farm

This chapter considers the economic impact of Middle Muir Wind Farm during its development and construction, and operational phases.

Middle Muir Wind Farm is located in South Lanarkshire near Glentaggart.

South Lanarkshire is highlighted in Figure 5.1, as is the local area within 30km of the wind farm, and the regional area within 60km, which encompasses the whole of Glasgow and the surrounding area. Individual transactions are highlighted as blue dots, showing where the supply chain is based.

Figure 5.1 Middle Muir Wind Farm Local and Regional Study Areas



Source: BIGGAR Economics

5.1 Development and Construction Impacts

5.1.1 Expenditure

Financial data provided by Banks Renewables shows that the total expenditure associated with development and construction of Middle Muir Wind Farm was £59.7 million, equal to £1.2 million per MW.



The largest contract area was turbines (£32.2 million, or 54%), followed by grid connection (£10.4 million, or 17%), balance of plant (£10.3 million, or 17%), and development and design (£6.4 million, or 11%). Aviation accounts for less than 1% of expenditure, in contrast to Kype Muir Wind Farm.

It was estimated, based on data from Banks Renewables and the assumptions outlined in the approach section, that £4.9 million would be secured by South Lanarkshire (8%), £5.4 million would be secured in the local area (9%), £24.5 million would be secured in the regional area (41%), £29.5 million would be secured in Scotland (49%) and £33.2 million would be secured in the UK (56%).

The main opportunities in South Lanarkshire relate to balance of plant contracts (£3.4 million). All balance of plants contracts are expected to take place within Scotland, as are the majority of grid connection contracts, while the majority of turbine contracts are expected to be completed by companies based outside of the UK.

Table 5.1 Capital Expenditure by Study Area, Middle Muir (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Development and Design	0.4	0.5	3.4	3.9	6.4	6.4 (11%)
Balance of Plant	3.4	3.4	10.3	10.3	10.3	10.3 (17%)
Grid Connection	0.5	0.5	5.7	9.9	10.4	10.4 (17%)
Turbines	0.5	1.0	5.1	5.1	5.7	32.2 (54%)
Aviation	-	-	0.0	0.3	0.4	0.4 (1%)
Total	4.9	5.4	24.5	29.5	33.2	59.7
Total (%)	8%	9%	41%	49%	56%	-

Source: BIGGAR Economics Calculations.

5.1.2 Economic Impact

Based on appropriate economic ratios and multipliers, it was estimated that during the development and construction phase Middle Muir Wind Farm supported £2.7 million GVA in South Lanarkshire, £3.4 million GVA in the local area, £15.9 million GVA in the regional area, £20.0 million GVA in Scotland and £33.7 million GVA in the UK.

Table 5.2 Economic Impact of Capital Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	1.9	2.3	9.4	10.8	12.6
Indirect Impact	0.4	0.6	3.9	6.0	12.7
Induced Impact	0.4	0.5	2.6	3.2	8.4
Total	2.7	3.4	15.9	20.0	33.7

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

Applying appropriate ratios and multipliers, it was estimated that during the construction and development phase Middle Muir Wind Farm supported 36 job years in South Lanarkshire, 44 job years in the local area, 209 job years in the regional area, 254 job years in Scotland and 457 job years in the UK.

Table 5.3 Economic Impact of Capital Expenditure, Employment (job years)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	27	31	128	140	165
Indirect Impact	5	8	51	77	173
Induced Impact	4	5	29	37	120
Total	36	44	209	254	457

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

5.2 Operational Impacts

This section considers the long-term impact over the 25 year operational lifetime of Middle Muir Wind Farm. Over this period, the operational expenditure is expected to be £71.5 million, after accounting for inflation.

As these impacts occur over a longer period of time, they are treated differently from the construction phase. As a result, the impacts are presented in three formats:

- average impact, which considers the average annual impact;
- undiscounted impact, which uses the gross figures provided by the financial analysis; and
- Net Present Value (NPV) impact, which applies a discount rate to the figures provided by the financial analysis.

5.2.1 Annual and Lifetime Operational Expenditure

The average annual operational expenditure was projected to be £2.7 million, with £0.9 million taking place in South Lanarkshire and the local area, £2.1 million in the regional area and Scotland and £2.5 million in the UK.



Around a third of contracts (32%) are expected to be secured within South Lanarkshire, including rents to the local landowner as well as civil maintenance.

Table 5.4 Operational Expenditure by Study Area, Middle Muir Wind Farm (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Annual	0.9	0.9	2.1	2.1	2.5	2.7
Lifetime	23.2	23.2	55.7	55.7	64.6	71.5
Turnover (%)	32%	32%	78%	78%	90%	-

Source: BiGGAR Economics Calculations.

5.2.2 Annual and Operation Lifetime Economic Impact

Based on the categories of expenditure provided by Banks Renewables and the share in each study area, the economic impact was estimated. This indicated that the expenditure could support an annual impact of £0.6 million GVA and 10 jobs in South Lanarkshire, £0.6 million GVA and 11 jobs in the local area, £1.5 million GVA and 24 jobs in the regional area, £1.6 million GVA and 26 jobs in Scotland, and £1.9 million GVA and 30 jobs in the UK.

Table 5.5 Economic Impact of Annual OPEX, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	0.5	0.5	1.1	1.1	1.3
Indirect Impact	<0.1	<0.1	0.2	0.3	0.3
Induced Impact	0.1	0.1	0.2	0.2	0.3
Annual	0.6	0.6	1.5	1.6	1.9
Lifetime	16.0	16.6	39.7	42.2	48.6

Source: BiGGAR Economics Calculations. Note, totals may not sum due to rounding.

Table 5.6 Economic Impact of Annual OPEX, Employment (jobs)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	9	9	17	17	19
Indirect Impact	0	1	4	5	6
Induced Impact	1	1	4	4	5
Annual	10	11	24	26	30

Source: BiGGAR Economics Calculations. Note, totals may not sum due to rounding.



5.2.3 Net Present Value Impact

Over 25 years, the NPV of operational expenditure was projected to be £53.0 million, with £17.7 million taking place in South Lanarkshire and the local area, £41.9 million in the regional area and Scotland, and £48.2 million in the UK.

Applying appropriate economic ratios and multipliers indicated that this expenditure could support £12.4 million GVA in South Lanarkshire, £12.8 million GVA in the local area, £30.1 million GVA in the regional area, £32.0 million GVA in Scotland and £36.5 million GVA in the UK.

Table 5.7 NPV Economic Impact of Operational Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
<i>NPV Turnover</i>	17.7	17.7	41.9	41.9	48.2
Direct Impact	10.4	10.4	21.5	21.5	24.5
Indirect Impact	0.6	1.0	4.2	5.6	6.3
Induced Impact	1.4	1.5	4.3	4.8	5.6
Total	12.4	12.8	30.1	32.0	36.5

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

5.3 Total Economic Impact

The total expenditure associated with Middle Muir Wind Farm including CAPEX and OPEX is expected to be £131.2 million. Of this:

- £28.1 million (21%) is expected to be secured in South Lanarkshire;
- £28.6 million (22%) is expected to be secured in the local area;
- £80.2 million (61%) is expected to be secured in the regional area;
- £85.2 million (65%) is expected to be secured in Scotland; and
- £97.8 million (75%) is expected to be secured in the UK.

As can be seen in Table 5.8, the main opportunity for the local authority is in operations and maintenance.

Table 5.8 Total Expenditure: Turnover by Study Area (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
CAPEX	4.9	5.4	24.5	29.5	33.2	59.7
OPEX	23.2	23.2	55.7	55.7	64.6	71.5
TOTEX	28.1	28.6	80.2	85.2	97.8	131.2
Total (%)	21%	22%	61%	65%	75%	-

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.



Over the lifetime of the wind farms, total expenditure associated with these contracts is expected to support:

- £18.8 million GVA in South Lanarkshire;
- £20.0 million GVA in the local area;
- £55.5 million GVA in the regional area;
- £62.2 million GVA in Scotland; and
- £82.2 million GVA in the UK.

Table 5.9 Total Expenditure: Economic Impact, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
CAPEX	2.7	3.4	15.9	20.0	33.7
OPEX	16.0	16.6	39.7	42.2	48.6
TOTEX	18.8	20.0	55.5	62.2	82.2

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

6. Bodinglee Wind Farm

This chapter considers the potential economic impact associated with Bodinglee Wind Farm.

The proposed Bodinglee Wind Farm would be located in South Lanarkshire.

South Lanarkshire is highlighted in Figure 6.1, as is the local area within 30km of the wind farm, and the regional area within 60km, which encompasses the whole of Glasgow.

Figure 6.1 Bodinglee Wind Farm Local and Regional Study Areas



Source: BiGGAR Economics

The Bodinglee Wind Farm analysis is based on a scheme with 40 turbines, each with a capacity of 6.6MW, and a total combined capacity of 264MW. The 40 year operational phase is expected to begin in the year 2028. However, the total capacity may change by the time that Environmental Impact Assessment has been published, and the economic impact will be updated to reflect this.

Information from Kype Muir and Middle Muir Wind Farms (the case studies) has been used to estimate the total development and construction expenditure and operational expenditure, as well as the share of spending in each study area and the associated economic impact.



6.1 Development and Construction Impacts

6.1.1 Expenditure

On this basis of the case studies and BiGGAR Economics' experience, the development and construction expenditure per MW has been assumed as around £1.0 million per MW, with a total expenditure of £266.0 million.

This information has also been used to estimate the categories of spend, suggesting that the largest categories are expected to be the turbines (£147.3 million, or 55.4% of the total) followed by grid connection (£50.3 million, or 18.9%) and the balance of plant (£50.0 million, or 18.8%). Development and design contracts include expenditure associated with Banks Renewables direct development⁵.

Table 6.1 Capital Expenditure by Contract Type (£m), Bodinglee Wind Farm

	Share (%)	Total (£m)
Development and Design	5.9%	17.4
Balance of Plant	18.8%	50.0
Grid Connection	18.9%	50.3
Turbines	55.4%	147.3
Aviation	0.4%	1.0
Total	100%	266.0

Source: BiGGAR Economics Calculations.

The share of expenditure in each of the study areas has been estimated based on what happened in the case studies. On this basis, it was assumed that South Lanarkshire would secure 9% of contracts (worth around £24.0 million), the local area would secure 11% (£28.3 million), the regional area would secure 45% (£131.8 million), Scotland would secure 50% (£131.8 million) and the UK would secure 54% (£144.5 million).

This suggests that balance of plant contracts are the most significant opportunity for South Lanarkshire (£16.6 million). The lowest share at the national level would be associated with turbine spend, where the UK would be expected to secure around 18% of contracts, mainly in transport and installation. A share of development and design expenditure would be associated with Banks Renewables own costs, which would be based at its offices in Hamilton, South Lanarkshire.

⁵ This was based on 4 staff employed full-time for 4 years.



Table 6.2 Capital Expenditure by Study Area (£m), Bodinglee Wind Farm

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Development and Design	2.6	4.0	10.5	11.8	17.1	17.4
Balance of Plant	16.6	16.6	48.7	48.8	50.0	50.0
Grid Connection	2.5	2.5	37.1	47.1	50.3	50.3
Turbines	2.3	5.2	23.2	23.2	26.0	147.3
Aviation	-	-	0.4	0.9	1.0	1.0
Total	24.0	28.3	119.9	131.8	144.5	266.0
Total (%)	9%	11%	45%	50%	54%	100%

Source: BIGGAR Economics Calculations.

6.1.2 Economic Impact

The economic impacts associated with Bodinglee Wind Farm’s development and construction expenditure are expected to be similar in type to those arising from the Kype Muir and Middle Muir Wind Farms.

Using evidence from the case studies, it was estimated that the direct economic impact during development and construction would be:

- £9.7 million GVA and 140 job years in South Lanarkshire;
- £12.0 million GVA and 171 job years in the local area;
- £44.0 million GVA and 591 job years in the regional area;
- £47.5 million GVA and 623 job years in Scotland; and
- £52.8 million GVA and 693 job years in the UK.

Table 6.3 Direct Impact of Capital Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Development and Design	1.5	2.2	5.8	6.7	9.6
Balance of Plant	6.2	6.2	18.1	18.2	18.6
Grid Connection	0.6	0.6	8.9	11.3	12.1
Turbines	1.4	3.0	11.0	11.0	12.2
Aviation	-	-	0.2	0.3	0.3
Total	9.7	12.0	44.0	47.5	52.8

Source: BIGGAR Economics Calculations.



Table 6.4 Direct Impact of Capital Expenditure, Employment (job years)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Development and Design	24	35	87	99	141
Balance of Plant	91	90	264	267	273
Grid Connection	4	4	55	70	76
Turbines	21	43	184	184	200
Aviation		-	1	3	3
Total	140	171	591	623	693

Source: BiGGAR Economics Calculations.

It was then necessary to apply indirect and induced multipliers, which have been derived from the case study analysis. On this basis it was estimated that the total economic impact would be:

- £13.5 million GVA and 185 job years in South Lanarkshire;
- £17.8 million GVA and 238 job years in the local area;
- £74.6 million GVA and 969 job years in the regional area;
- £88.3 million GVA and 1,129 job years in Scotland; and
- £144.0 million GVA and 1,950 job years in the UK.

Table 6.5 Economic Impact of Capital Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	9.7	12.0	44.0	47.5	52.8
Indirect Impact	1.7	3.0	18.5	26.6	56.3
Induced Impact	2.1	2.8	12.1	14.2	34.8
Total	13.5	17.8	74.6	88.3	144.0

Source: BiGGAR Economics Calculations.

Table 6.6 Economic Impact of Capital Expenditure, Employment (job years)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	140	171	591	623	693
Indirect Impact	23	40	242	344	767
Induced Impact	22	27	136	163	489
Total	185	238	969	1,129	1,950

Source: BiGGAR Economics Calculations.



6.1.3 Opportunities in South Lanarkshire

There are a number of local opportunities associated with the construction of onshore wind projects such as Bodinglee Wind Farm. In particular, there will be opportunities related to balance of plant contracts, including:

- provision of stone and aggregate;
- plant hire;
- civil engineering;
- road/bridge surfacing works;
- fencing;
- tree surgery and forestry;
- drainage;
- cleaning;
- and other trades activities (plumbing, metal fabrication, electricals, joinery, painting and scaffolding).

In addition, local accommodation providers will benefit from increased occupancy, including during the off-season.

6.2 Operational Impacts

This section considers the long-term impact over the assumed 40-year lifetime of Bodinglee Wind Farm, beginning in 2028. This has been estimated based on financial information from the case study wind farms, which suggests that over this period the operational expenditure would be £452.4 million after accounting for inflation.

As these impacts occur over a longer period of time, they are treated differently from the construction phase. As a result, the impacts are presented in three formats:

- average impact, which considers the average annual impact;
- undiscounted impact, which uses the gross figures provided by the financial analysis; and
- Net Present Value (NPV) impact, which applies a discount rate to the figures provided by the financial analysis.

6.2.1 Annual and Lifetime Operational Expenditure

The average annual expenditure associated with Bodinglee Wind Farm was projected to be £11.3 million. Of this, it was assumed that £3.5 million would be secured in South Lanarkshire (mainly rents), £3.5 million would be secured in the local area, £8.6 million in the regional area and Scotland and £11.3 million in the UK.



Table 6.7 Operational Expenditure by Study Area, Total (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
Turnover	3.5	3.5	8.6	8.6	10.0	11.3
Lifetime	140.0	140.0	345.6	345.6	399.8	452.4
Turnover (%)	31%	31%	76%	76%	88%	-

Source: BiGGAR Economics Calculations.

6.2.2 Annual and Lifetime Operational Economic Impact

Applying economic ratios derived from the case study wind farms, it was estimated that Bodinglee Wind Farm could support an annual economic impact of £2.1 million GVA and 23 jobs in South Lanarkshire, £2.2 million GVA and 24 job years in the local area, £6.1 million GVA and 53 jobs in the regional area, £6.4 million GVA and 56 jobs in Scotland, and £7.5 million GVA and 74 jobs in the UK.

Table 6.8 Direct Impact of Operational Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	1.8	1.8	4.3	4.3	5.0
Indirect Impact	0.1	0.2	0.9	1.2	1.4
Induced Impact	0.2	0.3	0.9	1.0	1.2
Total	2.1	2.2	6.1	6.4	7.5
Lifetime	85.1	88.1	242.0	257.8	301.7

Source: BiGGAR Economics Calculations.

Table 6.9 Direct Impact of Operational Expenditure, Employment (jobs)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Direct Impact	20	20	36	36	47
Indirect Impact	1	1	8	11	14
Induced Impact	3	3	9	10	12
Total	23	24	53	56	74

Source: BiGGAR Economics Calculations.

6.2.3 NPV

Over 40 years from 2028, the NPV of operational expenditure was projected to be £206.0 million, of which £64.9 million was assumed to take place in South Lanarkshire and the local area, £160.5 million in the regional area and Scotland, and £183.6 million in the UK.



Applying appropriate economic ratios and multipliers indicated that this expenditure could support £39.1 million GVA in South Lanarkshire, £40.5 million GVA in the local area, £111.2 million GVA in the regional area, £118.5 million GVA in Scotland and £138.6 million GVA in the UK.

Table 6.10 NPV Economic Impact of Operational Expenditure, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
<i>NPV Turnover</i>	64.9	64.9	160.5	160.5	183.6
Direct Impact	32.6	32.6	78.5	78.5	92.3
Indirect Impact	2.0	3.1	16.3	21.8	24.8
Induced Impact	4.5	4.8	16.4	18.2	21.5
Total	39.1	40.5	111.2	118.5	138.6

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

6.2.4 Opportunities

The main economic opportunities for South Lanarkshire during the operational phase of the wind farm are likely to be related to rents paid to the local landowner, enabling them to diversify and expand their business, as well as land and civils maintenance, for example maintaining roads. Habitat management is another opportunity, involving developing the land and increasing its conservation quality. There may also be opportunities to provide turbine maintenance services.

Jobs supported in the operation and maintenance of onshore wind tend to be in sectors that have relatively high levels of productivity and staff costs, such as the repair and installation of machinery, electric power generation, transmission and distribution and the rental sector⁶. This suggests that these are well-paid, high quality jobs.

6.2.5 Community Benefit Fund

Banks Renewables will put in place a community benefit fund as part of the proposed wind farm, which will distribute funding to the surrounding area.

In line with Scottish Government guidance, this will consist of £5,000 per MW in funding. Given a 264MW development, this will equal around £1.3 million per annum. Over 40 years, this will contribute £52.8 million in funding.

Discussions with the community will take place to identify local priorities and areas where this funding could have the greatest benefit. Banks Renewables has experience in this area, having previously administered community benefit funding related to Kype Muir and Middle Muir Wind Farms in surrounding towns and villages such as Abington, Douglas, Coalburn, Crawfordjohn, and Robertson.

⁶ Office for National Statistics (2022), UK Annual Business Survey 2020



In the first five years, part of this funding will be ring-fenced for an employment and training initiative in partnership with South Lanarkshire Council. This aims to increase the employability of local residents and reduce unemployment and deprivation, which is higher than elsewhere in Scotland.

Other areas that may secure funding include environment improvements. For example, the community benefit funding associated with Middle Muir Wind Farm supported habitat improvements at the Red Moss Bog near Douglas.

6.2.6 Non-Domestic Rates

In addition, Bodinglee Wind Farm will be liable for non-domestic rates, the payment of which will contribute to public sector finances. Based on discussions with developers, it was assumed that the non-domestic rates paid would be £7,000 per MW. This may be conservative, as there is limited information available on non-domestic rates paid by wind farms operating without subsidies.

Based on a capacity of 264MW, the contribution would be £1.8 million. Over 40 years, the contribution would be £73.9 million. As an illustration of the level of impact this could support, the average revenue per employee at South Lanarkshire Council is around £63,700, and therefore non-domestic rates paid by Bodinglee Wind Farm could support 29 jobs at the Council⁷.

6.2.7 Annual Spend

The total spend in each study area by Banks Renewables can be estimated by combining OPEX, community benefits and non-domestic rates, though some caution should be taken in interpreting the total as each element will have different types of effects. On this basis, the estimated annual spend during each year of operation would be:

- £6.7 million in South Lanarkshire and the local area;
- £11.8 million in the regional area and Scotland;
- £13.2 million in the UK.

Table 6.11 Annual Expenditure (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
OPEX	3.5	3.5	8.6	8.6	10.0
Non-Domestic Rates	1.8	1.8	1.8	1.8	1.8
Community Benefits	1.3	1.3	1.3	1.3	1.3
Total	6.7	6.7	11.8	11.8	13.2

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

⁷ In practice, South Lanarkshire Council may not receive all of this income.



6.3 Total Economic Impact

The total expenditure associated with Bodinglee Wind Farm, including during the construction and operational phases, is expected to be £718.4 million. Of this:

- £164.0 million (23%) is expected to be secured in South Lanarkshire;
- £168.3 million (23%) is expected to be secured in the local area;
- £465.6 million (65%) is expected to be secured in the regional area;
- £477.5 million (66%) is expected to be secured in Scotland; and
- £544.2 million (76%) is expected to be secured in the UK.

As can be seen in Table 6.12, the main opportunity for the local authority is in operations and maintenance.

Table 6.12 Total Expenditure: Turnover by Study Area (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK	Total
CAPEX	24.0	28.3	119.9	131.8	144.5	266.0
OPEX	140.0	140.0	345.6	345.6	399.8	452.4
TOTEX	164.0	168.3	465.6	477.5	544.2	718.4
Total (%)	23%	23%	65%	66%	76%	-

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

Over the lifetime of the wind farm, total expenditure associated with these contracts is expected to support:

- £98.6 million GVA in South Lanarkshire;
- £105.9 million GVA in the local area;
- £316.6 million GVA in the regional area;
- £346.1 million GVA in Scotland; and
- £445.6 million GVA in the UK.

Table 6.13 Total Expenditure: Economic Impact, GVA (£m)

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
CAPEX	13.5	17.8	74.6	88.3	144.0
OPEX	85.1	88.1	242.0	257.8	301.7
TOTEX	98.6	105.9	316.6	346.1	445.6

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.



7.

Appendix: Impact per MW

This section outlines the impact associated with Bodinglee Wind Farm on a per MW basis.

Caution should be taken when applying these proportions to other planned wind farms as project details, such as the location and size of turbines will also affect economic impact associated with a project.

7.1 Development and Construction

Table 7.1 shows the expenditure per MW associated with each element of the development and construction phase.

Table 7.1 Development and Construction Expenditure per MW

	Expenditure (£)
Development and Design	£65,80
Balance of Plant	£189,400
Grid Connection	£190,600
Turbines	£558,100
Aviation	£3,600
Total	£1,007,480

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

GVA and employment per MW for the development and construction phase, and including direct, indirect and induced impacts, are presented in Table 7.2 and Table 7.3 below.

Table 7.2 Development and Construction GVA per MW

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Development and Design	£2,800	£6,700	£27,600	£34,100	£72,800
Balance of Plant	£34,800	£37,900	£125,700	£140,100	£191,800
Grid Connection	£3,100	£3,400	£56,900	£80,300	£145,800
Turbines	£6,600	£15,200	£67,000	£72,800	£124,600
Aviation	-	-	£1,100	£2,500	£2,700
Total	£47,300	£63,200	£278,200	£329,800	£537,700

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.



Table 7.3 Development and Construction Employment per MW

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Development and Design	0.04	0.09	0.38	0.47	1.11
Balance of Plant	0.47	0.50	1.67	1.86	3.02
Grid Connection	0.02	0.03	0.49	0.71	1.13
Turbines	0.09	0.21	1.06	1.14	2.01
Aviation	-	-	0.01	0.02	0.02
Total	0.63	0.84	3.60	4.21	7.29

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

7.2 Operation

Table 7.4 shows the expenditure per MW associated with each element of the operation and maintenance phase.

Table 7.4 Operation and Maintenance Expenditure per MW

	Expenditure (£)
Turbine Operation and Maintenance	£11,400
Transmission Costs	£12,700
Civil and Land Maintenance	£3,500
Aviation	£3,000
Rents	£7,700
Other fees	£5,500
Total	£43,800

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

GVA and employment per MW for the operation and maintenance phase, and including direct, indirect and induced impacts, are presented in Table 7.5 and Table 7.6.



Table 7.5 Development and Construction GVA per MW

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Turbine Operation and Maintenance	£1,900	£1,900	£4,000	£4,200	£5,000
Transmission Costs	-	-	£9,100	£9,800	£9,800
Civil and Land Maintenance	£1,400	£1,500	£2,800	£3,000	£3,300
Aviation	-	-	£2,000	£2,200	£2,200
Rents	£5,100	£5,200	£5,500	£5,800	£6,400
Other fees	£500	£600	£1,800	£1,900	£4,700
Total	£8,900	£9,200	£25,200	£26,800	£31,400

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

Table 7.6 Development and Construction Employment per MW

	South Lanarkshire	Local Area	Regional Area	Scotland	UK
Turbine Operation and Maintenance	0.01	0.01	0.03	0.03	0.04
Transmission Costs	-	-	0.05	0.06	0.06
Civil and Land Maintenance	0.03	0.03	0.06	0.07	0.07
Aviation	-	-	0.01	0.01	0.01
Rents	0.03	0.03	0.04	0.04	0.04
Other fees	<0.01	<0.01	0.01	0.02	0.05
Total	0.08	0.09	0.20	0.22	0.27

Source: BIGGAR Economics Calculations. Note, totals may not sum due to rounding.

BiGGAR Economics, Pentlands Science Park,
Bush Loan Penicuik, Midlothian, Scotland EH26 0PZ

info@biggareconomics.co.uk

biggareconomics.co.uk

© Copyright 2022. BiGGAR Economics Ltd. All rights reserved.

