Office for National Statistics

Statistical bulletin

UK Environmental Accounts: Low carbon and renewable energy economy: 2014 total activity

Total activity estimates of the UK low carbon and renewable energy economy for the reporting year 2014.

Contact:
Rachel Beardsmore
environment.accounts@ons.gsi.gov.uk
+44 (0)1633 455291

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1 . Main points

Total UK turnover from the low carbon and renewable energy (LCRE) economy, including both direct and indirect activity, was £83.4 billion in 2014.

Total UK employment from direct and indirect activity in the LCRE economy was 447,500 full-time equivalent (FTE) jobs in 2014.

Indirect activity accounted for 44.6% of UK turnover and 46.7% of UK FTE employment in the LCRE economy.

Energy efficient products generated £38.7 billion of turnover in 2014, of which 42.2% was from indirect activity, making this group the largest in terms of turnover.

Energy efficient products was also the largest group in terms of employment , generating 280,500 FTEs, of which 44.6% were from indirect activity.

The nuclear energy sector had a greater proportion of turnover (51.0%) generated through indirect activity than any other sector.

The hydropower sector had a greater proportion of FTE employment (60.0%) generated through indirect activity than other sectors.

2 . Introduction

In May 2016, we published The Low Carbon and Renewable Energy (LCRE) Economy Final Estimates bulletin , which presented estimates of direct economic activity in the LCRE economy. The estimates were based on a survey sent out to 41,483 UK businesses in 2015 for the reporting year 2014.

We have now developed an experimental methodology to estimate indirect turnover and employment generated by the LCRE economy. For the first time, we are able to publish estimates of total activity related to the LCRE economy. As Experimental Statistics, the content of this bulletin and the methodology behind it will continue to be evaluated to ensure that user needs are met.

What is indirect activity?

Most economic transactions increase economic activity by a larger amount than their size – this is because any transaction results in an increase in another economic actor's income or demand for an input, which in turn results in an increase in their spending, or investment. Multipliers are used to estimate the indirect effect an economic activity has on the wider economy, such as additional activity due to demand generated for the products of other firms by the wages paid to employees, or the increase in demand for the inputs used. A multiplier effect is the impact an economic transaction has on the wider economy; the multiplier measures the overall increase in economic activity resulting from the transaction, proportional to its size.

The total activity estimates in this report were calculated by constructing multipliers for each LCRE sector, both for the UK as a whole and each UK country, based on the sector's composition in terms of Standard Industrial Classification (SIC) and the corresponding multipliers for turnover[1] and employment[2], which we published in February 2014. Turnover and employment for each region, group and sector were multiplied by the corresponding multiplier to yield an estimate of total activity generated, including both direct and indirect activity. The difference between the direct activity previously published and the calculated total estimate is the indirect activity. Further details of the methodology are provided in the Quality and methodology section.

Notes for Introduction

1. UK Input-Output Analytical Tables: Multipliers and effects (output, employment cost and gross value added) .

2. Type I employment multipliers and effects.

3 . UK estimates

In the UK, an estimated £83.4 billion in turnover and 447,500 full-time equivalent (FTE) jobs were generated directly and indirectly by businesses active in the low carbon and renewable energy (LCRE) economy in 2014. Indirect activity accounted for 44.6% of total UK turnover from the LCRE economy (£37.2 billion) and 46.7% of FTE (209,000).

Of the 4 UK countries, England had the largest LCRE economy. Total LCRE activity in England in 2014 generated £67.3 billion, which was 80.7% of UK LCRE turnover, and 373,500 FTE, which was 83.5% of UK LCRE employment. Scotland had the second largest LCRE economy in 2014, generating 12.9% of UK turnover (£10.7 billion) and 9.7% of FTE employees (43,500). Of the remaining activity, 4.2% of turnover and 3.9% of employment was generated in Wales (£3.5 billion and 17,500 FTEs) and businesses in Northern Ireland generated 2.2% of UK turnover (£1.9 billion) and provided 2.9% of FTE employment (13,000).

Table 1: Estimates of direct and indirect low carbon and renewable energy economy activity

UK and country, 2014

	Turnover, direct (£ thousands)	Turnover, indirect (£ thousands)	Turnover, total activity (£ thousands)	Indirect turnover as % of total activity	Employees, direct (full-time equivalents)	Employees, indirect (full-time equivalents)	Employees, total activity (full-time equivalents)	Indirect employees as % of total employees
United Kingdom	46,193,500	37,228,500	83,422,000	44.6	238,500	209,000	447,500	46.7
England	37,558,500	29,780,500	67,339,500	44.2	201,000	172,500	373,500	46.2
Scotland	5,613,500	5,116,500	10,730,000	47.7	21,500	21,500	43,500	49.4
Wales	1,977,500	1,499,000	3,477,000	43.1	9,500	8,000	17,500	45.7
Northern Ireland	1,044,000	832,000	1,876,000	44.3	6,500	6,500	13,000	50.0

Source: Office for National Statistics

Notes:

1. Figures may not sum due to rounding.

In all areas of the UK in 2014, the estimated proportion of total employment from indirect activity was higher than the estimated proportion of total output from indirect activity. This suggests that the LCRE economy has a larger effect on industries in the supply and distribution chain that require higher employment.

Indirect activity in Scotland in 2014 accounted for 47.7% of Scottish total turnover (£5.1 billion) within the LCRE economy, whereas indirect activity in Wales generated only 43.1% of Welsh total turnover (£1.5 billion). The higher proportion of turnover generated by indirect activity in Scotland may be a result of Scotland's LCRE economy being dominated by low carbon electricity generation.

Indirect activity in Northern Ireland in 2014 accounted for the largest proportion of country-level FTE employment, at 50.0% (6,500), compared with 45.7% (8,000) in Wales; indirect activity accounted for 44.3% (£0.8 billion) total turnover in Northern Ireland. In Scotland, indirect activity generated 49.4% of total FTE employment (21,500) in the region's LCRE economy. The difference in the proportion of turnover compared with employment from indirect activity in Northern Ireland is probably due to the country's larger proportion of LCRE businesses active in the low emission vehicles group.

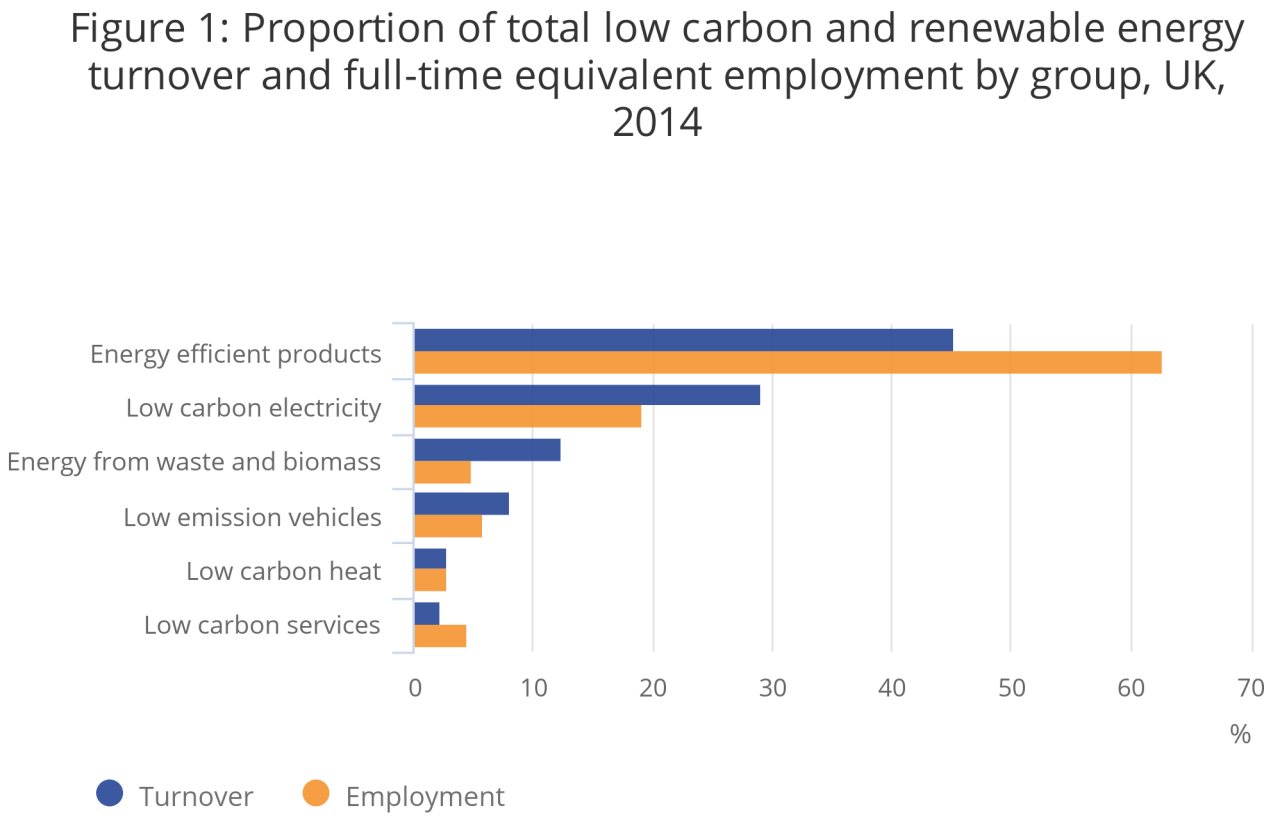
4 . Activity by low carbon and renewable energy group

The low carbon and renewable energy (LCRE) economy can be considered in terms of 17 sectors across 6 groups relating to different activities. These are explained in detail in the Quality and Methodology Information document.

The largest group in the UK LCRE economy in 2014 was energy efficient products, generating £37.8 billion in turnover across the UK (£15.9 billion or 42.2% indirect) and 280,500 full-time equivalent (FTE) jobs (125,000 or 44.6% indirect). It accounted for 45.3% of turnover and 62.7% of employment in the LCRE economy. The energy efficient products group was also largest in terms of direct activity. The main activities of businesses in the energy efficient products group are manufacturing and installing products; these are fairly labour intensive activities compared with activities of other LCRE groups, such as low carbon electricity.

The second-largest group was low carbon electricity, which generated £24.2 billion in turnover and 86,000 FTE workers across the UK. Indirect activity accounted for £11.7 billion (or 48.5%) turnover and 45,500 (or 52.9%) FTE employment. The low carbon electricity group accounted for 29.0% of total turnover and 19.2% of total employment generated by the LCRE economy in the UK in 2014.

Figure 1: Proportion of total low carbon and renewable energy turnover and full-time equivalent employment by group, UK, 2014



Source: Low carbon and renewable energy survey; Office for National Statistics

Notes:

1. Low emission vehicles include low emission vehicles and infrastructure, and fuel cells and energy storage.
2. Figures may not sum due to rounding.

Table 2: Estimates of direct and indirect low carbon and renewable energy group activity

UK, 2014

	Turnover, direct (£ thousands)	Turnover, indirect (£ thousands)	Turnover, total activity (£ thousands)	Indirect turnover as % of total activity	Employees, direct (full-time equivalents)	Employees, indirect (full-time equivalents)	Employees, total activity (full-time equivalents)	Indirect employees as % of total employees
Low carbon electricity	12,434,000	11,731,000	24,165,500	48.5	40,500	45,500	86,000	52.9
Low carbon heat	1,383,000	1,067,000	2,450,000	43.5	7,000	6,000	12,500	48.0
Energy from waste and biomass	5,565,000	4,709,000	10,274,000	45.8	11,500	10,500	22,000	47.7
Energy efficient products	21,871,000	15,947,000	37,818,000	42.2	155,500	125,000	280,500	44.6
Low carbon services	1,152,000	806,500	1,959,000	41.2	13,000	7,500	20,000	37.5
Low emission vehicles, infrastructure, fuels cells and energy storage	3,788,500	2,967,500	6,756,000	43.9	11,000	15,000	26,000	57.7

Source: Office for National Statistics

Notes:

1. Figures may not sum due to rounding.

The energy efficient products group was largest in both England and Northern Ireland for both turnover and employment in 2014. In England, this group generated £32.3 billion turnover, almost half (48.0%) of all English LCRE turnover and 242,500 FTE employment, which was just under two-thirds (64.9%) of English FTE employment. Around 42.1% of turnover and 44.5% of FTE employment in the energy efficient products group in England was generated through indirect activity.

The energy efficient products group accounted for over one-third (34.2%) of Northern Ireland's LCRE turnover, generating £0.6 billion, of which 41.2% was generated indirectly. The group also generated over half (53.8%) of Northern Ireland's LCRE FTE employment, with 7,000 FTE, of which 42.9% was generated indirectly.

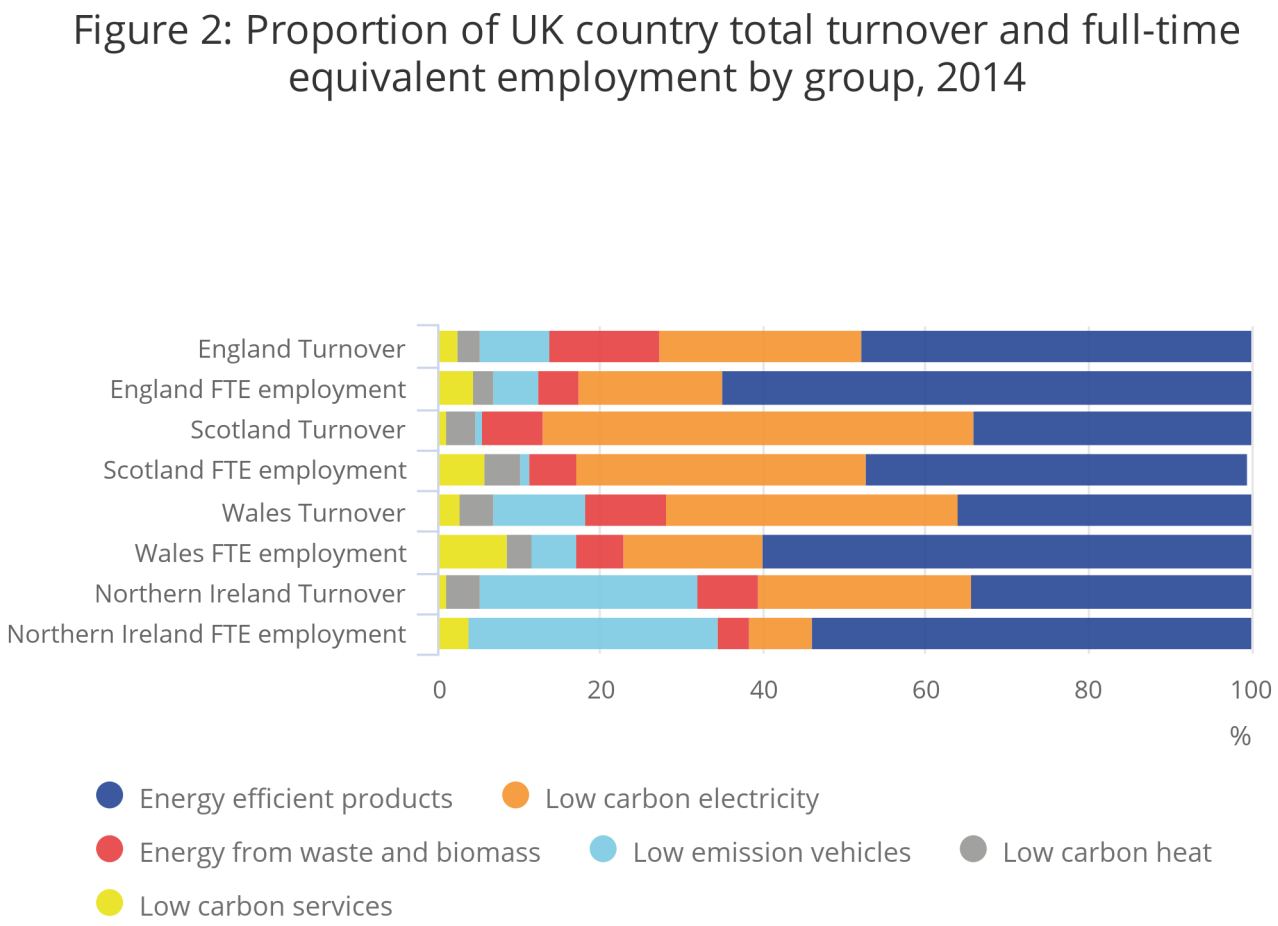
In Scotland the energy efficient products group was largest for employment but not turnover in 2014. The group generated 20,500 FTE employment, which was 47.1% of total Scottish LCRE employment; 43.9% of this was generated indirectly.

In Wales in 2014, the energy efficient products group was by far the largest in terms of employment, with 60.0% of FTE employment (10,500) being generated by this group alone. Around 43% of this employment was generated by indirect activity. In terms of turnover in Wales, the energy efficient products group was comparable in size with the low carbon electricity group; each generated £1.3 billion, making up 35.9% and 36.1% of the Welsh LCRE economy respectively. Indirect activity accounted for around 43.2% of turnover in the low carbon electricity group and around 41.5% of turnover in the energy efficient products group.

The low carbon electricity group was the second-largest group in England. However,in Scotland, this group generated the largest proportion of LCRE turnover. It generated a total of £5.7 billion (53.2%) of Scottish LCRE turnover, of which 51.2% was generated indirectly.

In Northern Ireland the second-largest group for both turnover and FTE employment was the low emission vehicles group. This group generated 26.9% of Northern Ireland's total LCRE turnover (£0.5 billion) and 29.6% of total FTE employment (4,000). As a proportion of the country's LCRE economy, Northern Ireland's low emission vehicles group was the largest in the UK (England's was the largest in value (£5.8 billion) but was only 8.6% of the total LCRE turnover and 5.4% of FTE employment).

Figure 2: Proportion of UK country total turnover and full-time equivalent employment by group, 2014



Source: Low carbon and renewable energy survey; Office for National Statistics

Notes:

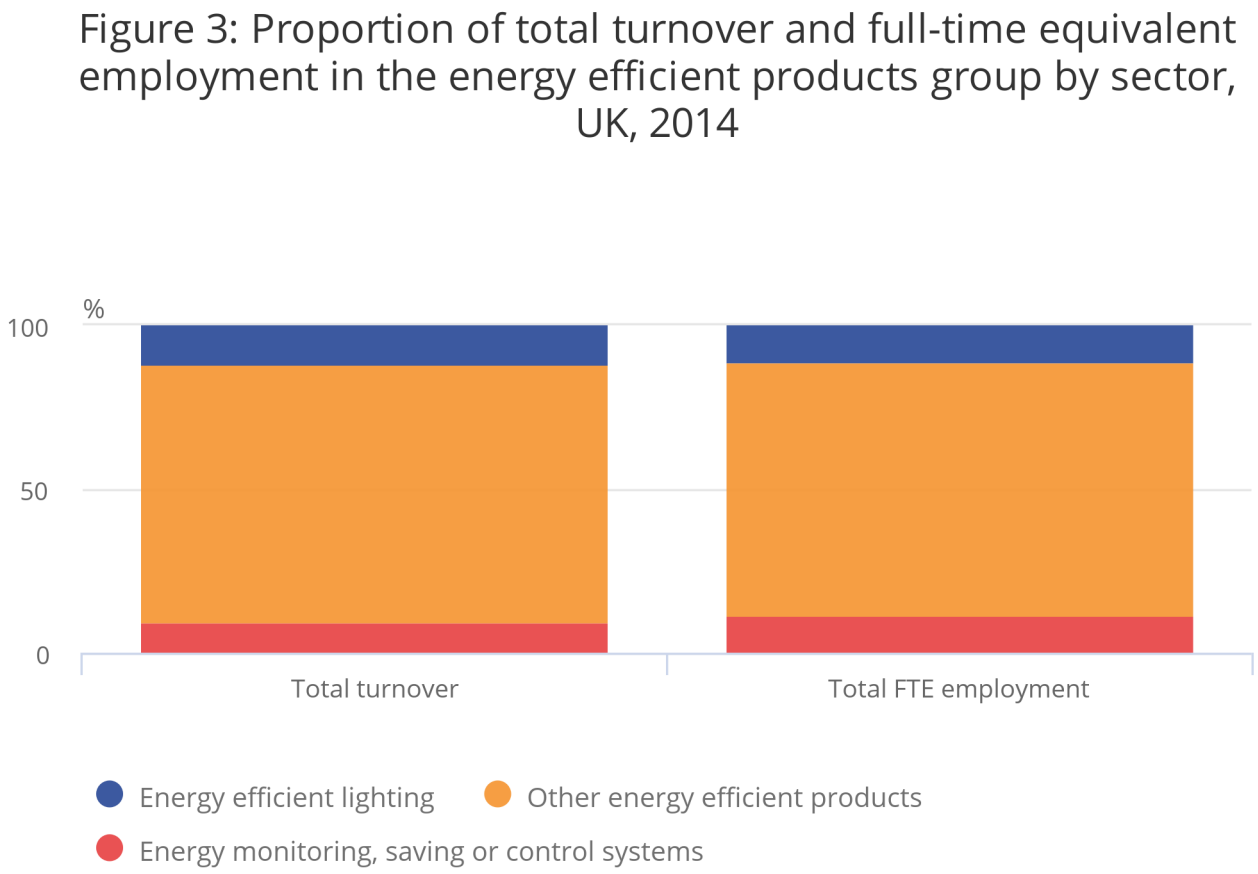
1. Low emission vehicles include low emission vehicles and infrastructure, and fuel cells and energy storage.
2. Figures may not sum due to rounding.

5 . Activity by low carbon and renewable energy sector

This section will focus on the sectors that make up the 2 largest low carbon and renewable energy (LCRE) groups within the UK; the energy efficient products group and the low carbon electricity group.

At the UK level, the energy efficient products group was dominated by the other energy efficient products sector in 2014; examples of “other energy efficient products” can be found in the Quality and Methodology Information document. This sector generated 78.9% of the group’s turnover (£29.9 billion) and 77.2% of the group’s full-time equivalent (FTE) employment (216,500). Around 42.3% of the turnover generated by the other energy efficient products sector was indirect, as was 44.6% of the FTE employment generated.

Figure 3: Proportion of total turnover and full-time equivalent employment in the energy efficient products group by sector, UK, 2014

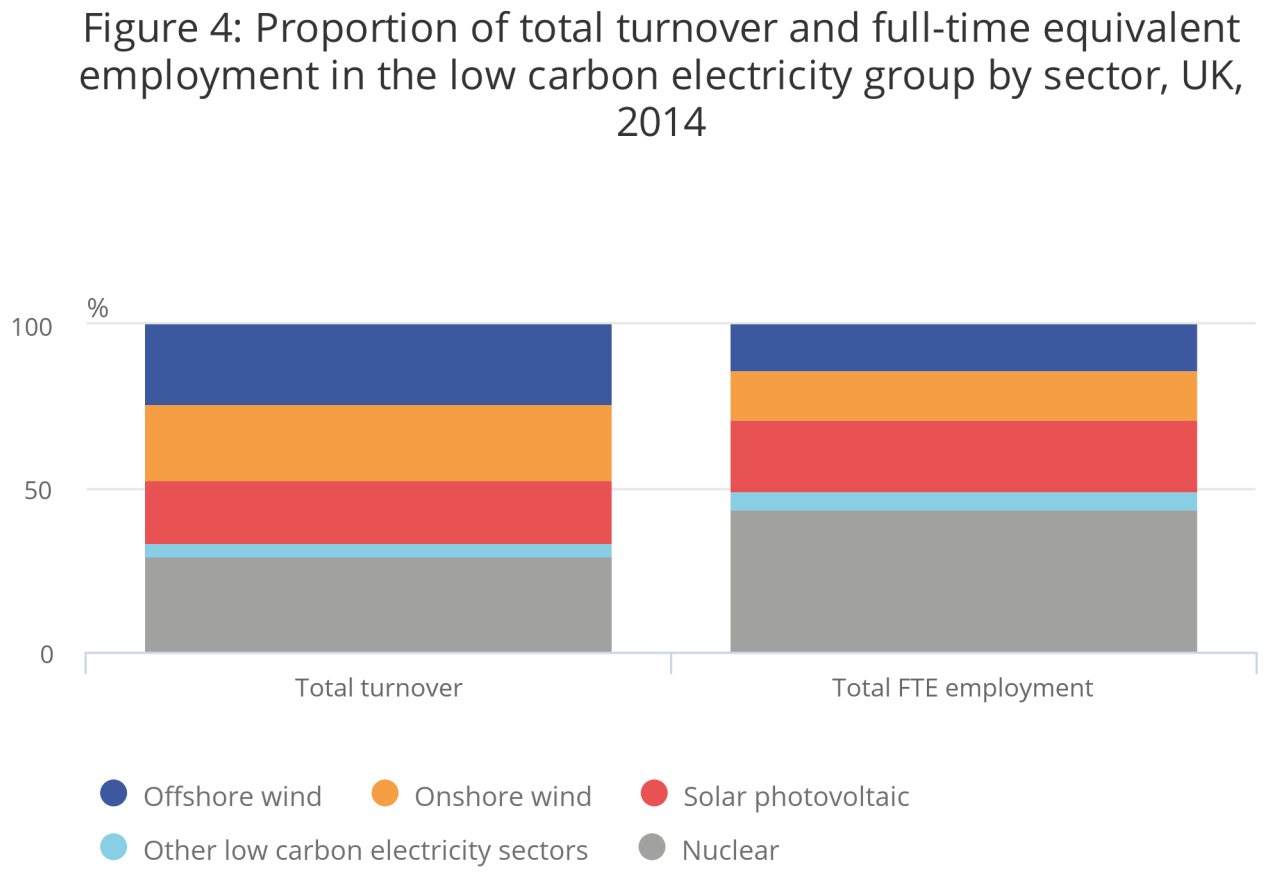


Source: Low carbon and renewable energy survey; Office for National Statistics

Within the second-largest group across the UK LCRE economy, the low carbon electricity group, the nuclear energy sector generated the largest proportion of turnover and FTE employment in 2014. The sector generated 29.3% of the low carbon electricity group’s turnover (£7.1 billion) and 43.6% of the group’s FTE employment (37,500). Around 51.0% of the turnover generated by the nuclear power sector was generated indirectly, as was 58.7% of the FTE employment.

The offshore wind and onshore wind sectors generated 23.6% and 23.3% of the low carbon electricity group’s turnover, equating to £5.7 billion and £5.6 billion respectively. For the offshore wind sector, 45.6% was generated indirectly, whereas for onshore wind, 49.9% was generated indirectly. However, the second-largest proportion of FTE employment in the low carbon electricity group, at 22.1%, was generated by the solar photovoltaic sector; this equates to 19,000 FTEs.

Figure 4: Proportion of total turnover and full-time equivalent employment in the low carbon electricity group by sector, UK, 2014



Source: Low carbon and renewable energy survey; Office for National Statistics

Notes:

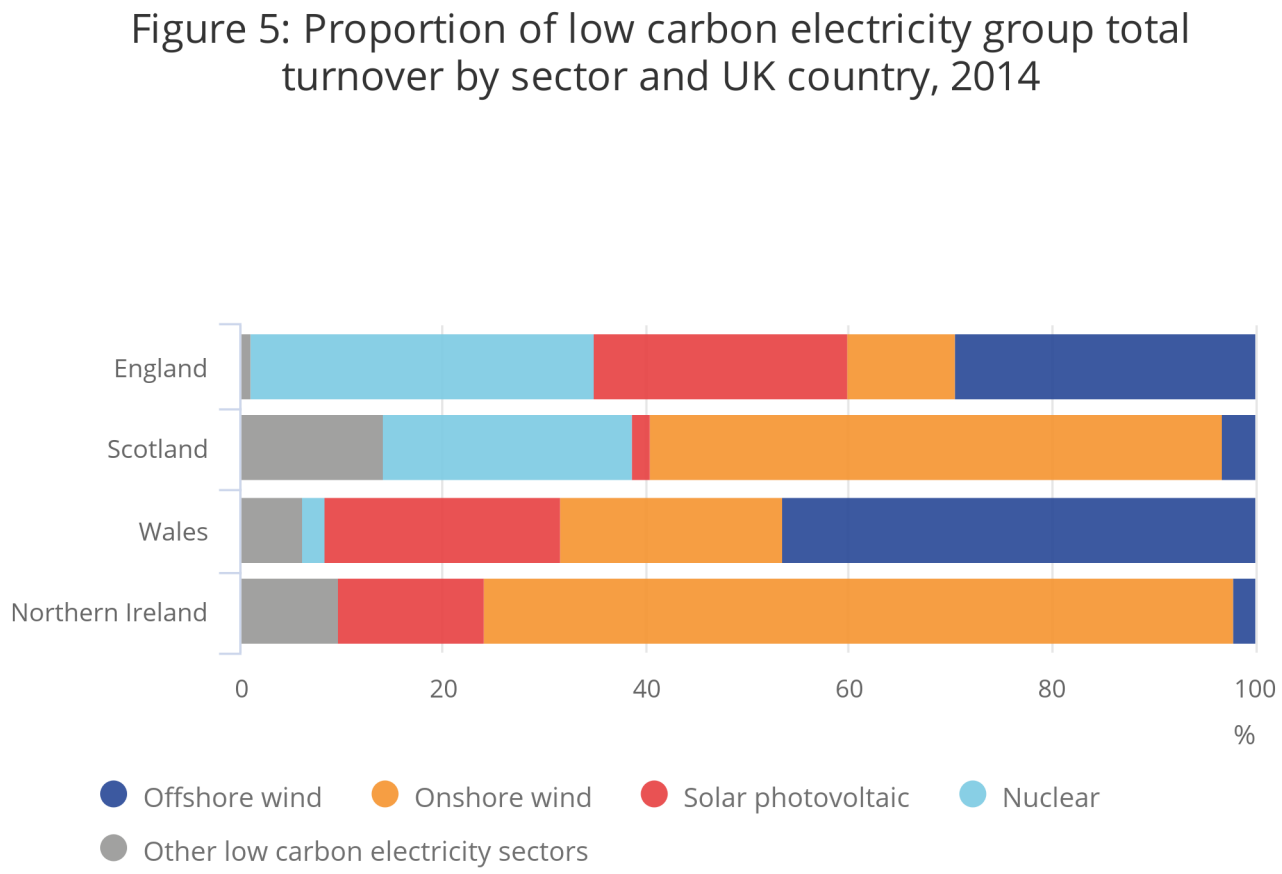
1. Other low carbon electricity sectors includes hydropower, other renewable electricity, and carbon capture and storage.

2. Figures may not sum due to rounding.

When looking at the turnover generated by different sectors within the low carbon electricity group at UK country level, however, there are large variations. Total activity in the nuclear energy sector generated the largest proportion of turnover in the group in England (33.8%, £5.7 billion) whereas Northern Ireland was dominated by the onshore wind sector, which accounted for 73.8% (£0.4 billion) of the total turnover within that group; in England, onshore wind only accounted for 10.6% (£1.8 billion) of the group's total turnover.

Onshore wind also accounted for the largest proportion of the Scottish low carbon electricity group turnover (56.5%, £3.2 billion) and the nuclear energy sector was the second largest (24.7%, £1.4 billion). In Wales, the offshore wind sector generated the largest proportion of turnover in the low carbon electricity group (46.6%, £0.6 billion) compared with just 3.1% in Scotland and 2.0% in Northern Ireland.

Figure 5: Proportion of low carbon electricity group total turnover by sector and UK country, 2014



Source: Low carbon and renewable energy survey; Office for National Statistics

Notes:

1. Other low carbon electricity sectors includes hydropower, other renewable electricity, and carbon capture and storage.

2. Figures may not sum due to rounding.

6 . Quality and methodology

The Low Carbon and Renewable Energy Economy Survey Quality and Methodology Information document contains important information on:

- the strengths and limitations of the data and how it compares with related data
- users and uses of the data
- how the output was created
- the quality of the output including the accuracy of the data

We regularly estimate multipliers for output, employment and other aspects of economic activity for each Standard Industrial Classification (SIC). However, they cannot be readily applied to the low carbon and renewable energy economy estimates, because each low carbon and renewable energy (LCRE) sector is made up from several different SICs, and in different proportions. To account for this, we weight the multipliers on the basis of each SIC's proportional share in a sector, group and region.

To generate a LCRE sector's output multiplier on a UK level, the output of each industry within the sector is divided by the sector's total output. These values are then multiplied by the respective SIC's output multiplier and the results are summed.

This process is repeated for each LCRE sector on a UK and country level, for output and employment, to produce sector level multipliers. As the industrial breakdown of a sector is not the same in each country of the UK, we use the same procedure to calculate country and group multipliers, using the sector's proportional share in each country or group multiplied by the sector multiplier previously constructed.

Once all the multipliers have been constructed, total LCRE activity is estimated by multiplying the direct activity estimates by the weighted multipliers.

What are Experimental Statistics?

The UK Statistics Authority Code of Practice defines Experimental Statistics as "New official statistics undergoing evaluation. They are published in order to involve users and stakeholders in their development and as a means to build in quality at an early stage."

The data contained within this release have undergone the same high levels of quality assurance as other official statistics. However, as Experimental Statistics, the methodology used to create them remains under development and may be revised following further evaluation. It is therefore recommended that this is taken into account when using the findings.

In line with the UK Statistics Authority's statement on Assessment and Designation of Experimental Statistics, we will be carefully evaluating these new estimates against the Code of Practice for Official Statistics. This will include assessments of both the quality of the estimates themselves and the extent to which they meet user needs.