BiGGAR Economics

Community Windpower

Economic Impact of Community Windpower's Projects in the South of Scotland

A report to
Community Windpower
30th October 2020

BiGGAR Economics

Contents

1. Executive Summary

Community Windpower seeks to develop three windfarms in the South of Scotland: Sanquhar II Wind Farm, Scoop Hill Wind Farm and Faw Side Wind Farm and a Visitor Centre at Scoop Hill.

1.1 Economic Impact of Sanquhar II Wind Farm

During its construction and development **Sanquhar II Wind Farm**, which is expected to have a generating capacity of **308 MW**, could generate:

- **£25.6 million Gross Value Added (GVA)** and support **355 job years** in **Dumfries and Galloway** and **East Ayrshire**;
- **£30.4 million GVA** and support **420 job years** in the **South of Scotland** (including Dumfries and Galloway and East Ayrshire); and
- **£110.9 million GVA** and support **1,604 job years** in **Scotland** (including South of Scotland).

Each year, the operation and maintenance of Sanquhar II Wind Farm could generate:

- **£3.9 million GVA** and support **57 jobs** in **Dumfries and Galloway** and **East Ayrshire**;
- **£4.0 million GVA** and support **59 jobs** in the **South of Scotland** (including Dumfries and Galloway and East Ayrshire); and
- **£6.0 million GVA** and support **96 jobs** in **Scotland** (including South of Scotland).

1.2 Economic Impact of Scoop Hill Wind Farm

Scoop Hill Wind Farm, which is expected to have a generating capacity of **525 MW**, could generate during its construction and development:

- **£43.6 million GVA** and support **604 job years** in **Dumfries and Galloway**;
- **£51.8 million GVA** and support **715 job years** in the **South of Scotland** (including Dumfries and Galloway); and
- **£189.0 million GVA** and support **2,735 job years** in **Scotland** (including South of Scotland).

Each year, the operation and maintenance of Scoop Hill Wind Farm could generate:

- **£6.6 million GVA** and support **97 jobs** in **Dumfries and Galloway**;
- **£6.9 million GVA** and support **101 jobs** in the **South of Scotland** (including Dumfries and Galloway); and
- **£10.2 million GVA** and support **164 jobs** in **Scotland** (including South of Scotland).

1.3 Economic Impact of Faw Side Wind Farms

Faw Side Wind Farm, which is expected to have a generating capacity of **315 MW**, during its construction and development could generate:

- **£25.9 million GVA** and support **359 job years** in **Dumfries and Galloway** and **Scottish Borders**;
- **£31.1 million GVA** and support **429 job years** in the **South of Scotland** (including Dumfries and Galloway and Scottish Borders); and
- **£113.4 million GVA** and support **1,641 job years** in **Scotland** (including South of Scotland).

Each year, the operation and maintenance of Faw Side Wind Farm could generate:

- **£4.0 million GVA** and support **58 jobs** in **Dumfries and Galloway and Scottish Borders**;
- **£4.1 million GVA** and support **60 jobs** in the **South of Scotland** (including Dumfries and Galloway and Scottish Borders); and
- **£6.1 million GVA** and support **98 jobs** in **Scotland** (including South of Scotland).

1.4 Cumulative Impacts

The total cumulative benefits from the construction and development of the three wind farms and from their operation could go beyond their total impact, as they could support the development of a supply chain in the South of Scotland. For example, if local businesses were to secure 5% more contracts than expected when considering the construction of a single wind farm, the three wind farms could generate during their construction and development:

- **£119.0 million GVA** and support **1,642 job years** across the **South of Scotland**; and
- **£413.3 million GVA** and support **5,980 job years** across **Scotland** (including South of Scotland).

Similarly, a 5% increase in the capacity of local businesses to carry out operation and maintenance contracts, could lead to cumulative operational impacts worth up to:

- **£15.8 million GVA** and **1,642 jobs** across the **South of Scotland**; and
- **£22.3 million GVA** and **5,980 jobs** across **Scotland** (including South of Scotland).

The three wind farms will also contribute to the aspirations of local communities through community benefit funds and support the provision of public services through the payment of non-domestic rates. It was estimated that the three wind farms could deliver **each year** a total **£1.5 million** in **community benefits**, including:

- **£0.6 million** from **Sanquhar II Wind Farm**;

- **£0.5 million** from **Scoop Hill Wind Farm**; and
- **£0.4 million** from **Faw Side Wind Farm**.

The total contribution to public finances could amount to around **£14.4 million** each year in non-domestic rates, including:

- **£3.9 million** from **Sanquhar II Wind Farm**;
- **£6.6 million** from **Scoop Hill Wind Farm**; and
- **£3.9 million** from **Faw Side Wind Farm**.

1.5 Scoop Hill Visitor Centre

Whereas there is no evidence of a negative relationship between onshore wind farms and tourism activity, the Visitor Centre at Scoop Hill could provide the local outdoor tourism industry with an additional asset, helping to attract visitors to the area.

Based on the evidence from similar developments, it was estimated that each year the Visitor Centre could attract **around 100,000 visitors** and could generate:

- **£0.9 million GVA** and **15 job years** in the **South of Scotland during the construction;** and
- **£1.7 million GVA and 69 jobs** in the **South of Scotland** each year **while in operation.**

1.6 The Strategic Case for Onshore Wind as a Driver of Economic Recovery

The Covid-19 pandemic has had a major impact on the economy, locally and nationally, with the South of Scotland being disproportionately negatively impacted. The renewable energy sector in general, including the three projects proposed by Community Windpower, can make an important contribution to national and regional economic recovery and transformation. This is because they can generate short term job opportunities that replace jobs lost during the Covid-19 pandemic, improve economic competitiveness and productivity in the longer term and deliver wider benefits, including environmental benefits.

The role of renewable energy in economic recovery has been recognised in new economic policy developments in Scotland over the summer of 2020, including in the report of Advisory Group on Economic Recovery, the Scottish Government's response to that report and the Programme for Government.

The growth of the renewable energy sector was a priority prior to the Covid-19 pandemic. The importance of the sector as a driver of economic recovery and transformation is difficult to overstate, particularly in areas that are likely to have suffered disproportionately from the negative economic impacts of the pandemic, such as the South of Scotland.

2. Introduction

This section sets out the aims of the study and provides an overview of its structure and content.

2.1 Study Aims

In October 2020 BiGGAR Economics was commissioned by Community Windpower to assess the economic impacts of three proposed wind farms and a Visitor Centre in the South of Scotland:

- Sanquhar II Wind Farm;
- Faw Side Wind Farm;
- Scoop Hill Wind Farm; and
- the Visitor Centre at Scoop Hill.

In addition to assessing the economic impacts from these projects, this study sets them into the context of the post Covid-19 economic recovery.

2.2 Report Structure

This report is structured as follows:

- Chapter 3 sets out the methodology that was followed in estimating the economic impacts of the three wind farm developments;
- Chapter 4 provides a socio-economic context;
- Chapter 5 considers the economic benefits from Sanquhar II Wind Farm;
- Chapter 6 identifies the economic impacts from Faw Side Wind Farm;
- Chapter 7 sets out the economic benefits from Scoop Hill Wind Farm;
- Chapter 8 quantifies the cumulative benefits from the construction and operations of the three wind farms;
- Chapter 9 gives an overview of tourism activity in the South of Scotland and of the role the Visitor Centre could play;
- Chapter 10 considers the economic impact that could be generated by the Visitor Centre; and
- Chapter 11 sets out the strategic case for investing in renewable energy projects in the post Covid-19 economic recovery.

3. Methodology

This section sets out the methodology that was followed in assessing the economic impacts of the three wind farm developments.

3.1 The Economic Impact of Wind Farms

3.1.1 A Best-Practice Approach

The analysis of the potential economic benefits from the construction and development of each of the three wind farms was based on industry best-practice. In particular, it relied on two studies conducted by BiGGAR Economics on behalf of RenewableUK in 2012[1] and 2015[2], which assessed the local, regional and national economic benefits from wind farms developed across the UK in recent years. These works, which were based on case studies of built wind farms, were the starting point in assessing the scope for economic impact at a local, regional and national level.

The analysis of economic impacts also benefitted from information on development and construction, and operations and maintenance costs from Community Windpower. The study further relied on BiGGAR Economics' experience working on onshore wind developments in the South of Scotland, as well as from an analysis of the economic structure of each of the study areas considered.

3.1.2 Study Areas

The assessment of economic impacts is conducted at the following geographical levels:

- local authority or local authorities where the wind farms are located (Dumfries and Galloway, Dumfries and Galloway and East Ayrshire, Dumfries and Galloway and Scottish Borders);
- South of Scotland; and
- Scotland.

Where economic impacts are reported at the level of each of these geographical areas, they are to be interpreted as inclusive (i.e. spending in the South of Scotland includes any spending taking place in East Ayrshire, Dumfries and Galloway and Scottish Borders; similarly, spending in Scotland includes expenditure occurring across the South of Scotland).

[1] Department of Energy & Climate Change and RenewableUK (2012), Onshore Wind, Direct & Wider Economic Impacts.

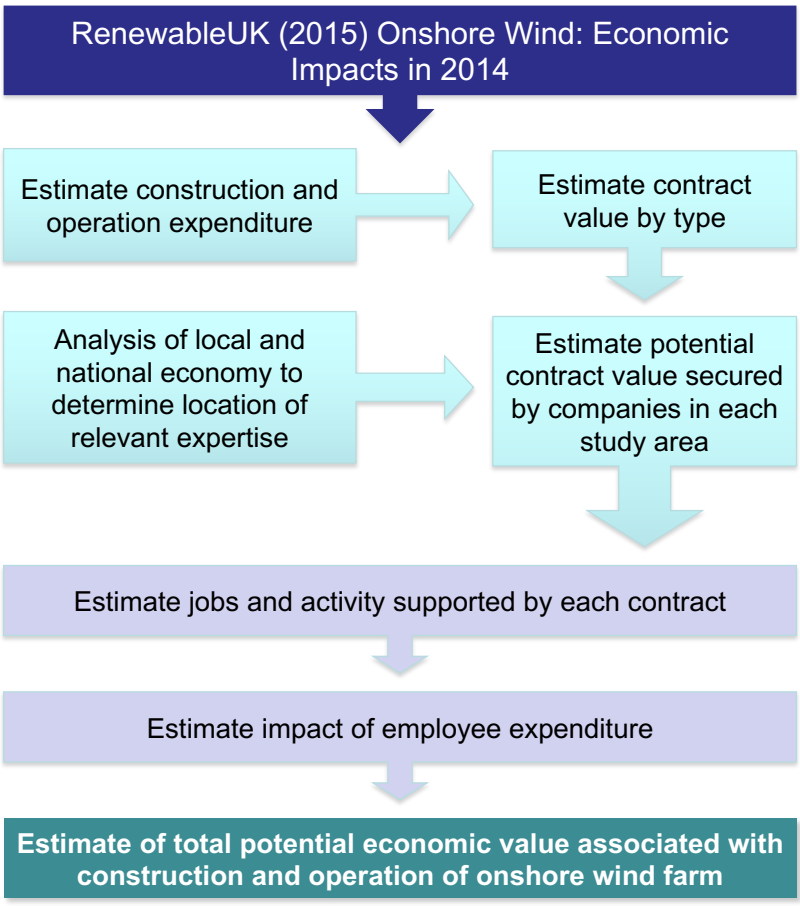
[2] RenewableUK (2015), Onshore wind: Economic impacts in 2014.

3.1.3 Approach to Economic Impact Assessment

This evidence and assumptions on the capacity to carry out contracts in a given study area are at the basis of the bespoke economic model that BiGGAR Economics uses to estimate the economic impact of onshore wind developments. In particular, as shown in Figure 3-1, the modelling exercise consists of four stages:

- estimation of total capital expenditure;
- estimation of the value of component contracts that make up total expenditure;
- assessment of the capacity of businesses in the study areas to perform and complete component contracts; and
- estimation of economic impact from resultant figures.

Figure 3-1 Approach to Direct and Indirect Economic Impact Assessment



The estimation of economic benefits is carried out in terms of the following three measures:

- Gross Value Added (GVA), a measure of economic output, which is usually defined as the value of an organisation's turnover minus any non-staff operational costs;
- years of employment (job years), a measure of employment that is used with reference to jobs that last over short time periods, such as during the

construction of an onshore wind farm. A full-time job lasting two years would be two job years and one lasting six months would be 0.5 job years; and
- headcount employment, which is used when referring to impacts taking place on an annual basis.

Relying on these measures, the analysis of economic impacts considers three type of benefits:

- direct economic impacts: component contracts and the jobs they support;
- indirect economic impacts: wider spending in the supply chain; and
- induced economic impacts: spending of people employed in these contracts.

Having estimated the total turnover generated in each study area by each contract type, publicly available statistics are used to define economic impacts. In particular, direct GVA and employment are estimated by dividing the turnover generated by a contract in a given sector by the turnover per GVA and turnover per job for that sector, as sourced from the UK Annual Business Survey (ABS)[3].

Indirect impacts are then estimated by multiplying direct GVA and employment impacts by Scottish Type 1 GVA and employment multipliers, as sourced from the Scottish Input-Output Tables[4], minus one. Induced impacts are estimated by multiplying direct GVA and employment impacts by the difference between Type 2 and Type 1 multipliers.

[3] Office for National Statistics (2020), UK Annual Business Survey, 2018 Revised.
[4] Scottish Government (2020), 2017 Scottish Input-Output Tables.

4. Socio-Economic Context

This section analyses the local areas considered in the assessment of economic impacts in relation to their economic structure.

To introduce the geographies included in the assessment, this chapter provides:

- estimates of current and future population (headcount and structure);
- a series of labour market indicators; and
- evidence on the industrial structure of each of the economies considered.

4.1 Demographics

In 2019 Dumfries and Galloway had a population of 148,860, East Ayrshire of 122,010 and the Scottish Borders of 115,510 (Table 4-1). The combined population of the three local authorities was 386,380, equivalent to around 7% of the population of Scotland.

Whereas the three local authorities had a similar share of the population aged 0-15 as Scotland, they had a relatively smaller working age population (16-64 years old). Around 58% of the population of Dumfries and Galloway, 59% of that of the Scottish Borders and 62% of that of East Ayrshire were between 16 and 64 years old, compared with 64% in Scotland.

Similarly, the share of the population aged 65+ was relatively larger in Dumfries and Galloway (26%) and in the Scottish Borders (25%), with East Ayrshire having a similar share (20%) as Scotland (19%).

Table 4-1 Population, 2019 Estimates

	Dumfries and Galloway	East Ayrshire	Scottish Borders	Scotland
Total	**148,860**	**122,010**	**115,510**	**5,463,300**
0-15	16%	17%	16%	17%
16-64	58%	62%	59%	64%
65 and over	26%	20%	25%	19%

Source: National Records of Scotland (2020), Mid-2019 Population Estimates Scotland.

When compared to 2019-based estimates, population projections to 2043 (Table 4-2) suggest a decline in the number of people living in Dumfries and Galloway (-8%) and in East Ayrshire (-7%). On the contrary, over the period to 2043 the populations of the

Scottish Borders and of Scotland are expected to increase by about 1% and 2% respectively.

Across all the study areas, the population is expected to age, though this will follow current trends in their population structures. As a result, by 2043 the populations of Dumfries and Galloway and the Scottish Borders will remain relatively older than those of East Ayrshire and Scotland.

Table 4-2 Population Projections to 2043

	Dumfries and Galloway	East Ayrshire	Scottish Borders	Scotland
Total	**136,286**	**113,792**	**116,138**	**5,574,819**
0-15	13%	16%	15%	15%
16-64	53%	58%	53%	60%
65 and over	34%	27%	31%	25%

Source: National Records of Scotland (2019), Projected Population of Scotland 2018-based.

4.2 Economic Structure

Economic data on each of the study areas provide evidence on their labour market performance and on their relative sectoral strengths. Evidence is provided across Table 4-3 and Table 4-4.

The employment rate among the population of working age (16-64 years old) is similar across Dumfries and Galloway (75.1%), East Ayrshire (74.3%) and Scotland (74.5%), and slightly larger in the Scottish Borders (76.2%). The unemployment rate was smallest in Dumfries and Galloway (3.1%) and the Scottish Borders (3.2%), with East Ayrshire (4.6%) and Scotland (4.2%) having a similar share of their working age population being unemployed. The relatively low unemployment rates and relatively high employment rates in the South of Scotland are in part linked to the fact that these areas have relatively smaller working age populations.

Full-time workers in East Ayrshire and Scotland as a whole tend to have higher median gross annual income of up to £30,000, as compared to their counterparts living in Dumfries and Galloway (£24,400) and Scottish Borders (£27,800). Differences in incomes are linked to the productivity of an area's economic base.

Table 4-3 Labour Market Indicators

	Dumfries and Galloway	East Ayrshire	Scottish Borders	Scotland
Employment Rate (16-64)	75.1%	74.3%	76.2%	74.5%
Unemployment Rate (16-64)	3.1%	4.6%	3.2%	4.2%
Median Gross Annual income (£), FT Workers	24,400	29,500	27,826	30,000

Source: ONS (2020), Annual Population Survey 2019; ONS (2020), Annual Survey of Hours and Earnings 2019 – Resident Analysis.

The economies of the three local authorities feature a relatively larger share of those in employment working in agriculture, forestry and fishing. In 2019 in Dumfries and Galloway and in the Scottish Borders the sector employed around 11.8% and 10.4% of those in employment, compared to 3.2% in Scotland as a whole.

Similarly manufacturing employment was relatively larger in Dumfries and Galloway (8.8%) and in the Scottish Borders (10.4%) than in Scotland (6.9%). While the construction sector was a relatively larger employer in the Scottish Borders (6.3%) than in Scotland (5.5%), this was not the case across East Ayrshire (4.7%) and Dumfries and Galloway (4.4%).

As in the rest of Scotland, the sectors employing most people were wholesale trade and human health. These were relatively more important in the three local authorities, employing around 32.4% in Dumfries and Galloway, 33.4% in Scottish Borders and 37.3% in East Ayrshire, compared to 28.7% in Scotland as a whole.

Table 4-4 Industrial Structure, 2018

	Dumfries and Galloway	East Ayrshire	Scottish Borders	Scotland
Agriculture, forestry and fishing	11.8%	4.1%	10.4%	3.2%
Mining and quarrying	0.1%	0.7%	0.1%	1.1%
Manufacturing	8.8%	7.0%	10.4%	6.9%
Electricity, gas, steam, air conditioning	0.4%	0.5%	1.0%	0.7%
Water supply, sewerage, etc.	0.9%	0.8%	0.7%	0.8%
Construction	4.4%	4.7%	6.3%	5.5%
Wholesale and retail trade	16.2%	14.0%	16.7%	13.6%
Transportation and storage	4.4%	3.5%	2.6%	4.2%
Accommodation and food services	8.8%	7.0%	7.3%	7.9%
Information and communication	0.9%	0.9%	1.5%	3.1%
Financial and Insurance activities	0.9%	1.6%	0.7%	3.3%
Real estate activities	1.8%	1.0%	1.7%	1.5%
Professional, scientific and technical activities	5.9%	4.7%	5.2%	7.0%
Administrative and support service activities	4.4%	8.1%	4.2%	7.9%
Public administration and defense	3.7%	8.1%	3.6%	6.0%
Education	7.4%	5.8%	6.3%	7.4%
Human health and social work activities	16.2%	23.3%	16.7%	15.1%
Arts, entertainment and recreation	2.2%	2.9%	3.6%	2.8%
Other service activities	1.8%	1.9%	1.7%	2.1%
Total Number of People Employed	**68,000**	**43,000**	**48,000**	**2,612,000**

Source: Business Register and Employment Survey (BRES), 2018.

4.3 Summary of Socio-Economic Context

The population structure of the South of Scotland is older than that of Scotland as a whole, with this trend expected to continue in the future in combination with an overall decline in the population. The region faces outward migration of young people in search of job opportunities and employment in sectors paying higher wages.

The development of a strong onshore wind industry in the area, by providing highly productive, high paying jobs, could reduce the need for outward migration and contribute to the South of Scotland's prosperity.

5. Sanquhar II Wind Farm

This section sets out the economic benefits associated with Sanquhar II Wind Farm.

5.1 The Economic Impact of Sanquhar II Wind Farm

Sanquhar II Wind Farm is a proposed development on the border between Dumfries and Galloway and East Ayrshire. The wind farm would form a natural extension to the existing, operational, Sanquhar Wind Farm and would comprise 44 turbines. Each turbine is expected to have a capacity of 7 MW, thereby giving a combined total installed capacity of around 308 MW with an operational lifetime of 40 years.

5.1.1 Construction and Development – Economic Impact

Based on information from Community Windpower, it was estimated that the total construction and development costs for Sanquhar II Wind Farm could amount to £336.9 million. To estimate the economic impact associated with this expenditure, it was first necessary to split it into four categories of contracts:

- development and planning;
- turbines;
- balance of plant; and
- grid connection.

The relative size of each of these contracts was estimated based on the construction and developments costs of wind farms that are in operation across the UK. This relied on BiGGAR Economics' 2015 study on the economic impact of onshore wind developments carried out on behalf of RenewableUK.

In this way, it was estimated that the largest share of costs could be in turbines' contracts, which could be worth up to £233.7 million, equivalent to 69.4% of total construction and development expenditure (Capex). Spending on balance of plants contracts could account for 19.3% of Capex, followed by development and planning contracts (including finance and professional fees) (6.5%) and grid connection contracts (4.8%).

Table 5-1 Value of CAPEX Contracts – Sanquhar II Wind Farm

	% of Capex	Value of the Proposed Development (£m)
Development and Planning (including finance and professional fees)	6.5%	21.9
Turbines	69.4%	233.7
Balance of Plant	19.3%	65.0
Grid Connection	4.8%	16.3
Total	**100.0%**	**336.9**

Source: BiGGAR Economics Analysis of RenewableUK (2015), Onshore Wind: Economic Impacts 2014.
*totals may not add up due to rounding.

At this stage, it was necessary to estimate the capacity of businesses in each of the study areas to carry out contracts across these four categories of Capex. Assumptions on the ability of local, regional and national businesses to carry out these contracts were based on:

- the evidence from the 2015 RenewableUK study;
- the local economic structure of the study areas considered;
- information on suppliers from Community Windpower; and
- previous experience with onshore wind developments in the South of Scotland.

In this way, it was estimated that Dumfries and Galloway and East Ayrshire could secure around 11% of Capex contracts, with the South of Scotland securing around 13% and Scotland up to 40%. The largest opportunity for Dumfries and Galloway and East Ayrshire was identified in the contracts associated with the balance of plant, £21.8 million of which could benefit local suppliers.

Balance of plant contracts could also represent the largest opportunity for the South of Scotland and Scotland as a whole, with businesses set to benefit from contracts worth up to £25.7 million and £58.2 million respectively.

Table 5-2 Development and Construction, Expenditure by Study Area and Contract

	Dumfries and Galloway and East Ayrshire		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Development and Planning (including finance and professional fees)	13%	2.8	16%	3.4	87%	19.1
Turbines	3%	8.1	4%	9.8	17%	40.5
Balance of Plant	34%	21.8	39%	25.7	90%	58.2
Grid Connection	35%	5.7	37%	6.1	100%	16.3
Total	**11%**	**38.5**	**13%**	**45.0**	**40%**	**134.1**

*Totals may not add up due to rounding.

Having estimated the size of the contracts that could be secured in each of the study areas, it was possible to estimate the direct GVA and direct employment associated with them. This was achieved by dividing the turnover generated in each study area by the turnover per GVA and turnover per job ratios of the sectors that would be carrying out each contract.

It was then necessary to consider those economic impacts that would take place across the supply chain (indirect impacts). These were estimated by applying Type 1 GVA and employment Scottish multipliers from the Scottish Input-Output Tables[5] to direct GVA and employment. Since the multipliers refer to impacts at the level of the Scottish economy, these were weighted by 33% at the Dumfries and Galloway and East Ayrshire level and by 35% at the South of Scotland level, as done in similar assessments.

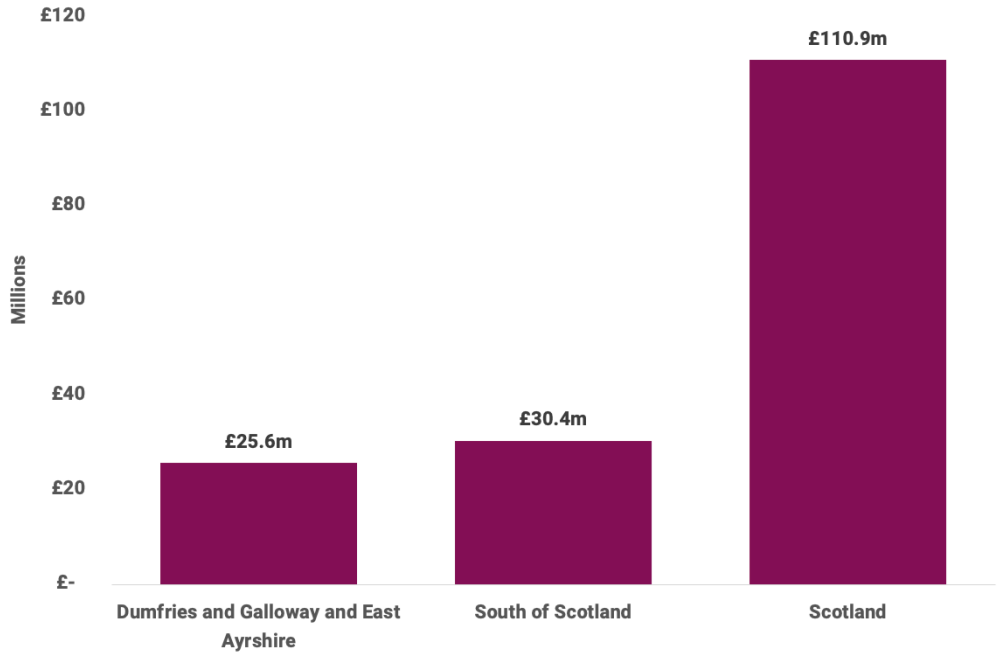
The spending of the salaries paid to those working for the contractors involved in the construction and development of Sanquhar II Wind Farm will further generate economic benefits. To estimate these, Type 2 Scottish multipliers were applied to the direct GVA and employment estimates. To account for the spending that would take place locally, Scottish multipliers were weighted by 70% at the Dumfries and Galloway and East Ayrshire level and by 75% at the South of Scotland level. This was based on internal analysis by BiGGAR Economics of the spending patterns of households across Scotland, which relied on the Office for National Statistics' Family Spending in the UK[6].

Summing up the direct, indirect and induced benefits from Sanquhar II Wind Farm, it was estimated that its construction and development could generate:

[5] Scottish Government (2020), Supply, use and input-output tables: 1998-2017.
[6] Office for National Statistics (2019), Family Spending in the UK: April 2017 to March 2018.

- **£25.6 million GVA** and **355 job years** in **Dumfries and Galloway** and **East Ayrshire**;
- **£30.4 million GVA** and **420 job years** in the **South of Scotland**; and
- **£110.9 million GVA** and **1,604 job years** across Scotland.

Figure 5-1 GVA Impact - Construction and Development of Sanquhar II Wind Farm



Source: BiGGAR Economics Analysis

5.1.2 Operations and Maintenance – Economic Impact

The starting point in estimating the economic impact from operation and maintenance was to estimate the total annual costs during Sanquhar II Wind Farm's operation. Based on information from Community Windpower, it was estimated that total annual operation and maintenance (Opex) expenditure could be around £15.5 million. This excludes community benefits and non-domestic rates, which are considered separately.

It was then necessary to estimate how much of the operation and maintenance works could be performed by local suppliers. An analysis of the local economic structure, complemented by information from Community Windpower, suggested that around 36% of Opex could benefit businesses in Dumfries and Galloway and East Ayrshire and 37% in the South of Scotland. Scottish businesses could benefit from around 50% of the Opex contracts.

Table 5-3 Operations and Maintenance, Expenditure by Study Area

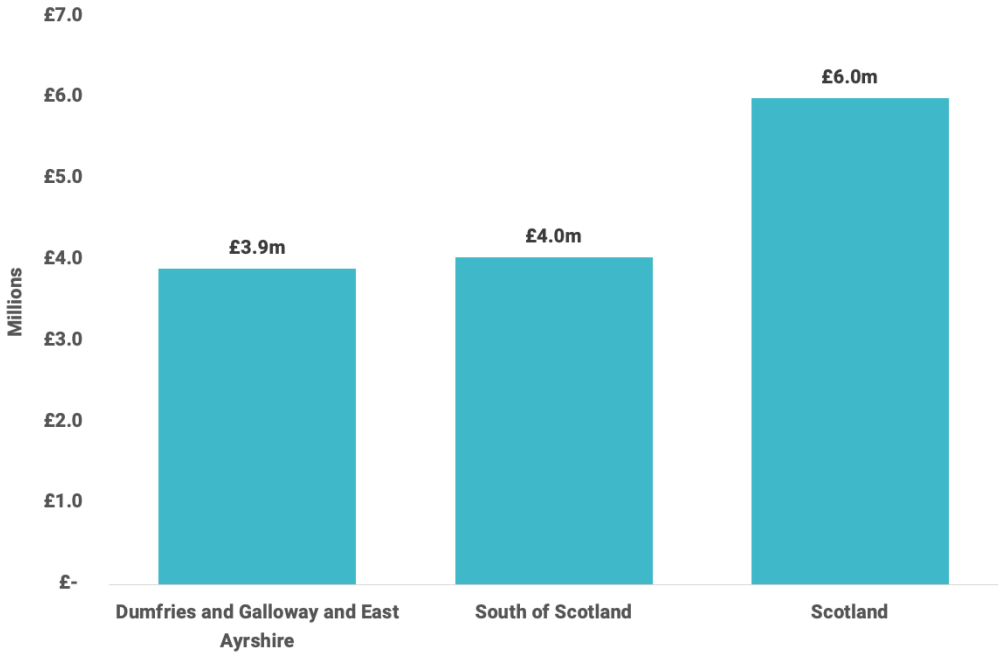
	Dumfries and Galloway and East Ayrshire		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Operations and Maintenance	36%	5.6	37%	5.8	50%	7.7

Having estimated total annual expenditure in Opex taking place in each study area, it was possible to apply turnover per GVA and turnover per job multipliers to estimate the direct GVA and employment supported by these contracts.

Type 1 and Type 2 GVA and employment multipliers were then applied to the estimates of direct GVA and employment impacts to estimate indirect and induced impacts. Adding together direct, indirect and induced impacts, it was estimated that each year the operations and maintenance spend associated with Sanquhar II Wind Farm could generate:

- **£3.9 million GVA** and **57 jobs** in **Dumfries and Galloway and East Ayrshire**;
- **£4.0 million GVA** and **59 jobs** across the **South of Scotland**; and
- **£6.0 million GVA** and **96 jobs** across **Scotland**.

Figure 5-2 Operations and Maintenance GVA Impact - Sanquhar II Wind Farm



Source: BiGGAR Economics Analysis

5.1.3 Community Benefits

In addition to the economic benefits generated during its construction and operation, Sanquhar II Wind Farm will also make a contribution to local economic development

through a community benefit fund. The fund, which will benefit communities in the immediate proximity of the wind farm, is expected to be worth around £2,500 per MW.

Based on a grid capacity of 250MW, this is equivalent to **total community benefits worth £625,000 every year** and to cumulative community benefit payments worth **up to £25.0 million over the 40-year lifetime of Sanquhar II**. The community benefit funding could provide significant wider social, educational, environmental and economic benefits for the local community.

Based on the annual value of the community benefit fund, it was possible to estimate how many jobs could be supported in the local area. By dividing the total value of the annual community benefit payments by the turnover per job of the voluntary sector[7], it was estimated that **the community benefit fund could support 11 jobs throughout the operational period**.

5.1.4 Non-Domestic Rates

Sanquhar II Wind Farm would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. Whilst non-domestic rates are set at the national level, they are redistributed to local authorities and so considered to be local taxation.

Based on an estimated non-domestic rates liability of £12,500 per MW, it was estimated that Sanquhar II Wind Farm **each year throughout its operation** could **contribute to public finances** around **£3.9 million**. The cumulative value of the non-domestic rates **over the wind farm's lifetime** could be **up to £154.0 million**. These non-domestic rates, by providing an additional revenue stream, would support the delivery of local government services.

Whilst, the actual contribution would depend on variables such as the actual load factor and the potential for any relief from non-domestic rates, these estimates are broadly in line with the non-domestic rates liabilities of similar developments across the South of Scotland.

[7] Scottish Council of Voluntary Organisations (2020), State of the sector 2020.

6. Scoop Hill Wind Farm

This section sets out the economic benefits associated with Scoop Hill Wind Farm.

6.1 The Economic Impact of Scoop Hill Wind Farm

Scoop Hill is a proposed wind farm development in Dumfries and Galloway. Community Windpower is proposing 75 turbines with total installed capacity of around 525 MW and an operational lifetime of 40 years.

6.1.1 Construction and Development – Economic Impact

Based on the construction and development expenditure (Capex) per MW of Sanquhar II Wind Farm, it was estimated that the total construction and development costs for Scoop Hill Wind Farm could amount to around £574.3 million. To estimate the economic benefits associated with it, this spending was split into four categories of contracts:

- development and planning;
- turbines;
- balance of plant; and
- grid connection.

The relative size of each of these contracts was estimated based on the construction and developments costs of wind farms that are in operation across the UK. This relied on BiGGAR Economics' 2015 study on the economic impact of onshore wind developments carried out on behalf of RenewableUK.

In this way, it was estimated that the largest share of costs could be associated with turbines contracts, which could be worth up to £398.3 million, equivalent to 69.4% of total Capex. Spending on balance of plants contracts could account for 19.3% of Capex, followed by development and planning contracts, including finance and professional fees (6.5%), and grid connection contracts (4.8%).

Table 6-1 Value of CAPEX Contracts – Scoop Hill Wind Farm

	% of Capex	Value of the Proposed Development (£m)
Development and Planning (including finance and professional fees)	6.5%	37.4
Turbines	69.4%	398.3
Balance of Plant	19.3%	110.8
Grid Connection	4.8%	27.8
Total	**100.0%**	**574.3**

Source: BiGGAR Economics Analysis of RenewableUK (2015), Onshore Wind: Economic Impacts 2014.
*totals may not add up due to rounding.

Assumptions on the ability of local, regional and national businesses to carry out these contracts were based on:

- the evidence from the 2015 RenewableUK study;
- the local economic structure of the study areas considered;
- information on suppliers from Community Windpower; and
- previous experience with onshore wind developments in the South of Scotland.

In this way, it was estimated that Dumfries and Galloway could secure around 11% of Capex contracts, with the South of Scotland securing around 13% and Scotland up to 40%. The largest opportunity for Dumfries and Galloway and East Ayrshire was identified in the contracts associated with the balance of plant, £37.1 million of which could benefit local suppliers. Balance of plant contracts could also represent the largest opportunity for the South of Scotland (£43.8 million) and businesses across Scotland as a whole (£99.2 million).

Table 6-2 Development and Construction Expenditure by Study Area and Contract

	Dumfries and Galloway		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Development and Planning (including finance and professional fees)	13%	4.7	16%	5.8	87%	32.5
Turbines	3%	13.8	4%	16.7	17%	69.0
Balance of Plant	34%	37.1	39%	43.8	90%	99.2
Grid Connection	35%	9.8	37%	10.4	100%	27.8
Total	**11%**	**65.5**	**13%**	**76.6**	**40%**	**228.5**

*Totals may not add up due to rounding

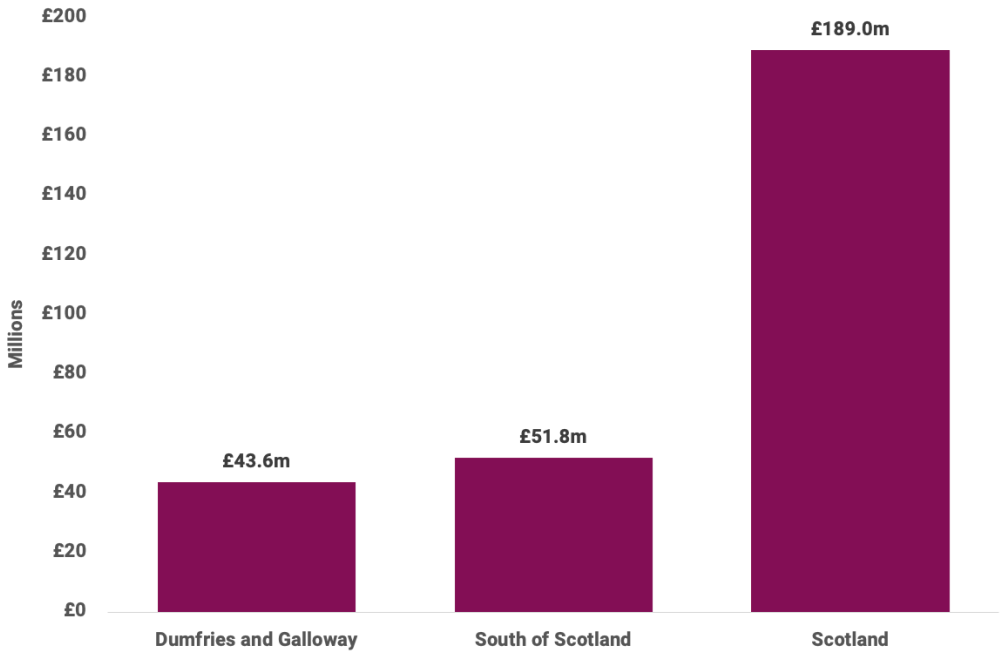
Having estimated the size of the contracts that could be secured in each of the study areas, it was possible to estimate the direct GVA and direct employment associated with those. This was achieved by dividing the turnover generated in each area by each contract type by the turnover per GVA and turnover per job ratios of the sectors that would be carrying them out.

Indirect and induced impacts were then estimated by applying the relevant Scottish Type 1 and Type 2 employment and GVA multipliers in the same way as in the previous chapter.

Summing up the direct, indirect and induced benefits from Scoop Hill Wind Farm, it was estimated that its construction and development could generate:

- **£43.6 million GVA** and **604 job years** in **Dumfries and Galloway**;
- **£51.8 million GVA** and **715 job years** in the **South of Scotland**; and
- **£189.0 million GVA** and **2,735 job years** across **Scotland**.

Figure 6-1 GVA Impact - Construction and Development of Scoop Hill Wind Farm



Source: BiGGAR Economics Analysis

6.1.2 Operations and Maintenance – Economic Impact

The starting point in estimating the economic impact from operation and maintenance works was to estimate the total annual costs during Scoop Hill Wind Farm's operation. These were estimated based on the costs per MW expected to arise from the operation of Sanquhar II Wind Farm. On this basis, it was estimated that total annual Opex could be around £26.5 million. This excludes non-domestic rates and community benefits, which are considered separately.

It was then necessary to estimate how much of the operation and maintenance works could be performed by local suppliers. An analysis of the local economic structure and information from Community Windpower suggested that around 36% of Opex could benefit businesses in Dumfries and Galloway, 37% those in the South of Scotland and 50% those in Scotland as a whole.

Table 6-3 Operations and Maintenance - Expenditure by Study Area

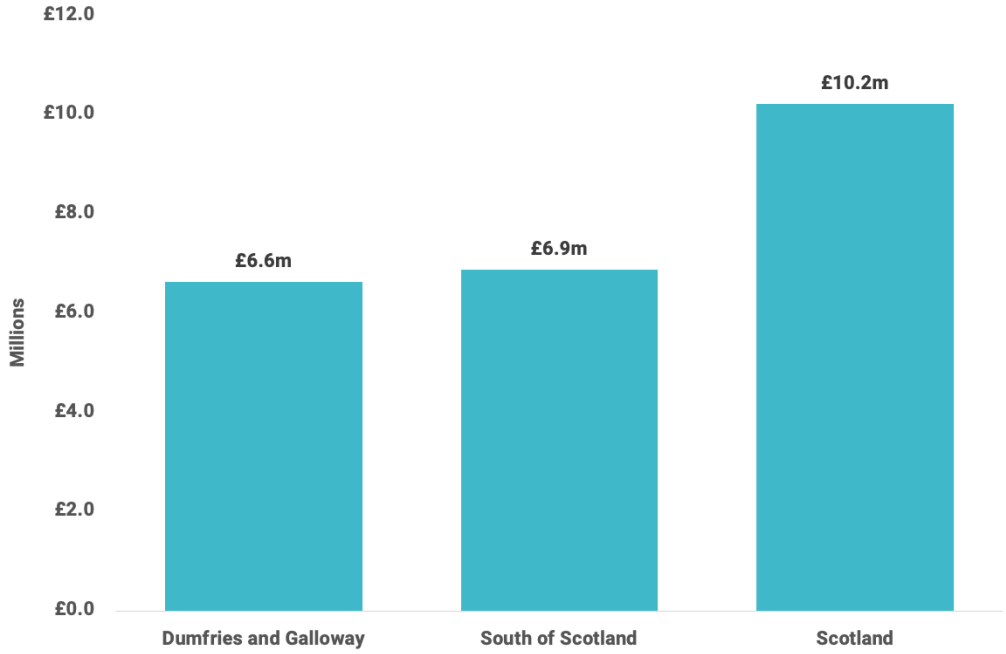
	Dumfries and Galloway		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Operations and Maintenance	36%	9.6	37%	9.8	50%	13.2

Having estimated total annual expenditure in Opex taking place in each study area, it was possible to apply turnover per GVA and turnover per job to estimate the direct GVA and employment supported by operational expenditure. Type 1 and Type 2 GVA and employment multipliers were then applied to the estimates of direct GVA and employment impacts to estimate indirect and induced impacts.

Adding together direct, indirect and induced impacts, it was estimated that each year the operations and maintenance spend associated with Scoop Hill Wind Farm could generate:

- **£6.6 million GVA** and **97 jobs** in Dumfries and Galloway;
- **£6.9 million GVA** and **101 jobs** across the South of Scotland; and
- **£10.2 million GVA** and **164 jobs** across Scotland.

Figure 6-2 Operations and Maintenance GVA Impact – Scoop Hill Wind Farm



Source: BiGGAR Economics Analysis

6.1.3 Community Benefits

In addition to the economic benefits generated during its construction and operation, Scoop Hill Wind Farm will also make a contribution to local economic development through a community benefit fund. **The fund**, which will benefit communities in the immediate proximity of the wind farm, is expected to be **worth around £500,000 each year**.

This is equivalent to **total cumulative community benefit payments** worth up to **£20.0 million over the 40-year lifetime of Scoop Hill Wind Farm**. These funds could provide significant wider social, educational, environmental and economic benefits for the local communities.

Based on the annual value of the community benefit fund, it was possible to estimate how many jobs could be supported in the local area. By dividing the total value of the annual community benefit payments by the turnover per job of the voluntary sector, it was estimated that **the community benefit fund could support nine jobs throughout the operational period**.

6.1.4 Non-Domestic Rates

Scoop Hill Wind Farm would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. Whilst non-domestic rates are set at the national level, they are redistributed to local authorities and so considered to be local taxation.

Based on an estimated non-domestic rates liability of around £12,500 per MW, it was estimated that **Scoop Hill Wind Farm** throughout its operation **each year could**

contribute to public finances around £6.6 million. The **cumulative value of the non-domestic rates over the wind farm's lifetime** could be up to around **£262.0 million**. These non-domestic rates, by providing an additional revenue stream, would support the delivery of local government services.

Whilst, the actual contribution would depend on variables such as the actual load factor and the potential for any relief from non-domestic rates, these estimates are broadly in line with the non-domestic rates liabilities of similar developments across the South of Scotland.

7. Faw Side Wind Farm

This section sets out the economic benefits associated with Faw Side Wind Farm.

7.1 The Economic Impact of Faw Side Wind Farm

Faw Side is a proposed wind farm development on the border between Dumfries and Galloway and the Scottish Borders. Community Windpower is proposing 45 turbines with total installed capacity of around 315MW, with an operational lifetime of 40 years.

7.1.1 Construction and Development – Economic Impact

Based on the construction costs per MW of Sanquhar II Wind Farm, it was estimated that the total construction and development costs for Faw Side Wind Farm could amount to around £344.6 million. To estimate the economic benefits associated with it, this spending was split into four categories of contracts:

- development and planning;
- turbines;
- balance of plant; and
- grid connection.

The relative size of each of these contracts was estimated based on the construction and developments costs of wind farms that are in operation across the UK. This relied on BiGGAR Economics' 2015 study on the economic impact of onshore wind developments carried out on behalf of RenewableUK.

The largest share of costs is expected to be in turbines contracts, which could be worth up to £239.0 million, equivalent to 69.4% of total construction and development expenditure (Capex). Spending on balance of plants contracts could account for 19.3% of Capex, followed by development and planning contracts, including finance and professional fees (6.5%), and grid connection contracts (4.8%).

Table 7-1 Value of CAPEX Contracts – Faw Side Wind Farm

	% of Capex	Value of the Proposed Development (£m)
Development and Planning (including finance and professional fees)	6.5%	22.4
Turbines	69.4%	239.0
Balance of Plant	19.3%	66.5
Grid Connection	4.8%	16.7
Total	**100%**	**344.6**

Source: BiGGAR Economics Analysis of RenewableUK (2015), Onshore Wind: Economic Impacts 2014.
*totals may not add up due to rounding.

Assumptions on the ability of local, regional and national businesses to carry out these contracts were based on:

- the evidence from the 2015 RenewableUK study;
- the local economic structure of the study areas considered;
- information on suppliers from Community Windpower; and
- previous experience with onshore wind developments in the South of Scotland.

In this way, it was estimated that Dumfries and Galloway and Scottish Borders could secure around 11% of Capex contracts, with the South of Scotland securing around 13% and Scotland up to 40%. Balance of plant contracts were identified as the main opportunity for suppliers in Dumfries and Galloway and the Scottish Borders (£22.3 million), in the South of Scotland (£26.2 million) and Scotland (£59.5 million).

Table 7-2 Development and Construction Expenditure by Study Area and Contract

	Dumfries and Galloway and Scottish Borders		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Development and Planning (including finance and professional fees)	11%	2.6	16%	3.5	87%	19.5
Turbines	3%	8.3	4%	10.0	17%	41.4
Balance of Plant	34%	22.3	39%	26.3	90%	59.5
Grid Connection	35%	5.9	37%	6.2	100%	16.7
Total	**11%**	**39.0**	**13%**	**46.0**	**40%**	**137.1**

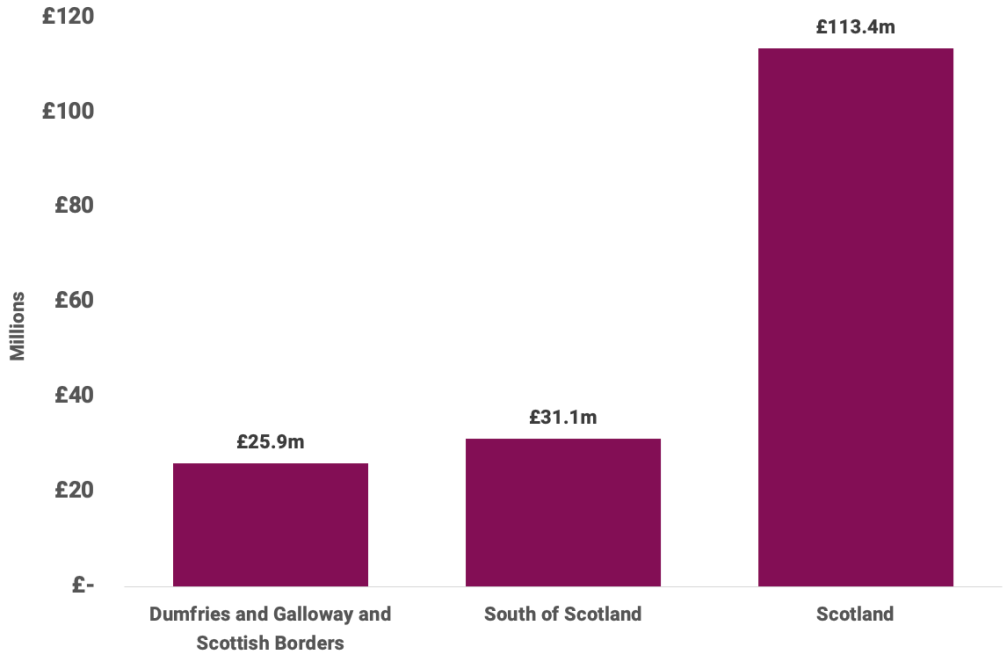
*Totals may not add up due to rounding.

Having estimated the size of the contracts that could be secured in each of the study areas, it was possible to estimate the direct GVA and direct employment associated with those. This was achieved by dividing the turnover generated in each area by each contract type by the turnover per GVA and turnover per job ratios of the sectors that would be carrying them out.

Scottish Type 1 and Type 2 GVA and employment multipliers were then applied to the direct GVA and employment impacts to estimate indirect and induced impacts. Summing up the direct, indirect and induced benefits from Faw Side Wind Farm, it was estimated that its construction and development could generate:

- **£25.9 million GVA** and **359 job years** in **Dumfries and Galloway** and **Scottish Borders**;
- **£31.1 million GVA** and **429 job years** in the **South of Scotland**; and
- **£113.4 million GVA** and **1,641 job years** across **Scotland**.

Figure 7-1 GVA Impact - Construction and Development of Faw Side Wind Farm



Source: BiGGAR Economics Analysis

7.1.2 Operations and Maintenance – Economic Impact

The starting point in estimating the economic impact from operation and maintenance works was to estimate the total annual costs during Faw Side Wind Farm's operation. These were estimated based on the costs per MW expected to arise from the operation of Sanquhar II Wind Farm. On this basis, it was estimated that total annual operations and maintenance expenditure (Opex) could be around £15.9 million.

It was then necessary to estimate how much of the operation and maintenance works could be performed by local suppliers. An analysis of the local economic

structure suggested that around 36% of Opex spend could benefit businesses in Dumfries and Galloway and Scottish Borders, 37% those in the South of Scotland and 50% those across Scotland.

Table 7-3 Operations and Maintenance - Expenditure by Study Area

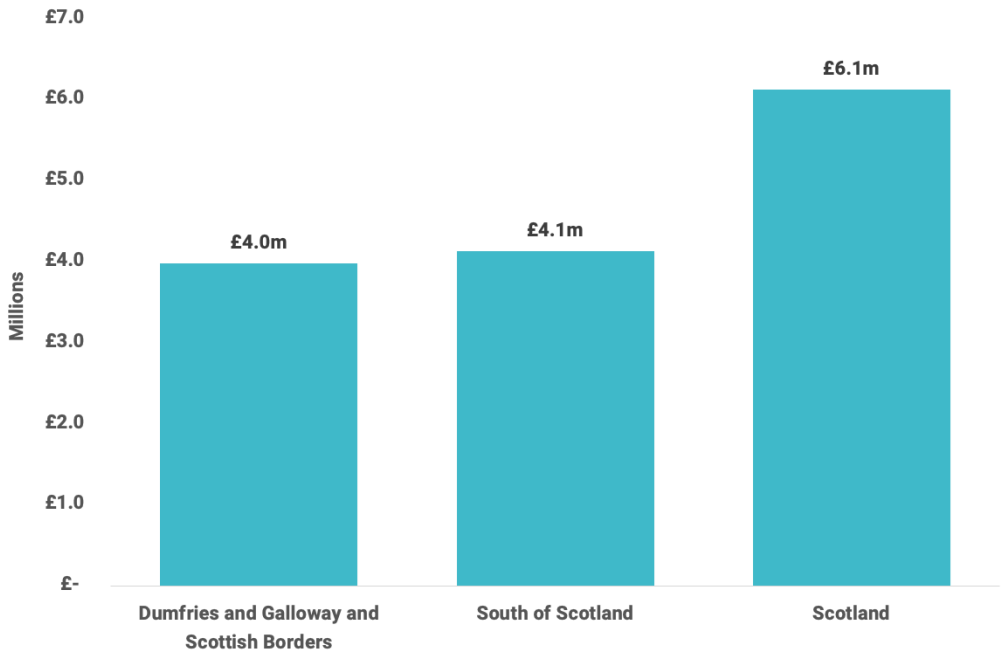
	Dumfries and Galloway and Scottish Borders		South of Scotland		Scotland	
	%	£m	%	£m	%	£m
Operations and Maintenance	36%	5.7	37%	5.9	50%	7.9

Having estimated total annual expenditure in Opex taking place in each study area, it was possible to apply turnover per GVA and turnover per job multipliers to estimate the direct GVA and employment supported by Opex spend.

Type 1 and Type 2 GVA and employment multipliers were then applied to the estimates of direct GVA and employment impacts to estimate indirect and induced impacts. Adding together direct, indirect and induced impacts, it was estimated that each year the operations and maintenance spend associated with Faw Side Wind Farm could generate:

- **£4.0 million GVA** and **58 jobs** in **Dumfries and Galloway** and **Scottish Borders**;
- **£4.1 million GVA** and **60 jobs** across the **South of Scotland**; and
- **£6.1 million GVA** and **98 jobs** across **Scotland**.

Figure 7-2 Operations and Maintenance GVA Impact – Faw Side Wind Farm



Source: BiGGAR Economics Analysis

7.1.3 Community Benefits

In addition to the economic benefits generated during its construction and operation, Faw Side Wind Farm will also contribute to local economic development through a community benefit fund. **The fund**, which will benefit communities in the immediate proximity of the wind farm, is expected to be **worth around £350,000 each year**.

This is equivalent to **total cumulative community benefit payments worth up to £14.0 million over the 40-year lifetime of Faw Side Wind Farm**. The community benefit funding could provide significant wider social, educational, environmental and economic benefits for the local community.

Based on the annual value of the community benefit fund, it was possible to estimate how many jobs could be supported in the local area. By dividing the total value of the annual community benefit payments by the turnover per job of the voluntary sector, **it was estimated that the community benefit fund could support six jobs throughout the operational period**.

7.1.4 Non-Domestic Rates

Faw Side Wind Farm would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. Whilst non-domestic rates are set at the national level, they are redistributed to local authorities and so considered to be local taxation.

Based on an estimated non-domestic rates liability of around £12,500 per MW, it was estimated that **Faw Side Wind Farm** throughout its operation **each year could contribute to public finances around £3.9 million**. **The cumulative value of the non-domestic rates over the wind farm's lifetime could be up to around £157.0 million**. These non-domestic rates, by providing an additional revenue stream, would support the delivery of local government services.

Whilst, the actual contribution would depend on variables such as the actual load factor and the potential for any relief from non-domestic rates, these estimates are broadly in line with the non-domestic rates liabilities of similar developments across the South of Scotland.

8. Cumulative Impact

This section summarises the combined economic impact of the three wind farms.

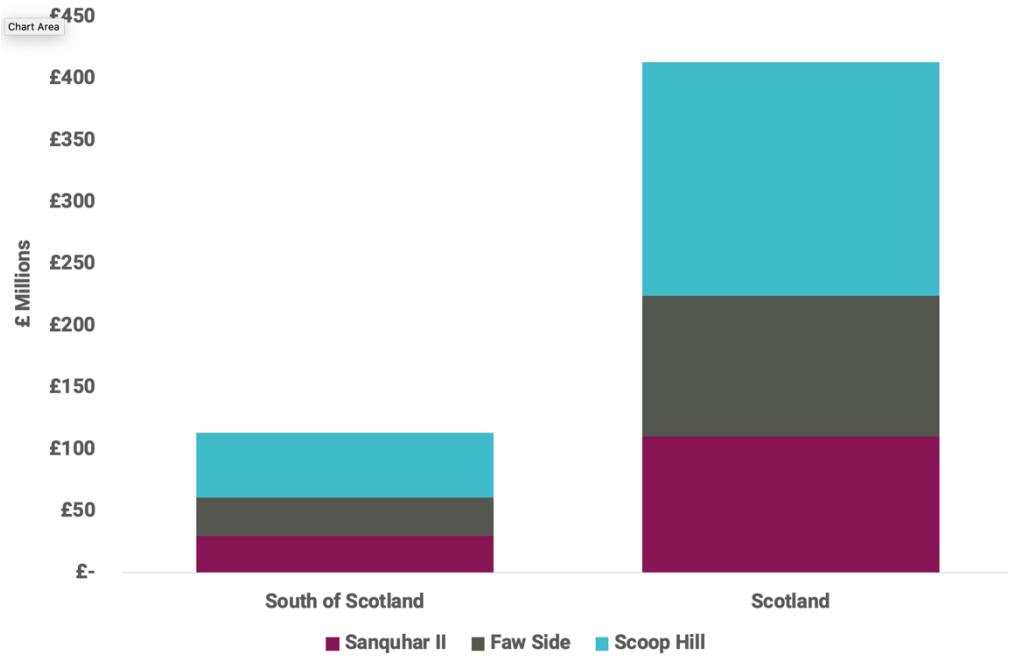
8.1 Cumulative Economic Benefits

8.1.1 Development and Construction

It was estimated that the **total expenditure on construction and development** if the three projects were to go ahead could be up to **£1.3 billion**. This expenditure could generate a total:

- **£113.3 million GVA** and **1,564 job years** in the **South of Scotland**; and
- **£413.3 million GVA** and **5,980 job years** across **Scotland**.

Figure 8-1 Cumulative GVA Impact - Construction and Development



Impacts may be larger depending on how the prospects of having a pipeline of contracts affects the decisions of local businesses. The presence of three projects in the area may lead businesses operating in the South of Scotland to scale up to further benefit from contracts or lead to the creation of new businesses seeking to exploit the opportunities available with construction and development contracts. These changes would be affecting local content, rather than the content at the Scottish level.

For example, a 5% increase in the capacity of businesses in the South of Scotland to carry out contracts may lead to economic impacts up to:

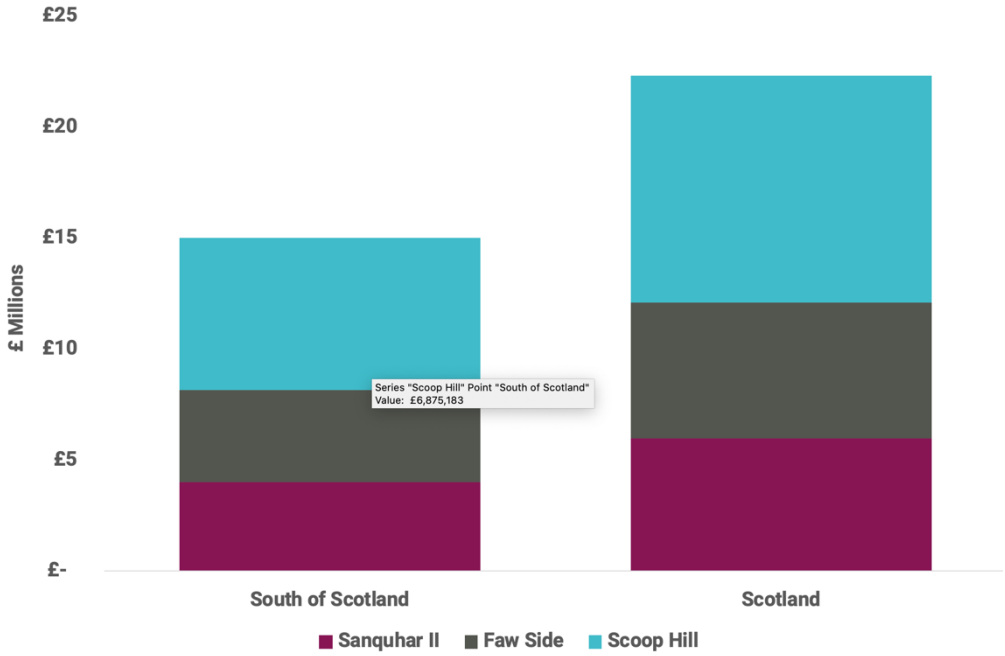
- **£119.0 million GVA** and **1,642 job years** in **South of Scotland**; and
- **£413.3 million GVA** and **5,980 job years** across **Scotland**.

8.1.2 Operations and Maintenance

The cumulative impact from the operational expenditure on the three Community Windpower windfarms was estimated as:

- **£15.0 million GVA** and **221 jobs** in the **South of Scotland**; and
- **£22.3 million GVA** and **358 jobs** across **Scotland**.

Figure 8-2 Cumulative GVA Impact - Operations and Maintenance



In a similar way as with construction and development contracts, the presence of three projects of a similar scale, may lead to the strengthening of the supply chain in the South of Scotland.

For example, a 5% increase in the ability of businesses across the South of Scotland to carry out operation and maintenance contracts may result in the following impacts:

- **£15.8 million GVA** and **232 jobs** in the **South of Scotland**; and
- **£22.3 million GVA** and **358 jobs** across **Scotland**.

8.1.3 Community Benefits

Were the three wind farms to be realised, Community Windpower would contribute to the ambitions for local economic development of the communities local to each of the wind farms. The **total annual expenditure** of Community Windpower on **community benefits** is expected to be around **£1.5 million**. It was further estimated that this expenditure could support a total of up to **26 jobs across the local**

communities involved in the schemes. **The cumulative value** of the community benefits across the three sites **over the developments' lifetime** was estimated as **£59.0 million**. A breakdown of the value of communitive benefits across each site is set out in Table 8-1.

Table 8-1 Cumulative Impact - Community Benefits

	Annual (£ million)	Over 40 years (£ million)
Sanquhar II Wind Farm	0.6	25.0
Faw Side Wind Farm	0.4	14.0
Scoop Hill Wind Farm	0.5	20.0
Total Community Benefits	**1.5**	**59.0**

*Totals may not add up due to rounding.

8.1.4 Non-Domestic Rates

Each of the wind farms will also make a contribution towards local public finances through the payment of non-domestic rates. These contributions will support the provision of local public services. It was estimated that the three wind farms could contribute up to around **£14.3 million in non-domestic rates each year**. **Over a 40-year period**, their cumulative contribution could amount to **£573.0 million**.

Table 8-2 Cumulative – Non-Domestic Rates

	Annual (£ million)	Over 40 Years (£ million)
Sanquhar II Wind Farm	3.9	154.0
Faw Side Wind Farm	3.9	157.0
Scoop Hill Wind Farm	6.6	262.0
Total Non-Domestic Rates	**14.3**	**573.0**

*Totals may not add up due to rounding.

9. Tourism Context

This section examines evidence on the relationship between wind farms and tourism and discusses tourism activity in the South of Scotland.

9.1 Wind Farms and Tourism

A key concern for wind farm developments is the effect that their existence has on tourism, particularly in the local area where they operate.

The most comprehensive study of potential effects of wind farms on tourism was undertaken in 2008 by the Moffat Centre at Glasgow Caledonian University[8]. The study was based on what could happen and found that, although there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall effect on tourism expenditure and employment would be very limited.

In the intervening time since this study, wind farms have become a more common feature in Scotland and any negative effects on the tourism economy as a result of their existence would now be apparent.

To assess whether any negative effects have been realised, in 2017 BiGGAR Economics undertook an analysis examining the relationship between wind farm developments and tourism[9]. The study looked at wind farms constructed between 2009 and 2015 and tourism at the national, regional and local level during the same period.

Analysis found that during this time period the number of wind farms increased across Scotland, and in almost all local authority areas, while employment in sustainable tourism also grew substantially. The analysis also found no correlation between tourism employment and the number of turbines at the national or local authority area.

The study also considered the impact on employment at a much smaller, more granular level, in data zones up to 15 km from developments. The sites considered were constructed between 2009 and 2015. As these sites did not exist in 2009, comparing employment in 2009 and 2015 was considered an effective measure of the effect of wind farms on local employment, while excluding construction impacts such as wind farm related employees staying in local accommodation.

[8] Moffat Centre (2008), The Economic Impact of Wind Farms on Scottish Tourism
[9] BiGGAR Economics (2017), Wind Farms and Tourism Trends in Scotland

Following this analysis, no link was found between the development of a wind farm and tourism related employment. In 21 out of the 28 areas considered, employment in sustainable tourism grew. In 22 of the areas, employment either grew faster or decreased less than the rate for the relevant local authority area as a whole.

Overall, the conclusion of this study was that published national statistics on employment in sustainable tourism demonstrate that there is no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at the local authority level, nor in the areas immediately surrounding wind farm developments. Therefore, there is no research evidence that shows fears of negative effects on Scotland's tourism economy as a result of wind farm developments.

9.2 Scoop Hill Visitor Centre

Community Windpower have identified an opportunity to develop a Visitor Centre at Scoop Hill in Eskdalemuir Forest, in conjunction with the proposed wind farm development at the site. The Centre's development and design is currently at an early concept stage but, based on existing information, potential amenities could include:

- a multipurpose space;
- retail store;
- library;
- external deck;
- reception; and
- café.

The purpose of the centre is to aid in promoting the wind farm development and the local environment, whilst offering a visitor experience for the general public and providing a space for the local community. Motivations for the design of the Centre are therefore to inform and educate visitors in addition to providing facilities for outdoor sport and leisure.

9.3 Tourism Context

This section provides some background on tourism activity in the South of Scotland. This is done by considering:

- the number and spend of day visitors to the South of Scotland, the region's most visited attractions and activity at outdoor visitor attractions;
- evidence on the number of visitors attracted by similar energy-related visitor centres across the UK; and
- the size of the potential catchment area within which the Visitor Centre would operate.

The aim of this section is to provide an evidence base on the potential number of visitors that the Visitor Centre could attract each year.

9.3.1 Day Domestic Tourism to the South of Scotland

As shown in Table 9-1, there were 9.9 million day-visits to the South of Scotland in 2018, with a total spend of £348 million in the region's economy. This represented 7.0% of all day visits in Scotland and accounted for 6.4% of total day visit spend. The number of visits to the region were in line with the region's population relative to Scotland.

Table 9-1 Visitors to the South of Scotland, 2018

	Day Visits (million)	Day Visits Spend (£m)	Average Spend per Visit (£)
Dumfries and Galloway	5.3	£244	£46
Scottish Borders	3.0	£61	£20
East Ayrshire	1.6	£43	£27
South of Scotland	**9.9**	**£348**	**£35**
Scotland	143.7	£5,462	£38

Source: Visit Scotland (2019) Dumfries and Galloway Factsheet, 2018. Visit Scotland (2019) Scottish Borders Factsheet, 2018. Visit Scotland (2019) Ayrshire and Arran Factsheet, 2018.

The paid visitor attractions receiving the most visits in the South of Scotland are listed in Table 9-2. In 2018, Threave Garden was the most visited attraction, attracting over 96,000 visitors to Dumfries and Galloway. The most visited attraction in the Scottish Borders was Melrose Abbey with 58,286 visitors. The majority of the top paid visitor attractions in the South of Scotland are outdoor locations, highlighting the attractiveness of this type of activity to visitors.

Table 9-2 Most Visited Paid Attractions in the South of Scotland

Attraction	Number of Visits
Threave Garden	96,357
Melrose Abbey	58,286
Dawyck Botanic Garden	35,622
Carlaverock Castle	35,305
Traquair House	31,256
Jedburgh Abbey	27,489
Logan Botanic Garden	25,186
Bowhill House and Country Estate	22,680
Devil's Porridge Museum	18,370
Carlaverock Wildfowl & Wetlands Trust	18,000

Source: Visit Scotland (2019), Dumfries and Galloway Factsheet, 2018 and Visit Scotland (2019), Scottish Borders Factsheet, 2018.

In 2018, the most visited free attraction in the South of Scotland was Gretna Green Blacksmiths Shop with over 700,000 visitors. Galloway Forest Park in Dumfries and Galloway was the second most visited free attraction, closely followed by Tweed Valley Forest Park, with both sites attracting over 300,000 visitors in 2018. As shown in Table 9-3, the majority of the most visited free attractions in the South of Scotland are outdoor recreational sites.

Table 9-3 Most Visited Free Attractions in the South of Scotland

Attraction	Number of Visitors
Gretna Green Famous Blacksmiths Shop	770,602
Galloway Forest Park	368,366
Tweed Valley Forest Park	345,326
Mabie Forest	69,496
St Abb's Head	50,555
Dalbeattie Forest	49,823
Grey Mare's Tail	45,966
Newcastleton Forest	32,704
Mary Queen of Scot's Visitor Centre	31,865
Jedburgh Castle Jail and Museum	23,458

Source: Visit Scotland (2019), Dumfries and Galloway Factsheet, 2018 and Visit Scotland (2019), Scottish Borders Factsheet, 2018.

9.3.2 Outdoor Attractions in the South of Scotland

As identified above, outdoor attractions represent a significant proportion of the most visited attractions in the South of Scotland. Additional outdoor attractions in the region include:

- 7Stanes: originating in 2001 the seven mountain biking trails are available to riders of all abilities and comprise the largest mountain biking destination in the UK, reaching over 400,000 visitors in 2007[10];
- Galloway Activity Centre: located at Loch Ken the outdoor adventure site offers recreational activities such as sailing, windsurfing, kayaking, archery, mountain biking, climbing and stand up paddle boarding. The centre also has yuts and cabins for accommodation and an on-site café;
- Forest Estate Shooting Ground: a sporting clay ground in the town of Castle Douglas where visitors can experience hunting, shooting and fishing; and
- Dark Sky Park: located in Galloway Forest Park, the site was the first Dark Sky Park in the UK and by 2018 had attracted over 78,000 visitors[11].

9.3.3 Visitors Coming to Scotland via the M74

The Visitor Centre is expected to be easily accessible from the M74, one of the main roads that bring visitors to Scotland. As a result, it could be a stop in some of these visitors' journeys.

The most recent evidence available on how visitors reach Scotland is included in the Scotland Visitor Survey 2015 & 2016[12]. Overall, 37% of the visitors surveyed came to Scotland by car. There are, however, considerable differences across visitor groups. In particular, around 64% of visitors from Scotland and the UK travelled to Scotland by car, compared to 24% of visitors from Europe and 17% of long-haul visitors. Repeat visitors were also more likely to come to Scotland by car (57%) than first-time visitors (28%).

In 2019, there were 7.7 million[13] overnight holiday trips to Scotland, 43% of which were from visitors coming from outside Scotland. Over the same year, there were around 2.1[14] million holiday trips from international visitors, almost equally split between those coming from Europe and from elsewhere in the world.

As a result, in 2019 around 2.3 million trips involved travelling to Scotland by car, with around 1.9 million domestic trips by car from the rest of the UK and 0.4 million from elsewhere in the world.

[10] We are Cycling (2020), Economic Benefits of Cycle Tourism.
[11] Forestry and Land Scotland (2018) Investing and growing visitor footfall and the profile of the National Forest Estate, available at: https://forestryandland.gov.scot/blog/investing-and-growing-the-visitor-footfall-and-the-profile-of-the-national-forest-estate
[12] Visit Scotland (2017), Scotland Visitor Survey 2015 & 2016 – Transport Extract.
[13] Kantar (2020), The GB Tourist, 2019 Annual Report.
[14] Visit Britain (2020), Inbound nation, region & county data, available at: https://www.visitbritain.org/nation-region-county-data

9.3.4 Potential Catchment Area for Recreational Visitors

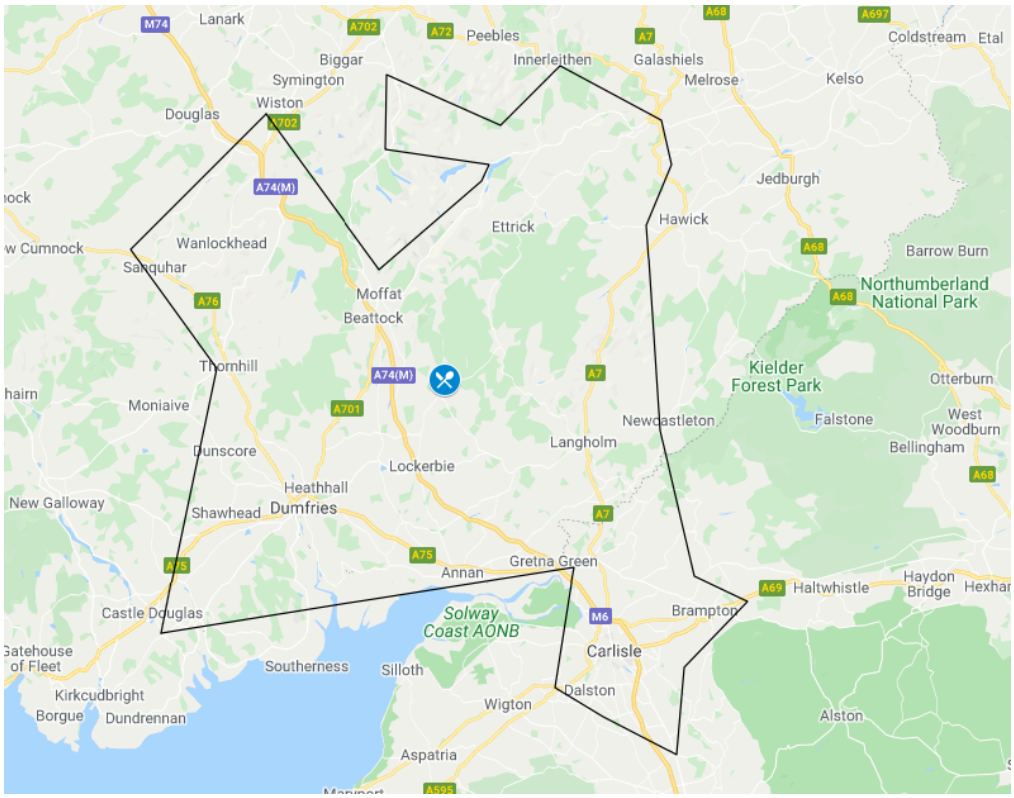
The centre could also attract local people that would use the land for recreational activities including walking their dogs, jogging and cycling. To establish an upper limit on the number of such users, a catchment area was defined as including those places that were less than an hour drive from the Visitor Centre.

The area defined in this way is shown in Figure 9-1 and spans locations across four local authorities:

- South Lanarkshire;
- Dumfries and Galloway;
- Scottish Borders; and
- Cumbria.

Data from the Office for National Statistics[15] and the National Records of Scotland[16] were used to estimate the total population in the area, which amounted to around 168,000 people. The population on the Scottish side of the catchment area was estimated as including around 60,000 people, whereas on the Cumbrian side live around 108,000 people (i.e. the population of Carlisle local authority).

Figure 9-1 Catchment Area – One-hour Drive from the Visitor Centre



[15] Office for National Statistics (2020), Population estimates – local authority based by single year of age.
[16] Scottish Government (2020), Population Estimates (Current Geographic Boundaries) – original data are from the National Records of Scotland.

9.3.5 Similar Visitor Centres

Across Scotland and the UK, there are a series of visitor centres linked to energy facilities, including onshore and offshore wind farms, nuclear power stations and hydroelectric power stations. Through a web search it was possible to collect data on the number of visitors attracted by the following visitor centres:

- Whitelee Wind Farm;
- Hollow Mountain;
- Scroby Sands Offshore Wind Farm;
- Sizewell B Nuclear Power Station; and
- Dungeness B Nuclear Power Station.

Whitelee Wind Farm

Whitelee Wind Farm is Scotland's largest onshore windfarm, operated by ScottishPower Renewables, and is located in Eaglesharm Moor to the South of Glasgow. The site is inclusive of an on-site visitor centre which features an exhibition space, learning hub, café and gift shop. In 2019, BVGA associates conducted a review of the impact generated by Whitelee Wind Farm[17] and found that the visitor centre has attracted over 750,000 visits in ten years, equivalent to approximately 75,000 visitors per year. It was also estimated that 200,000 people each year visit Whitelee for recreational activities, including cycling, walking and running[18].

Hollow Mountain

Located at Ben Cruchahan mountain in the Scottish Highlands, Hollow Mountain is an underground pumped hydro power station offering guided tours. Close to the underground site is a visitor centre featuring an interactive exhibition space and café. Recent figures indicate that Hollow Mountain attracts around 50,000 visitors a year[19].

Scroby Sands Offshore Wind Farm

Scroby Sands is a 30 turbine offshore wind farm, commissioned at Great Yarmouth in 2004. The site was one of the first commercial offshore windfarms in the UK and has a visitor centre complete with interactive activities and educational facilities, particularly for school trips. The centre was refurbished in 2018 and attracts around 35,000 visitors each year[20].

[17] BVGassociates (2019), 10 years of Whitelee Windfarm, a decade of economic, environmental and social benefits.

[18] The local authority areas within a 1-hour drive of Whitelee Visitor Centre (East & West Dunbartonshire, East Renfrewshire, Renfrewshire, Glasgow City, North & South Lanarkshire and East & South Ayrshire) represent a catchment area with a population of around 2.0 million.

[19] The Oban Times (2019), Hollow Mountain Visitor Centre is five-star attraction, available at: https://www.obantimes.co.uk/2019/10/12/hollow-mountain-visitor-centre-is-five-star-attraction/

[20] RWE (2019), Over 35,000 visitors each year visit us, available at: https://www.group.rwe/en/our-neighbourhood/rwe-erleben/visitor-centres/scroby-sands-visitor-centre

Sizewell B Nuclear Power Station

Sizewell B is a nuclear power station in Suffolk which has an on-site visitor centre inclusive of an interactive exhibition space, guided tours and educational facilities. Between 2012 and 2019, the centre was visited by over 40,000 people[21], equivalent to almost 6,000 visitors a year.

Dungeness B Nuclear Power Station

Dungeness B, an EDF nuclear power station in Kent offering the same experience as Sizewell B, attracted 10,000 visitors over the period 2013 to 2015,[22] approximately 5,000 visitors each year.

A summary of visitor numbers to the above attractions is listed in Table 9-4. Visitor numbers attracted by nuclear power stations may constitute a lower-bound as the numbers of visitors to this type of facility tend to be limited by strict security requirements.

Table 9-4 Visitor Numbers to Energy-Related Attractions in the UK

Attraction	Annual Number of Visitors
Whitelee Wind Farm	75,000
Hollow Mountain	50,000
Scroby Sands Offshore Wind Farm	35,000
Sizewell B Nuclear Power Station	6,000
Dungeness B Nuclear Power Station	5,000

9.4 Summary and Conclusions from Tourism Context

As described in this chapter, there is no evidence of a negative relationship between wind farm developments and tourism.

The South of Scotland attracts millions of day visitors each year, contributing significantly to the region's economy. The top attractions are predominantly outdoor sites, including forests and historic sites, and the region has a number of outdoor recreation sites, highlighting the areas attractiveness as a centre for outdoor entertainment.

[21] East Anglian Daily Times (2019), Power station reaches special milestone for visitor numbers, available at: https://www.eadt.co.uk/news/sizewell-b-woods-loke-primary-visit-1-6163950

[22] EDF(2015), EDF Energy announces 10 more years for Dungeness B, available at: https://www.edfenergy.com/news/edf-energy-announces-10-more-years-dungeness-b

The proposed Visitor Centre at the Scoop Hill site is intended to provide a space for the local community with a number of concepts intended to be included to inform and educate visitors whilst providing recreational space. The Visitor Centre would join a series of other energy-related visitor centres located on-site existing developments in the UK which succeed in attracting thousands of visitors each year.

The site at Scoop Hill is located close to the M74 motorway, a main route of travel for those coming to Scotland from England. This location therefore may attract visitors on their journey, an aspect which also differentiates the Scoop Hill Visitor Centre location from Whitelee Visitor Centre which is less likely to attract these visitors. Therefore, the Centre's close location to the A74 compensates for its smaller potential catchment area in comparison to that of Whitelee's.

Following analysis of each of these aspects, it was assumed that the Scoop Hill Visitor Centre site could attract around 100,000 visitors each year, of which 50,000 might be paying visitors at the Visitor Centre itself.

10. Economic Impact of Scoop Hill Visitor Centre

The development of a Visitor Centre at Scoop Hill will generate significant economic benefits for both the South of Scotland and Scotland.

10.1 Approach

As discussed in the previous section, the starting point for the analysis was to determine how many visitors the Visitor Centre is likely to attract once operational. To achieve this, it was necessary to identify similar attractions, and their current visitor numbers, and also to identify the top regional attractions in the South of Scotland, particularly outdoor activities, and use their visitor numbers to provide some context. It was therefore assumed that visitor numbers to the site would be **100,000**.

Economic impacts that will be generated by the Scoop Hill Visitor Centre include:

- **construction impacts,** including temporary employment opportunities and spending associated with building the centre;
- **on-site impacts**, generated through the operation of the Visitor Centre; and
- **off-site impacts**, created through the additional spending of visitors in the South of Scotland.

As with the assessment of the proposed windfarms, economic impacts for the Visitor Centre are quantified in terms of **GVA** and **Employment/Years of Employment** and, unless otherwise stated, are estimated using the same method. The study area for this assessment is the **South of Scotland**.

10.2 Construction Impact

The construction of the Scoop Hill Visitor Centre will generate temporary economic benefits. The construction impact assumed that the Centre suggests would be around 900m^2 and, based on the average cost per m^2 (£2,960)[23] of visitor centres across the UK, the construction of the Scoop Hill Visitor Centre could cost approximately £2.7 million.

[23] Costmodelling (2020), Typical UK Construction Costs of Buildings, available at: https://costmodelling.com/building-costs

Based on BiGGAR Economics' previous experience with similar tourism facilities, it was assumed that 50% of capital spend would benefit businesses in the South of Scotland.

The direct GVA and employment impacts were estimated by dividing turnover by the turnover per GVA and turnover per employee ratios for the construction sector. These totals were then multiplied by the indirect and induced multipliers for the sector to estimate the total GVA and employment impacts that the construction of the Centre could generate.

In this way, it was estimated that the construction of the Visitor Centre could generate £0.9 million GVA and support 15 job years in the South of Scotland.

Table 10-1 Visitor Centre Construction Impacts

	South of Scotland
Total GVA (£m)	0.9
Job Years	15

Source: BiGGAR Economics Analysis

10.3 On-Site Impact

In order to estimate the on-site impact of the Visitor Centre, it was necessary to make assumptions on the features that would be included as part of the Centre, as well as the anticipated income and expenditure that could be expected.

Based on existing information, this study has calculated the potential impacts of a Visitor Centre complete with a café and retail gift shop. Whilst these features can generate significant economic benefits for the regional and national economy (as discussed below), the actual benefits could be higher should additional features, such as the proposed bike rental facility, be pursued.

10.3.1 Direct Impact

Based on BiGGAR Economics' previous experience working on similar developments, assumptions were made regarding the income and expenditure that can be expected from the operation of the Visitor Centre.

The fundamental basis for these projections was the number of visitors. As previously stated, this study is based on 100,000 visitors. Assumptions were then made regarding the proportion of visitors that could be expected to use each of the facilities (i.e. the penetration rate) and their average spend (Table 10-2).

The figures and rates used in Table 10-2, are also those used to calculate the overall income of the Centre.

Table 10-2 Sources of Income

	Penetration Rate	Average Spend
Visitor Centre/Tours	50%	£6.00
Café	30%	£5.50
Retail Shop	15%	£10.00

Source: BiGGAR Economics Experience

In this way, it was estimated that when the Centre will be operational, total income might amount to around £0.6 million and total expenditure on supplies to £0.4 million. The direct economic contribution that is generated by an organisation is given by subtracting its non-staff costs from total income. On this basis, it was estimated that the Visitor Centre could make a direct economic contribution of £0.2 million GVA and support eight jobs across the South of Scotland.

Table 10-3 Direct Impact of Scoop Hill Visitor Centre

	South of Scotland
Total GVA (£m)	0.2
Total Jobs	8

Source: BiGGAR Economics Analysis

10.3.2 Supply Chain Impact

In order to support the delivery of services to visitors, purchases of goods and services will be made. These areas of expense relate to the running and maintenance of the building and supplies for the café and shop. Based on the anticipated income, it was estimated that when the centre is operational, expenses will amount to approximately £0.4 million. As shown in Table 10-4, it was also necessary to estimate what proportion of this expenditure would go to businesses in the South of Scotland.

Table 10-4 Scoop Hill Visitor Centre Supply Chain Assumptions

Assumption	Value
Total spend on good and services (£m)	0.4
% purchased from South of Scotland	60%

Source: BiGGAR Economics Assumption

Applying economic ratios and multipliers for the economic sectors where purchases of supplies would be made, it was possible to estimate the economic impact generated by supply spending.

In this way, it was estimated that through its spending on supplies of goods and services, Scoop Hill Visitor Centre could generate £0.1 million GVA and support three jobs in the South of Scotland.

Table 10-5 Supply Chain Impact of Scoop Hill Visitor Centre

	South of Scotland
Total GVA (£m)	0.1
Total Jobs	3

Source: BiGGAR Economics Analysis

10.3.3 Staff Spending Impact

The operation of the Visitor Centre will also support the local economy through the spending of its employees. Based on eight employees working on-site, Scoop Hill Visitor Centre would be expected to pay approximately £138,00 in wages and salaries.

In order to estimate the economic impact generated through staff spending, it was necessary to make assumptions on both where staff will live and where they will spend their salaries. Employees at Scoop Hill Visitor Centre were all assumed to live in Scotland, with 80% assumed to live in the South of Scotland. The staff spending matrix in Table 10-6 features the assumptions made when estimating where households spend their incomes. These were based on an internal analysis of household spending patterns.

Table 10-6 Staff Spending Matrix

	Where staff spend their salaries	
Where staff live	South of Scotland	Scotland
South of Scotland	50%	67%

Source: BiGGAR Economics Assumptions

The staff spending assumptions were used to estimate the total expenditure taking place in each of the study areas which were then discounted by 8% to account for households' expenditure on Value Added Tax (VAT)[24].

To estimate the GVA and employment impact of households' spending, expenditure in each study area was divided by the turnover per GVA and turnover per job ratios for Household Spending and multiplied by Type 1 and Type 2 multipliers to estimate indirect and induced effects arising from household expenditure.

[24] European Commission (2013), A study on the current VAT rates structures.

In this way, it was estimated that the spending of Scoop Hill Visitor Centre employees could generate £23,000 GVA for the South of Scotland.

Table 10-7 Staff Spending Impacts

	South of Scotland
Total GVA (£000's)	23
Total Jobs	-

Source: BiGGAR Economics Calculation

10.3.4 Summary of On-Site Impacts

Combining the impacts described in this section, it was estimated that Scoop Hill Visitor Centre's core operations would contribute £0.3 million GVA to the economy of the South of Scotland and support 11 jobs.

	South of Scotland
	GVA (£m)
Direct Impact	0.2
Supplier Impact	0.1
Staff Spending Impact	<0.1
Total GVA	**0.3**
	Jobs
Direct Impact	8
Supplier Impact	3
Staff Spending Impact	-
Total Jobs	**11**

Source: BiGGAR Economics Calculation

10.4 Off-Site Impacts

The development of Scoop Hill Visitor Centre will also generate additional economic benefits off-site. This would take place through the additional spending of visitors elsewhere in the local economy as a result of their visit to Scoop Hill Visitor Centre.

As shown in Table 9-1, there were 9.9 million day-visitors to the South of Scotland in 2018. It was also calculated that these visitors spent £348 million in the South of Scotland, giving an average spend per visitor of £35. Assuming an average on-site spend per visitor of £7, this gives an average off-site spend per visitor of £28.

It was then necessary to make assumptions on the origin of visitors that would visit the Centre. As shown in Table 10-8, it was assumed that 50% of visitors to Scoop Hill Visitor Centre would be from Scotland, 40% would be from the rest of the UK and

10% would be visitors from overseas. It was also assumed that of the total Scottish visitors, 70% would be from the South of Scotland and 30% from the rest of Scotland.

Table 10-8 Visitor Origin and Spend Assumptions

Visitors		Value
Projected Number of Visitors to Scoop Hill Visitor Centre		100,000
	% from Scotland	50%
	% from Rest of UK	40%
	% from Overseas	10%
Spend per Day		
Average day visitor spend per day in South of Scotland		£35
Average On-Site spend per visitor		£7
Off-Site spend per visitor		£28

Source: Visit Scotland (2019) Dumfries and Galloway Factsheet, 2018. Visit Scotland (2019) Scottish Borders Factsheet, 2018. Visit Scotland (2019) Ayrshire and Arran Factsheet, 2018 & BiGGAR Economics Experience.

These assumptions were then used to calculate the additional spending generated by visitors to Scoop Hill Visitor Centre. The additional spend was then discounted to account for VAT at a rate of 20%.

In this way, it was estimated that £1.8 million additional expenditure would take place in the South of Scotland. This was then divided by the turnover per GVA and turnover per job of the "Accommodation and food service activities" sector. Indirect and induced impacts were then estimated by applying Type 1 and Type 2 multipliers.

Therefore, as shown in Table 10-9, as a result of visits to Scoop Hill Visitor Centre, the off-site expenditure of day visitors could generate £1.4 million GVA and support 58 jobs in the South of Scotland.

Table 10-9 Off-Site Expenditure of Day Visitors

	South of Scotland
Total GVA (£m)	1.4
Total Jobs	58

Source: BiGGAR Economics Calculation

10.5 Summary of Operational Economic Impact

As shown in Table 10-10, it was estimated that when operational, the Scoop Hill Visitor Centre could generate £1.7 million GVA for the economy of the South of Scotland and support 69 jobs in the region.

Table 10-10 Economic Impact of Scoop Hill Visitor Centre

	South of Scotland
	GVA (£m)
On-Site Impact	0.3
Off-Site Impact	1.4
Operational Impact	**1.7**
	Jobs
On-Site Impact	11
Off-Site Impact	58
Operational Impact	**69**

Source: BiGGAR Economics Analysis

11. Strategic Case

This section sets out the strategic case for investment in renewable energy as a tool for economic recovery.

11.1 Strategic Priority of Renewable Energy

Even prior to the Covid-19 pandemic, the renewable energy sector was a well-established priority in Scotland's economic strategy, as well as being central to energy policy.

For example, the 2007 Government Economic Strategy[25] identified six key sectors with high-growth potential and the capacity to boost productivity. These included energy (with a particular focus on renewables).

These sectors were identified so that they might receive enhanced support, including the regulatory and fiscal environment, with the objective of expanding Scotland's areas of international comparative advantage. The strategy sought to build critical mass in key growth sectors, with government helping to create the right environment for their competitiveness and growth.

11.2 Economic Impact of Covid-19

The Covid-19 pandemic has had a major impact on the economy, locally and nationally.

It will be some time until the longer term economic consequences of the Covid-19 pandemic become apparent, although it is already clear that it has resulted in structural economic changes.

The economic impacts to date have not been evenly distributed, with big differences in the effects for people of different ages, genders and ethnicity. There have also been geographic differences and the available evidence suggests that the impact in the South of Scotland has been greater than typical for Scotland.

By the end of July 2020, there were 23,400 employees in Dumfries and Galloway on the UK Government's Coronavirus Job Retention Scheme (CJRS)[26] or Self-Employment Income Support Scheme (SEISS)[27], equivalent to 35% of all employment in the area. In East Ayrshire, there were 19,800 employees on CJRS or

[25] Scottish Government (2007), Government Economic Strategy
[26] HMRC (2020), Coronavirus Job Retention Scheme Statistics July 2020
[27] HMRC (2020), Self-Employment Income Support Scheme Statistics July 2020

SEISS, 34% of all employment. In Scottish Borders, there were 19,400 employees on CJRS or SEISS, 36% of all employment.

In all three cases, this is greater than for Scotland as a whole where one-third of employees were on furlough.

The need for policies to promote economic recovery will therefore need to take account of the greater needs of areas that have suffered more, such as the South of Scotland, as well as the opportunities that exist there.

11.3 Renewable Energy and Economic Recovery

The renewable energy sector is well placed to make an important contribution to national and regional economic recovery and transformation.

Investments that drive economic recovery (at the national or regional level) should ideally have three main features, they should:

- be labour intensive in the short term: that is generate short term job opportunities that replace those lost during the Covid-19 pandemic;
- improve economic competitiveness and productivity in the longer term; and
- deliver wider benefits, including environmental benefits, delivering against the national outcomes in the National Performance Framework[28].

The three projects proposed by Community Windpower have these features.

As the quantitative economic impact assessments in this report show, they will be employment intensive in the construction phase, and so can provide jobs to replace those lost in the Covid-19 pandemic.

The growth is sustainable because it decarbonises the electricity generation sector, that other parts of the economy rely on, and so decarbonises the economy as a whole.

They also delivers productivity growth (that is, growth in outputs the economy can deliver with a fixed set of inputs) because operational costs are lower than for non-renewable, fossil fuel-based electricity generation.

Renewable energy projects, such as these three wind farm projects and associated investments, are therefore ideal for delivering economic recovery.

The role that renewable energy can play in economic recovery was recognised in the June 2020 report of the Advisory Group on Economic Recovery (AGER)[29] to the Scottish Government. The recommendations included "prioritisation and delivery of

[28] Scottish Government (2018), National Performance Framework.
[29] Advisory Group on Economic Recovery (June 2020), Towards a robust, resilient wellbeing economy for Scotland

green investments", including that the green economic recovery is central to recovery overall and that Scotland should lever its natural advantages, such as "the almost limitless quantities of renewable energy from wind, wave and tidal power".

The Scottish Government's response[30] sets out how it intends to take forward the AGER report's recommendations. It prioritises a sustainable recovery that supports jobs and supports all parts of Scotland, while meeting its climate change targets and wider environmental objectives.

The 2020/21 Programme for Government[31], covers the next year and it clearly indicates the longer term economic strategic priorities. It focuses on economic recovery, making clear that the aim is not a return to business as usual, but a transition to a "fairer, greener and wealthier country". The Programme is centred around three commitments:

- the creation of new jobs, good jobs and green jobs;
- promoting lifelong health and wellbeing; and
- promoting equality and supporting young people to reach their potential.

Investment in renewable energy is part of the Scottish Government's first commitment. In particular, the plan sets out a range of measures to "protect biodiversity, create green jobs and accelerate a just transition to net-zero". Specific commitments include significant investments in a Green New Deal, including £100 million committed for a Green Job Fund and £60 million to help industrial and manufacturing sectors decarbonise, grow and diversify.

The growth of the renewable energy sector was a priority for the Scottish Government prior to the Covid-19 pandemic.

The importance of the sector as a driver of economic recovery and transformation is difficult to overstate, nationally and also particularly in areas that are likely to have suffered disproportionately from the negative economic impacts of the pandemic, such as the South of Scotland, and so be in the greatest need of economic growth and diversification.

[30] Scottish Government (August 2020), Economic Recovery Implementation Plan
[31] Scottish Government (September 2020), Programme for Government: Protecting Scotland, Renewing Scotland

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