



STUC report on Scotland's low carbon and renewable energy economy

October 2025

Jobs and activity in low carbon economy in 2023

The latest ONS data covering economic activity for 2023 in the Low Carbon and Renewable Energy Economy (LCREE) was published in July 2025.

Between 2022 and 2023, there have been relatively minor changes to the turnover, exports, and imports activity in the low carbon and renewable energy economy in Scotland. However, job numbers have risen from 26,000 to 33,500, an increase of 28.8%. (*Table 1*) This is the highest numbers of jobs in Scotland's LCREE since the ONS data was first published in 2014.

Table 1

ONS Low Carbon and Renewable Energy Economy Estimates (Scotland)				
	2022	2023	Change	% change
Number of businesses	13,500	15,500	2,000	14.8%
Turnover	£11.524bn	£11.605bn	£81m	0.7%
Jobs (FTE)	26,000	33,500	7,500	28.8%
Exports	£1.112bn	£1.186bn	£74.5m	6.7%
Imports	£1.170bn	£1.141bn	-£28.50	-2.4%

There is no shortage of businesses, with one business for every two workers in 2023. The increase in turnover between 2022 and 2023 is also below the rate of inflation for the same period of 7.9%.¹ Turnover per worker and per business has fallen, while evidently many companies hire one or no employees. As highlighted in previous STUC analysis of Scotland's low carbon economy, more consideration needs to be given to growing existing businesses rather than considering ways to stimulate low-carbon start-ups.²

The largest subsector of the LCREE is energy efficient products which has 8,000 workers, more than double the next largest subsector (*Table 2*)

The increase in jobs across the LCREE between 2022 and 2023, is largely due to increases in low emission vehicles and infrastructure, energy efficient lighting, and energy efficient products. These sectors, as well as low carbon consultancy, advisory and offsetting services, and renewable heat, saw increases of at least 500 jobs. (*Table 3*)

¹ <https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/l55o/mm23>

² <https://www.stuc.org.uk/resources/renewable-jobs-crisis-covid-19.pdf>

Table 2

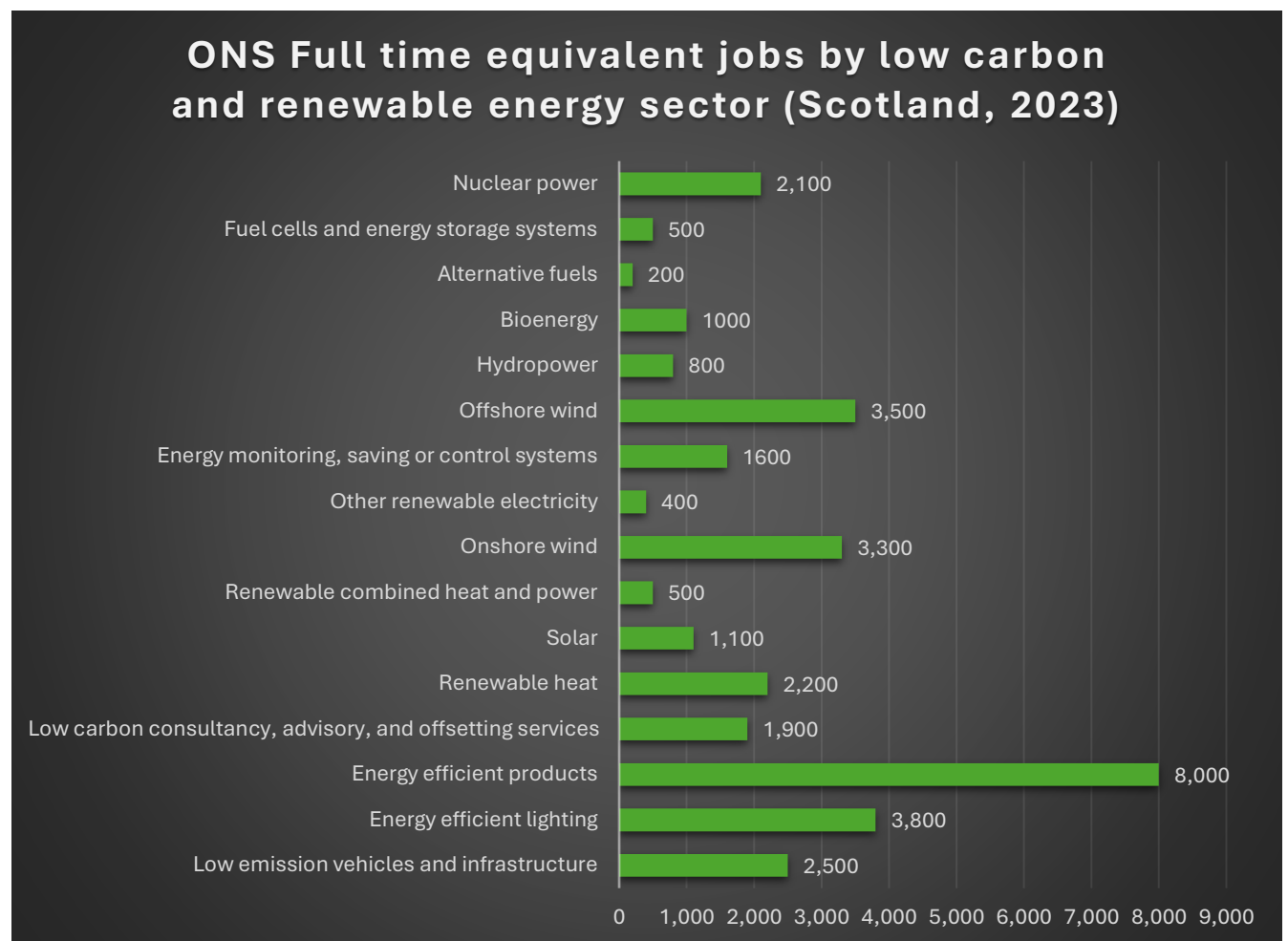
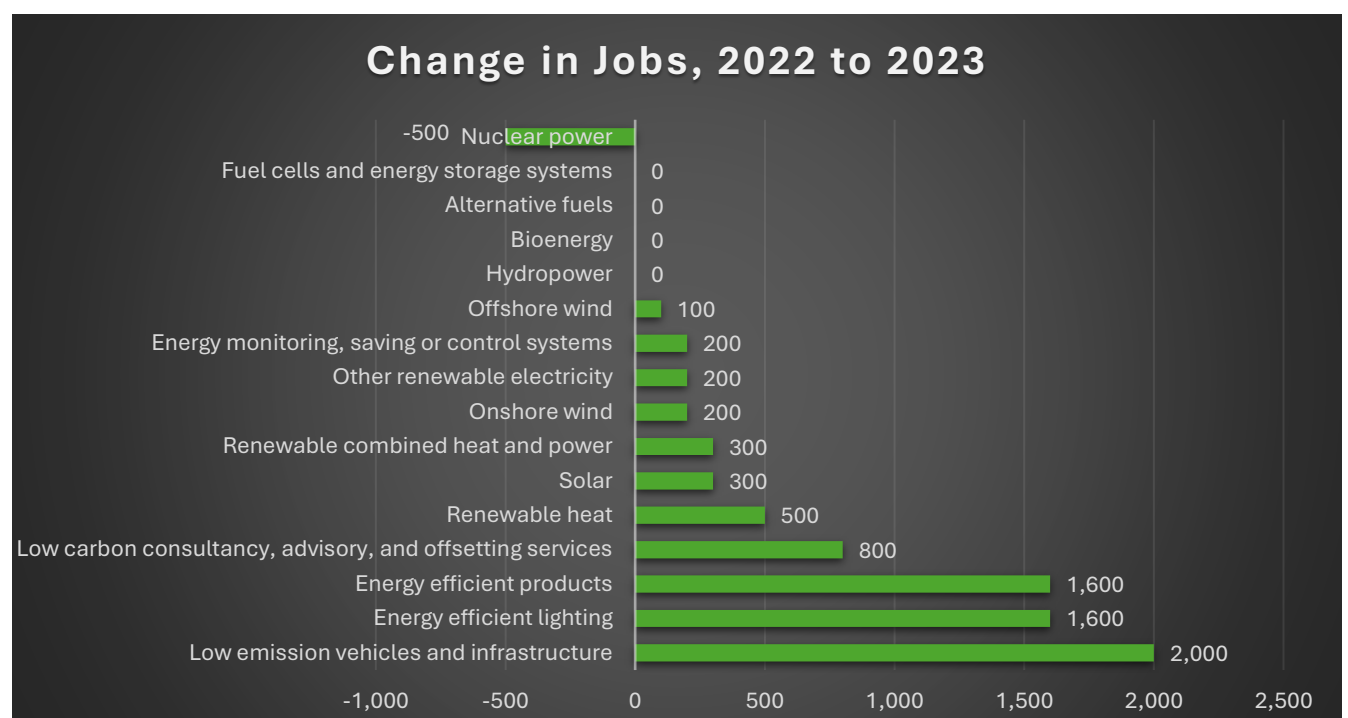


Table 3



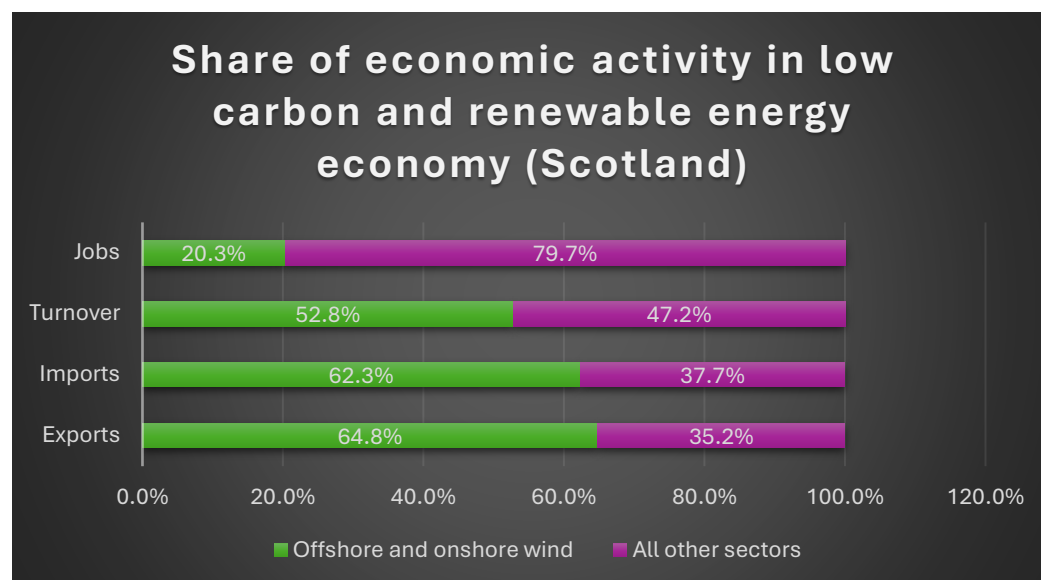
The decrease of 500 jobs in nuclear power likely relates to the closure of the Hunterston B power station in early 2022 and subsequent loss or redeployment of jobs by EDF Energy.³ If the Scottish Government does not overturn their opposition to new nuclear, there will be further job losses in this sector as other sites close. These are likely to be regionally concentrated around North Ayrshire, Caithness, and East Lothian.

The foundations of Scotland's low carbon economy

The STUC's analysis of Scotland's low carbon economy for 2022 highlighted the dominant role of offshore and onshore wind in the overall turnover, imports, and exports figures despite representing a significant minority of jobs.⁴

The data for 2023 shows that offshore and onshore wind continue to make up more than half of the exports, imports, and turnover in the low carbon economy. Despite this, the offshore and onshore wind sectors provide just 20% of total low carbon jobs in Scotland. (*Table 4*)

Table 4



The largest sectors for employment in the low carbon and renewable energy economy are energy efficient lighting and energy efficient products, representing over a third of total LCRE employment. The sectors are defined by the ONS as:

- **Energy efficient lighting:** The design, manufacture and installation of energy efficient bulbs, tubes, fittings and so on, designed to use less energy to produce the same or greater amount of light.
- **Energy efficient products:** The design, manufacture and installation of energy efficient products. Examples include energy efficient doors and windows, heating and ventilation, insulation, energy efficient building materials or technologies, and sustainable buildings and architecture.

In comparing sectors which account for more than 2,000 jobs, there is a clear gap in the number of jobs created in relation to their business turnover. Specifically, the number of jobs created for

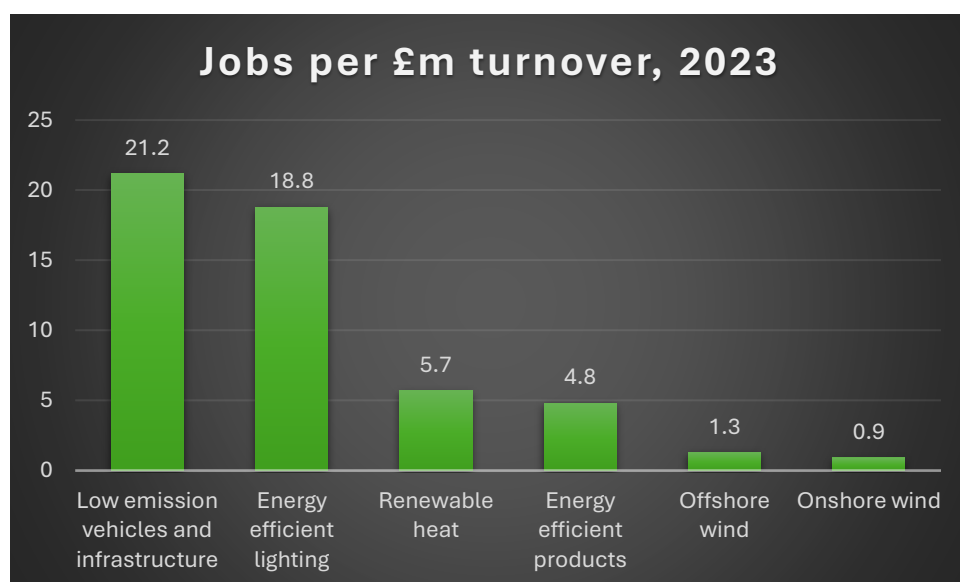
³ <https://www.bbc.co.uk/news/uk-scotland-glasgow-west-59894688>

⁴ <https://www.stuc.org.uk/resources/stuc-mind-the-gap-march24.pdf>

every million pounds of turnover is incredibly low in the offshore and onshore wind sectors, compared to others.

For every million pounds of turnover around 1 job is created in offshore and onshore wind. By contrast, every £1 million of investment by the oil and gas industry generated 14.2 jobs in 2022 and 13.4 jobs in 2023.⁵ These figures pose a real challenge to the Scottish Government which has predicated much of its economic strategy on renewable energy and offshore wind. (Table 5)

Table 5



The low carbon sectors creating the most jobs in relation to company turnover are engaged in work to do with people in Scotland's everyday life and spending; the cars we drive and where we refuel, the lightbulbs, windows, and insulation being installed in our buildings, and the heat pumps and solar thermal providing heat to homes and businesses.

These sectors are often overlooked for their potential to create jobs across Scotland, despite making up the majority of employment in the low carbon economy and being the most job-rich in terms of jobs per £m of turnover. For every million pounds of turnover in the low emissions vehicles and infrastructure and energy efficient lighting sectors, between 19 to 21 jobs are created.

Without proper scrutiny of developments in these sectors, and the profile of jobs, it is difficult to know the extent to which there is alignment with the Scottish Government's Fair Work agenda.

The Green Industrial Strategy was published in 2024 and yet gives no mention to these sectors. There is significant public investment and public policy relating to these areas which could be utilised to ensure jobs and opportunities in these sectors grow, while supporting ambitions for Fair Work and Just Transition. The Scottish Government should reform their approach to industrial strategy, to recognise the everyday parts of our economy which will change in meeting climate targets.

⁵ [https://www.ukeiti.org/sites/default/files/Experian-Oil-and-Gas-Economic-Impact-Summary-Final-1%20\(1\).pdf](https://www.ukeiti.org/sites/default/files/Experian-Oil-and-Gas-Economic-Impact-Summary-Final-1%20(1).pdf)

The following case studies highlight challenges within these sectors leading to job losses or an inability to expand. They are medium to large sized enterprises which should be the foundation of Scotland's low carbon economy.

Case studies

Alexander Dennis – Low emission vehicles and infrastructure sector

While the Scottish Government's much-needed furlough scheme helps protect at green bus manufacturer Alexander Dennis in Larbert in the short-term, a lack of orders could result in the loss of over 400 jobs in the low emission vehicles sector and would come in an area already facing the impact of job losses from the Grangemouth refinery and the larger supply chain. The Scottish Government has invested millions in green buses, yet most of this money has been spent buying buses made overseas.

Pat Egan, Unite industrial officer for Alexander Dennis said:

"Scotland needs to be fully supporting the transition to low emission buses and this must include public investment which sustains skilled manufacturing jobs here at home rather than overseas. We have the workforce, the expertise, and the capacity to build the green buses Scotland needs. We need stronger concrete commitments from the Scottish and UK governments, and operators to back local supply chains so that we can ensure that strategic investment in decarbonisation creates secure, high-quality jobs in Scottish communities."

AES Solar

AES Solar is a solar power manufacturing and installation company, based in Forres. This company currently employs over 70 people, including heating engineers, plumbers, and administrative teams to support their operations.

From their base in Forres, the company manufactures solar thermal panels that can be used for domestic hot water and commercial applications. They install these panels, as well as Solar PV and battery storage technologies, while providing ongoing maintenance services.

The company has grown significantly in recent years, creating over 20 new jobs and 10 apprenticeships in the process. Turnover has risen by over 40% as the company has built on commercial and domestic demand for their products.

However, the company has been frustrated in their efforts to expand as the policy landscape for their products has changed repeatedly. From the end of the UK Government's Feed-In Tariffs to changes to Scottish Government grant and loan support, the uncertainty and shifting goalposts have held back further expansion of the site and their apprenticeship programmes. The Scottish Government's Energy Strategy or Green Industrial Strategy do not sufficiently acknowledge these and related challenges.

With clear policy and support, AES Solar would be able to build on their success to date and grow their workforce in this green sector. AES Solar are ready to invest in their operations and increase their workforce but are concerned about a potential lack of skills in key trades. They have recruited a senior electrician and subsequently an apprentice to work alongside them but taking full advantage of their order book and potential opportunities relies on further expansion. They have raised issues with Scottish Enterprise and the Scottish Government but are frustrated by the lack of attention given to the sector.

Jamie Di Sotto, Commercial Director at AES Solar, comments:

“Scotland’s low carbon economy is built on both innovation and people. AES Solar has been part of Scotland’s renewable energy sector for nearly five decades, and we remain committed to driving it forward. Our growth shows the potential of Scottish renewables to create high-quality local jobs and apprenticeships. But without a clear and stable policy framework, the sector cannot reach its full potential. We’ve committed to Fair Work principles across our organisation, because a just transition must mean secure, rewarding careers for our people as well as progress on net zero.”

Plumbing Apprentice at AES comments:

“Since starting my plumbing apprenticeship at AES Solar, I’ve been able to work on heating systems and renewable installs while also studying towards my professional qualification. It’s a good balance for me. I’m learning on the job, getting experience in new technologies and working towards a professional career at the same time.”

City Building

Case study from City Building Joint Trade Union Committee

The primary activity of City Building is in the construction and maintenance of public buildings, including social homes, care homes, homeless hostels, and schools. City Building’s manufacturing division, RSBi, is equipped to produce energy efficient uPVC windows and doors, timber kits, kitchen, and bedroom furnishings for City Building and external customers.

It is one of the largest supported manufacturing businesses in Europe, employing 210 people, 60% of whom have a disability or disadvantage, and giving access to training and development opportunities. City Building:

- Trains most of its staff directly as apprentices, through its own training centre that offers 60 apprenticeships a year, out of whom 80% stay on to work for City Building.
- Trains all trades apprentices in accredited modules on energy efficiency, including energy literacy as relevant.
- Has great relationships with its three recognised trade unions and near 100% trade union coverage of staff, with trade union representatives actively involved with management.
- Bids for commercial tenders outside of the public sector and has in previous years returned a profit from commercial operations to the City Council of £5-6 million a year.

Collaboration with Glasgow City Council’s in-house team of architects, a comprehensive training programme, and direct employment of the workforce, combined with the practice of monitoring subcontractors through a framework agreement which sets employment and quality standards, provides a benchmark for meeting energy efficiency standards while creating quality jobs and reducing social inequalities.

Despite their success, City Building face uncertainty over ongoing investment. There are clear demands for the manufacturing and skills of the City Building workforce, particularly in building retrofits, yet national level funding has been uncoordinated and there is no clear pipeline of work. A strong commitment to the work and products of City Building would enable further growth under this socially and economically important model.

The race to benefit from Scotland's offshore energy

The Scottish Government's Green Industrial Strategy identifies wind as one of five priority areas of opportunity and strength.⁶ In contrast to the everyday aspects of the low carbon economy set out above, *Table 5* above shows the generation of electricity from offshore and onshore wind provides far fewer jobs in relation to turnover.

Wind farms are capital-intensive with employment and investment concentrated in the manufacturing and construction phases, rather than during their operational lifetime.⁷ As new wind farms begin to generate electricity and therefore income for the developer, their spending falls dramatically, including for labour. Based on committed levels of investment in ScotWind developer supply chain statements, average direct jobs in the operational phase of ScotWind projects could be less than 1,500 per year.⁸ In effect, there is only a limited relationship between the deployment of onshore and offshore wind in a country, and the number of jobs created there.

By contrast, Denmark has secured manufacturing opportunities domestically and built their wind exports sector. With an estimated 40% European market share, Danish companies and workers benefit from the expansion of wind overseas, including in Scotland.⁹ An estimated 2% of all private sector employees in Denmark work in the wind industry.¹⁰ If this was replicated across Scotland's approximately 2 million private sectors employees, employment in the wind sector would stand at 40,000 – instead it is just 6,800.

Previous STUC analysis concluded that Scotland would need 19 significant manufacturing sites including sites for nacelles, blades, and towers, for the committed investment of ScotWind developers to take place.¹¹ Without the domestic manufacturing, the number of jobs potentially created in Scotland falls dramatically and undermines the opportunity to build export capacity. (*Graph 1*)

⁶ <https://www.gov.scot/publications/green-industrial-strategy/pages/5/>

⁷ A breakdown of potential jobs across the lifespan of ScotWind offshore wind projects by development stage based on developer supply chain commitments is shown in our earlier report at Table 1 and Graph 2: <https://www.stuc.org.uk/resources/scotwind-report-2024.pdf>

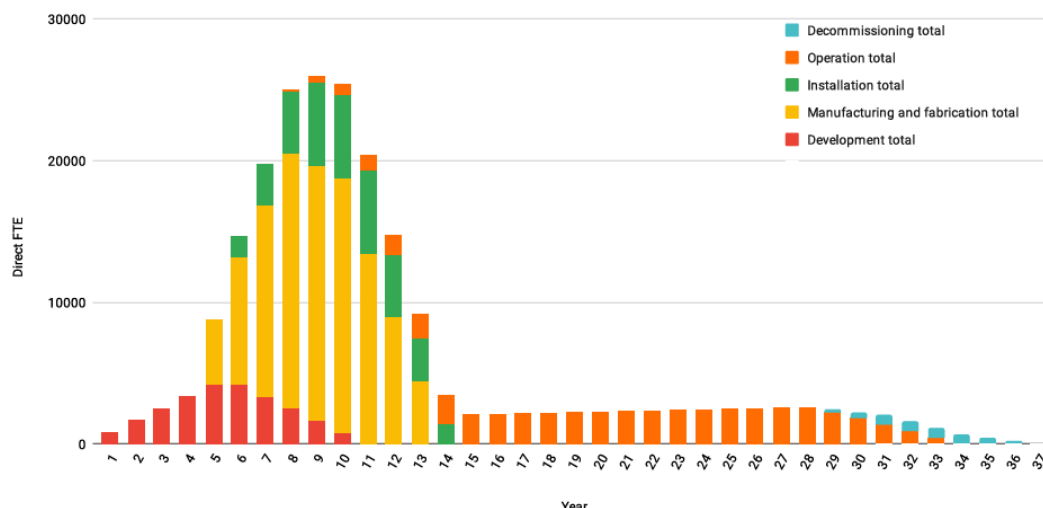
⁸ <https://www.stuc.org.uk/resources/scotwind-report-2024.pdf>

⁹ <https://stateofgreen.com/en/news/the-economic-benefits-of-wind-energy/>

¹⁰ <https://stateofgreen.com/en/news/the-economic-benefits-of-wind-energy/>

¹¹ <https://www.stuc.org.uk/resources/scotwind-report-2024.pdf>

Graph 1: Job creation from ScotWind projects over time, if investment matches Supply Chain Plan commitments



Since our report on the investment needed to secure manufacturing jobs in Scotland was published, only two manufacturing sites for high-voltage cables have been announced, one by XLCC in Hunterston and one by Sumitomo in Nigg. These sites could support nearly 1,000 long-term jobs once operational and represent steps of progress, particularly with XLCC committing to their workforce through a voluntary recognition agreement with GMB.¹²

In addition to the job creation from wind, communities across Scotland have raised concerns about the development of new renewable projects and the associated infrastructure.¹³ These concerns are partly driven by frustrations with the payments received by local communities through Community Benefit Funds in comparison to developers overall revenue. A voluntary baseline of £5,000 per MW for Community Benefit Funds has been set out by the Scottish Government but in many cases, developers do not reach this target.¹⁴

Recent analysis published by Equitable Energy Research demonstrates the huge disparity between Community Benefit Funds, and the returns for communities through full or partial ownership of renewable projects.¹⁵ Despite this, less than 1% of new renewable energy capacity installed in Scotland in 2024 was under local or community ownership.¹⁶

The Green Industrial Strategy identifies wind as an opportunity but fails to acknowledge the need to secure domestic manufacturing for long-term job creation, and the lack of existing fabrication site capacity. The wealth of Scotland's wind is held almost exclusively in private hands and community benefit funds are simply not retaining enough of the wealth generated by these natural resources in local areas, or in Scotland. These issues do not feature in the Green Industrial Strategy and there is a serious risk that offshore and onshore wind developments leave no lasting legacy in jobs or local wealth without a change in approach.

¹² <https://www.gmbscotland.org.uk/newsroom/gmb-scotland-rejects-signs-agreement-with-xlcc.html>

¹³ <https://www.thenational.scot/news/25245610.53-community-councils-demand-scottish-highland-energy-projects-pause/>

¹⁴ <https://theferret.scot/offshore-wind-measly-sum-communities-last-year/>

¹⁵ <https://platformlondon.org/app/uploads/2025/05/Social-Value-from-Renewables-EER-280525.pdf>

¹⁶ This figure is based on data taken from the Energy Savings Trust report showing an increase of 19MW in Community and Locally Owned energy in Scotland in 2024. The Scottish Government's Energy Statistics Hub shows an overall increase in renewable capacity in 2024 of 2,204MW.

<https://energysavingtrust.org.uk/report/community-and-locally-owned-energy-in-scotland-2024-report/> & <https://scotland.shinyapps.io/sg-scottish-energy-statistics/>

Case studies

GMB win recognition for green energy manufacturing jobs at XLCC

In July 2025, GMB announced a landmark voluntary recognition agreement with subsea cable manufacturers, XLCC. The agreement demonstrates the shared ambition for good, unionised jobs in North Ayrshire, and the value of better cooperation between trade unions and industry for energy transition and manufacturing job creation.

XLCC are developing a high-voltage direct current (HVDC) manufacturing facility in Hunterston, North Ayrshire. The project has been given public sector support through the Scottish National Investment Bank and the UK Government's National Wealth Fund. From 2029-30, the site will manufacture subsea cables for electricity transmission, with a potential 900 full-time jobs at Hunterston and a further 300 business support jobs in Kilmarnock.

Trade unions in Scotland have long campaigned for a proper industrial strategy to deliver energy and energy manufacturing jobs across Scotland. Scotland would need 19 manufacturing sites for components like cables, nacelles and turbine towers to have the capacity to deliver on the committed investment of ScotWind developers.

The XLCC site and voluntary recognition agreement is a major step forward that shows what can be won by harnessing the voice of energy workers and their communities.

GMB Scotland Secretary Louise Gilmour said:

“Too many energy and manufacturing workers believe the transition to renewables is being done to them and not with them. That must change and this agreement shows how, with unionised workers and their communities front and centre of the policy development process.”

“GMB believes genuine and effective cooperation between unions, industry, and governments can help deliver the scale of transformation needed in our manufacturing supply chains. We hope agreements like this can be a template to campaign for and secure a new industrial future.”

Seagreen wind farm

The Seagreen wind farm is a joint venture between TotalEnergies, SSE Renewables Services, and PTTEP, Thailand's publicly owned energy company. Seagreen is currently the sixth largest offshore wind farm in the world, with an installed capacity of more than 1,000MW.¹⁷

The project became operational in October 2023, and their accounts demonstrate the dynamics set out above in relation to turnover and spending in offshore wind farms. The latest available company accounts cover the year ending 31st March 2024 and therefore cover the first six months of the wind farms operation.

¹⁷ <https://www.marineinsight.com/know-more/biggest-offshore-wind-farms/>

In the year the wind farm became operational, revenue soared to £449.3m while the cost of sales was just £8.2m. The Operations & Maintenance Centre for Seagreen is based in Montrose and will support 80 full-time direct jobs.¹⁸

Table 3

Seagreen wind energy limited			
	Revenue	Net profit/loss	Cost of sales
Accounts to 31 st March 2024	£449.3m	£127.2m	£8.2m
Accounts to 31 st March 2023	£95.2m	-£1.4m	£21.2m
Accounts to 31 st March 2022	£0	-£9.56m	£0
Accounts to 31 st March 2021	£0	-£38.3m	£0

A comparison of private and local wind ownership in Argyll & Bute

The following information has been shared by Equitable Energy Research in a report commissioned by Platform titled “Social Value from renewables in the Highlands & Islands.”¹⁹

Beinn an Tuirc is an onshore wind farm with a combined 65 turbines and capacity of 74MW. The wind farm was developed and owned by Scottish Power Renewables and has generated around £2,500 per MW for local communities.

In comparison, Tilley is a single 0.9MW capacity turbine owned by the Tiree Community Development Trust. As of the 31st of December 2022, the total passed to the Trust was over £3,000,000 - an average of around £236,000 pa, or £263,000 per MW.

Table 4

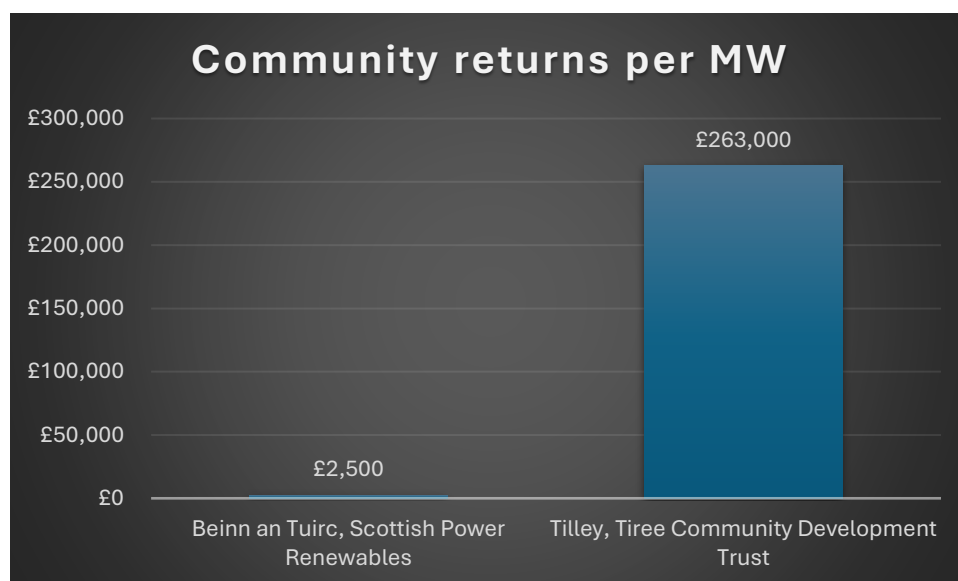
	Beinn an Tuirc	Tilley
Owner	Scottish Power Renewables	Tiree Community Development Trust
Number of turbines	65	1
Capacity	74MW	0.9MW
Community returns per year	£185,000	£236,000
Community returns per MW	£2,500	£263,000

In effect, the community owned windfarm returns a hundred times more per MW than the privately owned windfarm.

¹⁸ <https://www.sserenewables.com/offshore-wind/operational-wind-farms/seagreen/#:~:text=The%20O%26M%20base%20will%20be,offshore%20%27Service%20Operations%20Vessels%27.>

¹⁹ <https://platformlondon.org/app/uploads/2025/05/Social-Value-from-Renewables-EER-280525.pdf>

Table 7



The Tilley turbine has created revenue for the Tiree community, helping develop the Trust's services and support local initiatives such as building a community filling station, funding a Tiree Ranger Service and managing some community-owned business units and the island's two harbours.

Notes on the ONS data

The Office for National Statistics publishes estimates of the size of the UK's Low carbon and renewable energy economy (LCREE), including employment and turnover every year. The estimates are based on a survey of 25,000 businesses.

Starting in 2015 (for reporting year 2014) the Office for National Statistics (ONS) 'Low Carbon and Renewable Energy Survey', is the primary source of official information on the LCREE (Low Carbon and Renewable Energy) economy.

The ONS defines the LCREE as "economic activities that deliver goods and services that are likely to help the UK generate lower emissions of greenhouse gases, predominantly carbon dioxide." There are 17 defined sectors which ONS consider to meet this definition.

The ONS LCREE data continues to provide the most comprehensive overview of the state of the sector in relation to employment, company turnover and wider business activity. There are limitations to the data, with coefficients of variation (CVs) for all figures presented by the ONS.

In certain years and sectors, figures are not provided either due to confidentiality or because they are below a minimum level of employment or turnover.