

Estimates of UK employment in “green” jobs, occupations and firms (2022)

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1 Executive summary

1.1 Measuring green employment

1.1.1 The Office for National Statistics (ONS) defines a green job as:

- Employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change¹

1.1.2 They have developed three approaches to measuring green jobs:

- Industry-based approach
- Occupation-based approach
- Firm-based approach

1.1.3 It is important to note that these are experimental estimates of green jobs. Therefore, they are subject to revision as definitions, methods and data sources are reviewed.

¹

<https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/developingestimatesofgreenjobsintheuk>

1.2 Employment in green industries

1.2.1 In 2022, total employment across these green industries was estimated at 639,400 full time-equivalents (FTEs) in the UK. This was 8% higher than in 2021, and 19% higher than in 2020.

1.2.2 In 2022, the industries with the largest number of green jobs were:

- Waste (138,900)
- Energy efficiency products (116,100)
- Water (70,800)
- Repairs (54,200)
- Renewable energy (47,900)
- Environmental charities (40,400)
- Low carbon transport (34,800)

1.2.3 Since 2015, the industries that have seen the most FTE growth are:

- Waste (+37,900)
- Low carbon transport (+21,100)
- Renewable energy (+19,900)
- Water quantity (+15,500)
- Nuclear power (+11,000)

1.2.4 Within Renewable energy, FTEs increased the most in:

- Renewable heat (up 12,600 to 15,100)
- Offshore wind (up 8,300 to 11,300)
- Renewable combined heat and power (up 3,400 to 4,200)

1.3 Employment in green occupations

1.3.1 The methodology used by ONS to measure the number of people employed in green occupations changed significantly in 2022. Therefore, comparisons with previous years is not possible; nor are occupational or national breakdowns of the data provided.

1.3.2 In 2022, 12% of working adults in Great Britain reported that they would describe any part of their job as a "green job".

1.4 Employment in green firms

1.4.1 Nearly half (48%) of UK employees worked in one of ten industries that accounted for less than 1% each of total UK greenhouse gas (GHG) emissions in 2022.

1.4.2 Conversely, just three industries (the electricity, gas, steam and air conditioning industry, manufacturing, and the transportation and storage industry) accounted for over 62% of total UK GHG emissions in 2021, but employed just 14% of UK employees.

2 Measuring “green” employment

2.1.1 The Office for National Statistics (ONS) defines a green job as:

- Employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change²

2.1.2 They have developed three approaches to measuring green jobs:

- **Industry-based approach:** including all jobs in a green industry, with industries classified according to the activities they carry out
- **Occupation-based approach:** including all jobs that are green regardless of the industry they are in, based on the activities carried out by workers

The methodology used by ONS to measure the number of people employed in green occupations changed significantly in 2022. Therefore, comparisons with previous years is not possible; nor are occupational or national breakdowns of the data provided.

- **Firm-based approach:** including all jobs in a "green" firm, with such firms being classified based on, for example, their level of emissions

2.1.3 The employment estimates in this report are based on the number of full-time equivalents (FTEs) working in each of these three measurements. Under this approach, a person working full-time for one year would be counted as one FTE.

2.1.4 The data in this report are taken from Office for National Statistics (ONS), released 14 March 2024, ONS website, statistical bulletin, [Experimental estimates of green jobs, UK: 2024](#).

2.1.5 Finally, it is important to note that these are experimental estimates of green jobs. Therefore, they are subject to revision as definitions, methods and data sources are reviewed. ONS will continue to have discussions with stakeholders about the activities listed and will also be reviewing data sources to identify potential improvements to methods, or if alternative data sources are available.

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<https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/developingestimatesofgreenjobsintheuk>

3 Employment in green industries

3.1.1 The industry-based approach includes all jobs in a green industry or sector and are the ONS' headline estimate of employment in green jobs.

3.1.2 These activities include research and development, design, production, installation, operation and maintenance, and specialised consultancy services. Full definitions of these activities can be found in Appendix 1.

3.1.3 In 2022, total employment across these green industries was estimated at 639,400 full time-equivalents (FTEs) in the UK. This was 8% higher than in 2021, and 19% higher than in 2020.

3.1.4 Since 2015, total employment in the green industries has increased by nearly one-quarter (24%; or 124,100 FTEs).

3.1.5 In 2022, the industries with the largest number of green jobs were:

- Waste (138,900)
- Energy efficiency products (116,100)
- Water (70,800)
- Repairs (54,200)
- Renewable energy (47,900)
- Environmental charities (40,400)
- Low carbon transport (34,800)

Figure 1: Total employment in green industries: 2015 to 2022 (UK)



Source: Experimental estimates of green jobs, UK: 2015 – 2022, ONS.

3.1.6 Since 2015, the industries that have seen the most FTE growth are:

- Waste (+37,900)
- Low carbon transport (+21,100)
- Renewable energy (+19,900)
- Water quantity (+15,500)
- Nuclear power (+11,000)

Figure 2: Experimental employment figures by activity, UK: 2015 - 2022

Industry	2015	2020	Change	
			Number	%
Alternative fuels, including hydrogen supply	3,900	1,600	-2,300	-59%
Bioenergy	7,200	7,500	300	4%
Carbon capture and storage	*	800	--	--
Energy efficient products	115,500	116,100	600	1%
Energy saving and monitoring	13,300	18,800	5,500	41%
Energy storage	1,000	5,600	4,600	460%
Environmental charities	32,600	40,400	7,800	24%
Environmental consultancy not elsewhere classified	8,900	16,300	7,400	83%
Environmental related education	2,200	2,400	200	9%
Grid infrastructure	*	*	--	--
In-house environmental activities	5,100	2,500	-2,600	-51%
Low carbon transport	13,700	34,800	21,100	154%
Management of forests	10,800	14,300	3,500	32%
Managerial activities of government bodies	21,400	17,100	-4,300	-20%
Nature protection and restoration (excluding forests)	9,300	8,700	-600	-6%
Nuclear power	12,100	23,100	11,000	91%
Recycling	27,600	17,600	-10,000	-36%
Renewable energy	28,000	47,900	19,900	71%
Repairs	49,000	54,200	5,200	11%
Waste	101,000	138,900	37,900	38%
Wastewater	23,000	25,600	2,600	11%

Industry	2015	2020	Change	
			Number	%
Water quantity	29,700	45,200	15,500	52%
Total	515,300	639,400	124,100	24%

Source: Experimental estimates of green jobs, UK: 2015 – 2022, ONS.

* Indicates that data has been suppressed or is not currently available.

3.1.7 Within Renewable energy, FTEs increased the most in:

- Renewable heat (up 12,600 to 15,100)
- Offshore wind (up 8,300 to 11,300)
- Renewable combined heat and power (up 3,400 to 4,200)

Figure 3: Experimental employment figures, Renewable Energy, UK: 2015 - 2021

Renewable energy	2015	2020	Change	
			Number	%
Renewable electricity	24,700	28,600	3,900	16%
Offshore wind	3,000	11,300	8,300	277%
Onshore wind	7,600	6,600	-1,000	-13%
Solar	9,900	9,000	-900	-9%
Hydropower	600	1,100	500	83%
Other renewable energy	300	600	300	100%
Renewable heat	2,500	15,100	12,600	504%
Renewable combined heat and power	800	4,200	3,400	425%
Total	28,000	47,900	19,900	71%

Source: Experimental estimates of green jobs, UK: 2015 – 2022, ONS.

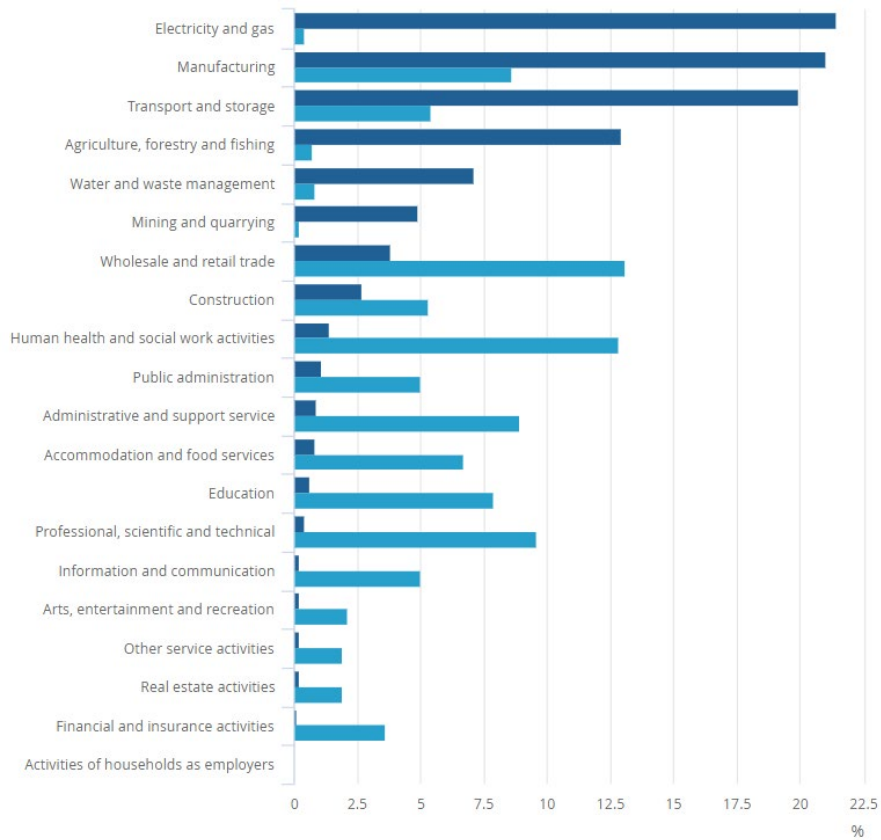
4 Employment in green occupations

- 4.1.1 In 2022, 12% of working adults in Great Britain reported that they would describe any part of their job as a "green job".
- 4.1.2 This data is based on ONS' new methodology to measure the number of people employed in green occupations – comparison with previous years is not possible; nor are occupational or national breakdowns this estimate published at this time.

5 Employment in green firms

- 5.1.1 The firm-based approach to measuring green jobs measures all jobs in firms classified as "green". By looking at this, we can also identify firms which will need to transition towards green, and therefore the number and characteristics of employees within them.
- 5.1.2 As a proxy for green industries, ONS has considered the relative contribution of each industry to total GHG emissions.
- 5.1.3 In 2022, there were 10 industries whose emissions contributed less than 1% each to total GHG emissions. These 10 industries collectively accounted for 4% of total GHG emissions and employed 48% (12.8 million) of total employees.
- 5.1.4 In contrast, three industries (electricity, gas, steam and air conditioning industry; manufacturing; and the transportation and storage) accounted for over 62% of total GHG emissions in 2022 and 14% (3.9 million) of total employees. These industries are likely to be most affected by the UK's transition to net zero, and already have the highest number of "green jobs", such as renewable energy.

Figure 4: Percentage of total greenhouse gas emissions (residence basis) and total employees by industry, UK, 2022



Source: Office for National Statistics, Ricardo Energy and Environment, Business Register and Employment Survey, Northern Ireland Statistics and Research Agency

Appendix 1 – Defining green industries

Listed below of the definitions of each of the green industries detailed in chapter 3:

- **Alternative fuels, including hydrogen**

Research and development, design, construction, production, operation and maintenance, and specialised consultancy services relating to energy alternative fuels which are not classed as bioenergy. Includes hydrogen produced either by electrolysis or low carbon thermochemical processes, or both.

- **Bioenergy**

Research and development, design, construction, production, operation and maintenance, and specialised consultancy services relating to energy from renewable biomass sources. Includes electricity, heat and combined heat and power.

- **Carbon capture and storage**

Research and development, design, construction, and operation and maintenance of the infrastructure related to the capture of either waste CO₂ or other greenhouse gases, or both, at point of emission or from the atmosphere more generally, and using it for additional economic activity and depositing it where it will not enter the atmosphere.

- **Energy-efficient products**

Research and development, design, manufacture, specialised consultancy services and installation of energy-efficient products.

- **Energy saving and monitoring**

Research and development, design, production, installation, operation and maintenance, and specialised consultancy services relating to systems that reduce energy consumption through effective heat or electricity management, including equipment and related systems for doing this.

- **Energy storage**

Research and development, design, construction, operation and maintenance of the infrastructure for energy storage. This includes the storage of electricity, hydrogen, thermal energy, and other energy.

- **Environmental charities**

This activity includes charities whose purpose is to protect and/or manage the environment and natural resources. Environmental charities include those providing environmental education and training, conservation and preservation of fauna and flora, and promotion of environmental issues (e.g. pollution abatement and control).

■ **Environmental consultancy n.e.c.**

Expert advice, training and education (academic and work-based) on protecting or restoring the environment that is not elsewhere categorised (n.e.c.).

■ **Environmental-related education**

This activity includes education aimed at environmental protection and management of natural resources. This activity includes tertiary education (non-university tertiary education and university tertiary education).

■ **Grid infrastructure**

Research and development, design, construction, operation and maintenance of the infrastructure related to the decarbonisation of grid networks. This would include the conversion of gas networks to be suitable for hydrogen, and the decarbonisation of the electricity grid.

■ **In-house environmental activities**

This includes activities that businesses carry out in-house to protect the environment against the damaging or depleting impact of the business's activity. It includes activities such as waste management and wastewater treatment on site.

■ **Low carbon transport**

The research and development, design, specialised consultancy services and manufacture of equipment related to transport designed to specifically reduce or remove emissions. Also includes the research and development, design, production and installation of infrastructure to support low and zero carbon transport, including electric vehicle (EV) charging infrastructure.

Low carbon transport includes zero and low emission vehicles, low carbon water transport, low carbon road and public transport, low carbon air travel and other low carbon travel. We will continue to consult with users on the scope of these activities, for example, whether all rail would be included or only employment activity related to decarbonising rail.

This category includes the manufacture of bicycles where it is for specific large-scale projects, such as city bikes. Leisure bikes are excluded.

- **Management of forests**

This activity includes activities relating to forests available for wood supply (but not currently cultivated) and for forests not available for wood supply (such as, protected forests, nature reserves, national parks). Associated activities carried out for their maintenance and management (restoration activities and prevention and control of forest fires) are included. This includes restoration activities (reforestation and afforestation) as well as the prevention and control of forest fires.

Activities and products concerning measurement, control, laboratories and so on are also included, as well as education, training and information, and general administration activities linked to the management of non-cultivated forest and forests not available for wood supply. This division does not include cultivated forests for wood supply or reforestation activities of cultivated forests.

- **Managerial activities of government bodies**

This category includes public administration aimed at protecting the environment and management of natural resources. Activities such as the issuing of environmental permits and licenses, monitoring of air, land and water, protection of biodiversity and landscapes, and the development of environmental policies are included.

- **Nature protection and restoration (excluding forests)**

Activities and measures aimed at the conservation, reintroduction or recovery of fauna and flora species, as well as the restoring, reshaping and rehabilitation of damaged habitats for the purpose of strengthening their natural functions.

This includes activities that promote a return to original conditions of soil and wetlands (including peatlands), and economic activities that improve soil and wetland functions without necessarily promoting a return to pre-disturbance conditions.

- **Nuclear power**

This includes research and development, design, construction, production, specialised consultancy services and installation of infrastructure for producing electricity from nuclear power, as well as the production of electricity from nuclear power, and the operation and maintenance of related infrastructure.

This category excludes energy attained from nuclear decay, which is covered in our section on "renewable combined heat and power". It also excludes activities relating to decommissioning, nuclear medicine and military nuclear programmes.

- **Recycling**

This activity includes the salvage of wrecks (automobiles, ships, computers, televisions and other equipment) and the processing of metal and non-metal waste and scrap and other articles into secondary raw materials. It also includes the separating and sorting of materials from waste streams and mixed recoverable materials into distinct categories. The production of energy from waste is excluded here and captured under "bioenergy".

- **Renewable energy**

Research and development, design, construction, production, manufacture and installation of infrastructure, and specialised consultancy services for producing energy from offshore wind, onshore wind, solar, hydropower, and other renewable sources (such as tidal or wave power, or geothermal sources).

- **Repairs**

These activities relate to the repair of personal and household goods, and computers. It excludes the repair and installation of machinery and equipment in the manufacturing sector.

- **Waste**

These activities relate to the collection, treatment and disposal of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. The output of the waste can either be disposed of or become an input into other production processes.

- **Wastewater**

These activities relate to the collection, treatment and disposal of wastewater, industrial or household, as well as contaminated sites. The output of the wastewater or sewage treatment process can either be disposed of or become an input into other production processes.

- **Water quantity**

This category includes natural water, water treatment and supply services for domestic and industrial needs. Management of water includes activities aimed at minimising the intake of inland water through in-process modification as well as the reduction of water losses and leaks, and the installation and construction of facilities for water reuses and savings.

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