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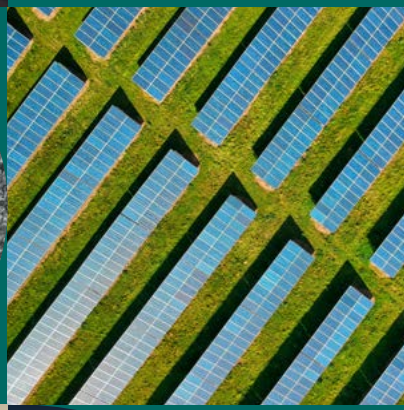
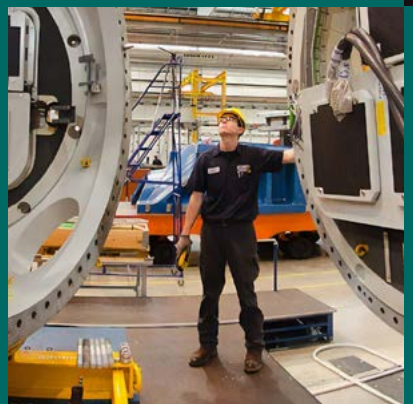




Financing a Just Transition

Putting people and communities at the heart of sustainable investment

Rathbones
Look forward

Introducing the Financing a Just Transition Report

Another year of extreme weather events and a stark warning on the climate emergency from the Intergovernmental Panel on Climate Change have shown us that there has never been a more pressing time to adapt the world economy to a net zero future.

The transition to a net zero economy has the potential to create large numbers of new jobs, as new industries emerge (and existing industries expand) to replace products and processes that become obsolete as we adapt to new innovations, regulations and consumer preferences. These range from producing low carbon electricity to retrofitting more efficient building insultation.

Taking the UK as an example, with around 7 million direct jobs currently found in industries that account for a high proportion of greenhouse gas emissions – such as agriculture, electricity production (from fossil fuels), road freight and aviation – we cannot ignore the social impact of the low carbon transition from potential unemployment.

If we are to achieve a "just transition" to net zero, alongside decarbonisation efforts, we must aim for long-term social inclusion and resilience, for example through education, reskilling and retraining for workers. This is especially vital in the areas that are most reliant on greenhouse gas intensive industries, ensuring that decarbonising the economy does not come at a human cost.

This report sets out research and recommendations for achieving this goal. It marks the latest stage of Greenbank's ongoing work focusing on the just transition, exploring the role of the financial services sector in putting people and communities at the heart of sustainable investment in pursuit of a global net zero goal.

This follows our 2021 Investor Day, which saw expert speakers offering their insights on the opportunities and risks associated with the technological, social and economic transformations required to make the shift to a healthier planet and more equitable society.

As investors, we must translate these just transition ambitions into action. Through collective action, we have a unique role to play in securing a more sustainable future for both people and planet.

John David,
Head of Rathbone Greenbank Investments

About the report

Using the UK as a case study, this report considers the impact on jobs as a result of the transition away from high carbon industries and growth in sectors likely to benefit from a low carbon future. While the analysis is specific to the UK, our recommendations for investors are relevant at a global, national and local level.

Firstly, the report looks at quantified estimates of the jobs that could be lost in sectors that are most at risk from adjustments driven by net zero transition to 2025, 2030 and 2050: milestones in the UK's pathway to achieving a 45% cut in emissions (2030) and net zero (2050).

The report then explores the potential for direct job gains across 18 business categories that are likely to expand as a result of the transition. To achieve this, we identified sectors that have growth potential as a result of decarbonisation strategies, and then estimated potential job growth nationally and regionally.

We know that the future will be shaped by an interconnected web of different drivers, including technology and changing global demographics. This report focuses on the impacts of the low carbon transition, holding these other megatrends steady. The full methodology is included at the end of the report.

By 2025

Job losses in greenhouse gas intensive industries balanced by new jobs in energy efficiency

By 2025, the UK is projected to see a net increase of 15,900 jobs as a result of the shift to a net zero carbon economy.

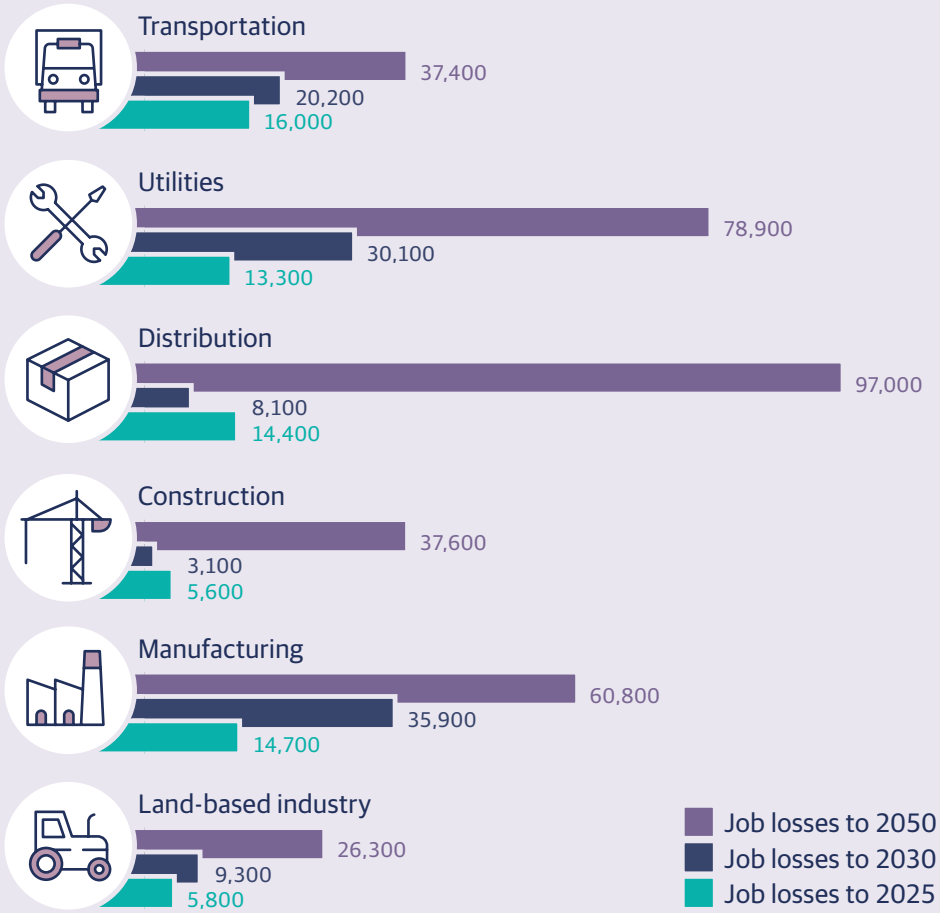
A total of 85,700 new jobs could be gained from the expansion of low carbon industries, with the largest proportion being those required to enhance the energy efficiency of buildings and other facilities, including the production and installation of improved insulation and lighting systems in commercial and residential buildings.

While these low carbon industries expand, we can expect to see a parallel loss of 69,800 jobs in greenhouse gas (GHG) intensive industries as a direct result of transitioning to net zero. The largest contributor to this fall is transportation, which is set to lose 16,000 jobs. However, the largest proportional change is among the manufacturing industry, where jobs are expected to decline by 14,700, equating to 10.6% of the baseline total for this sector. Most of these jobs lost in manufacturing are linked to the production of fuels and petrochemicals.

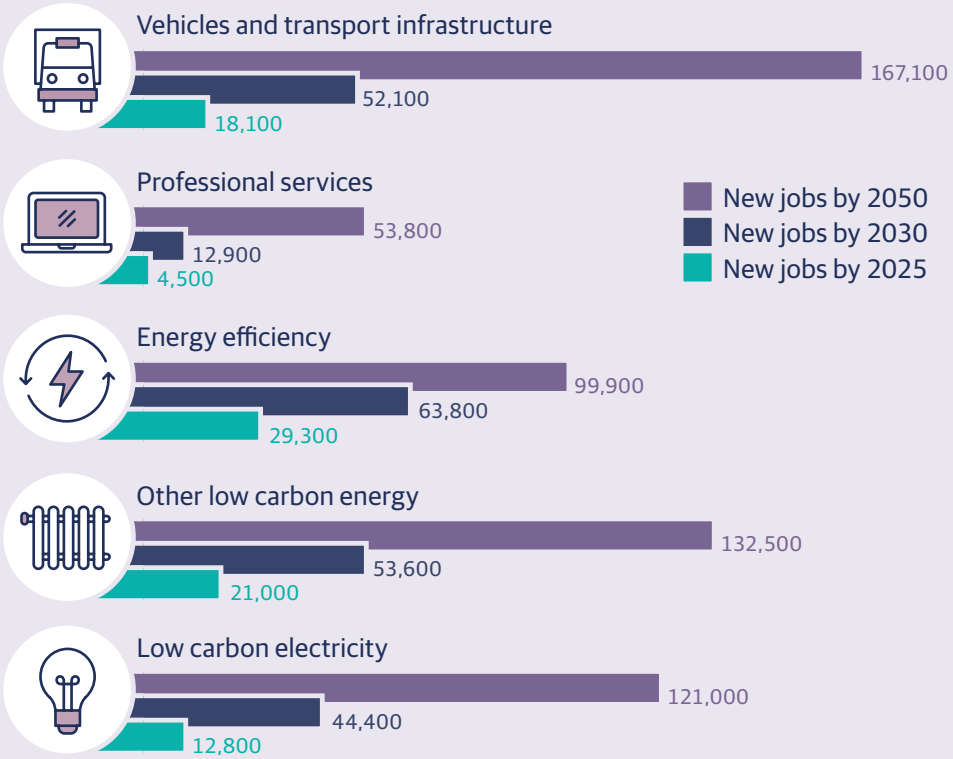
At a regional level, Yorkshire and the Humber is expected to experience the largest gains, with a net increase of 4,300 jobs. Another area to benefit substantially is the North West, with a net increase of 3,600 jobs.

However, there are three areas that are expected to experience a net decline in employment by 2025: Wales, with a net loss of 1,600 jobs; London, with a net loss of 2,800 jobs; and Scotland with the largest net loss of jobs, amounting to 3,800 by 2025. In this case, expected gains in sectors such as renewable electricity (especially offshore and onshore wind power) are not expected to be sufficient to offset losses expected in sectors such as oil and gas extraction by 2025 – though it is important to note that longer-term trends for these regions are positive.

Potential job losses across high carbon industries



Direct job gains in green economy sectors



By 2030

Green industries flourish and diversify to deliver 100,000 more jobs

By 2030, there is expected to be a net gain of 120,100 jobs as a result of the net zero transition.

Behind this are total direct gains of 226,800 new jobs in green economy sectors. The early dominance of employment in the energy efficiency sector is expected to have begun to diminish, with jobs in vehicles and transport infrastructure and low carbon energy becoming nearly as important.

Of these new jobs expected by 2030, over 52,000 jobs are associated with the production or operation of electric or hydrogen-powered vehicles (such as cars, vans, buses and trains) and the infrastructure required to support these vehicles.

Other major contributions include 44,400 new jobs required to build, operate and maintain the supply of low carbon electricity.

A further 53,600 jobs would be expected to be created to build and operate other low carbon energy sources and infrastructure, such as carbon capture and storage and hydrogen networks, and to manufacture and distribute biofuels.

Meanwhile, there are expected to be total losses of 106,700 jobs by 2030, with 35,900 of these in GHG-intensive manufacturing, and just over 30,000 in utilities (including energy generation and transmission, and waste treatment).

By this point, all UK countries and English regions are expected to experience a net gain of employment. The area with the largest increase in absolute terms is Yorkshire and the Humber, with a net increment of 18,800 jobs. The area with the smallest increase is Wales, with an expected net gain of 600 jobs by 2030. Scotland, meanwhile, will see an expected net gain of 2,700 by this point.

By 2050

Net zero sectors boost UK jobs by nearly a quarter of a million

By 2050, the net gain in employment is expected to have grown further, to over 236,000 jobs – meaning that by this time, the UK jobs landscape will see nearly a quarter of a million more jobs as a result of the transition to net zero.

The detail behind this figure shows that the total number of jobs that are estimated to be gained amounts to over 574,000. Of these, over 254,000 jobs will be in low carbon electricity and energy, with 167,000 in transport infrastructure and low carbon vehicles.

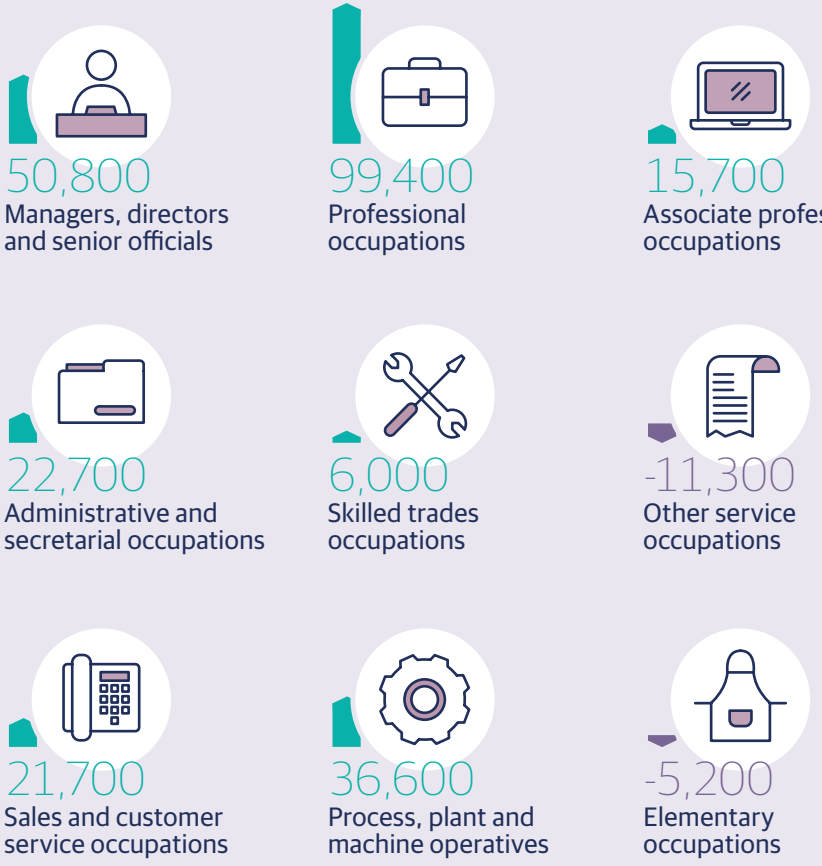
Meanwhile, there are expected to be nearly 338,000 job losses. Focusing on the demographics of jobs expected to be lost, just over 69% are those currently filled by men, with just under 31% filled by women. Based on current age profiles, around 24% of those whose jobs are at risk across the industries examined are currently aged 25-34.

As well as the overall number of jobs, we can expect the transition to cause a shift in the types of work on offer.

Whereas the jobs likely to be lost are spread across most occupational categories, the jobs likely to be gained are more weighted towards roles requiring higher levels of qualifications. The largest share of jobs expected to be created are professional occupations, including jobs such as civil/electrical engineers, architects, computer scientists, data analysts and legal/accountancy professionals. By 2050, these types of roles are expected to account for 26.2% of the green transition jobs created.

While many of the jobs created by 2050 will be filled by new entrants to the workforce, many of whom will be graduates, these figures suggest that significant efforts to retrain workers in declining industries will be required to ensure both an equitable transition and to address potential future skills shortages in growth industries.

Changes in types of job roles



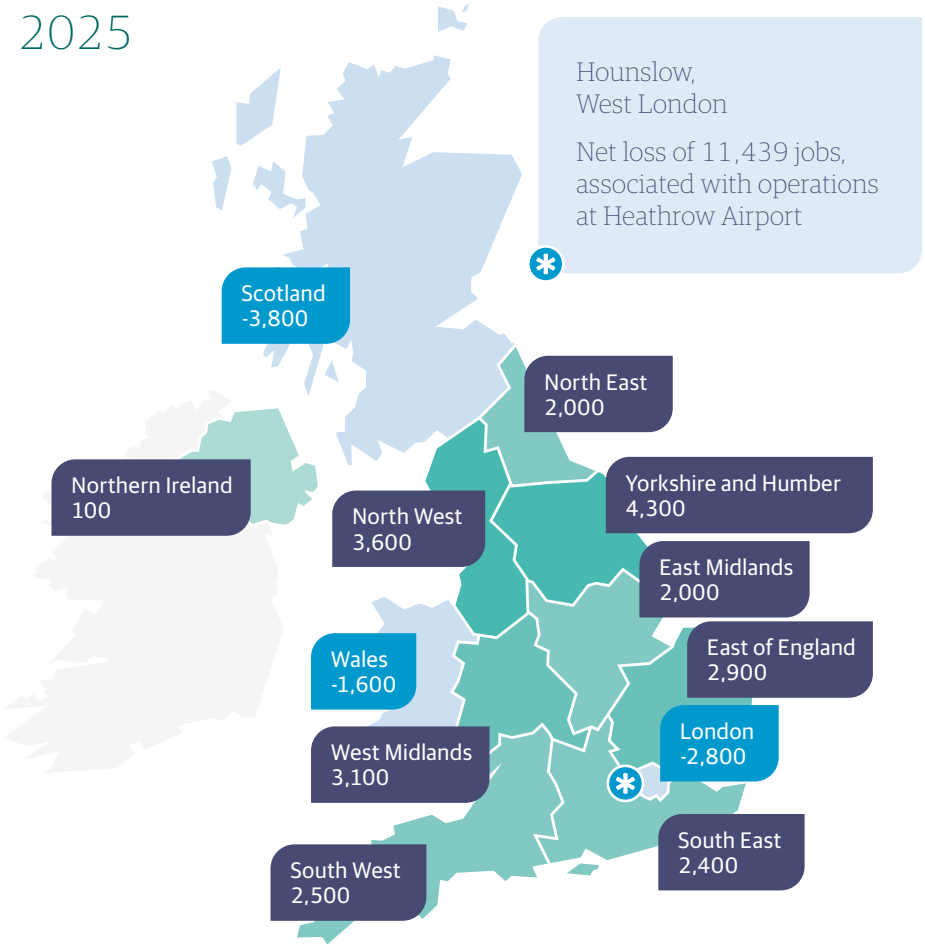
"There has never been a more pressing time to adapt our economy to a low carbon future. As well as being vital to building a more sustainable future for us all, the transition to net zero offers the prospect of bolstering the UK jobs landscape. However, with around seven million direct jobs found in UK industries that account for a high proportion of greenhouse gas emissions, we cannot ignore the social impact of the transition, which is why we have commissioned this new research."

John David, head of Rathbone Greenbank Investments

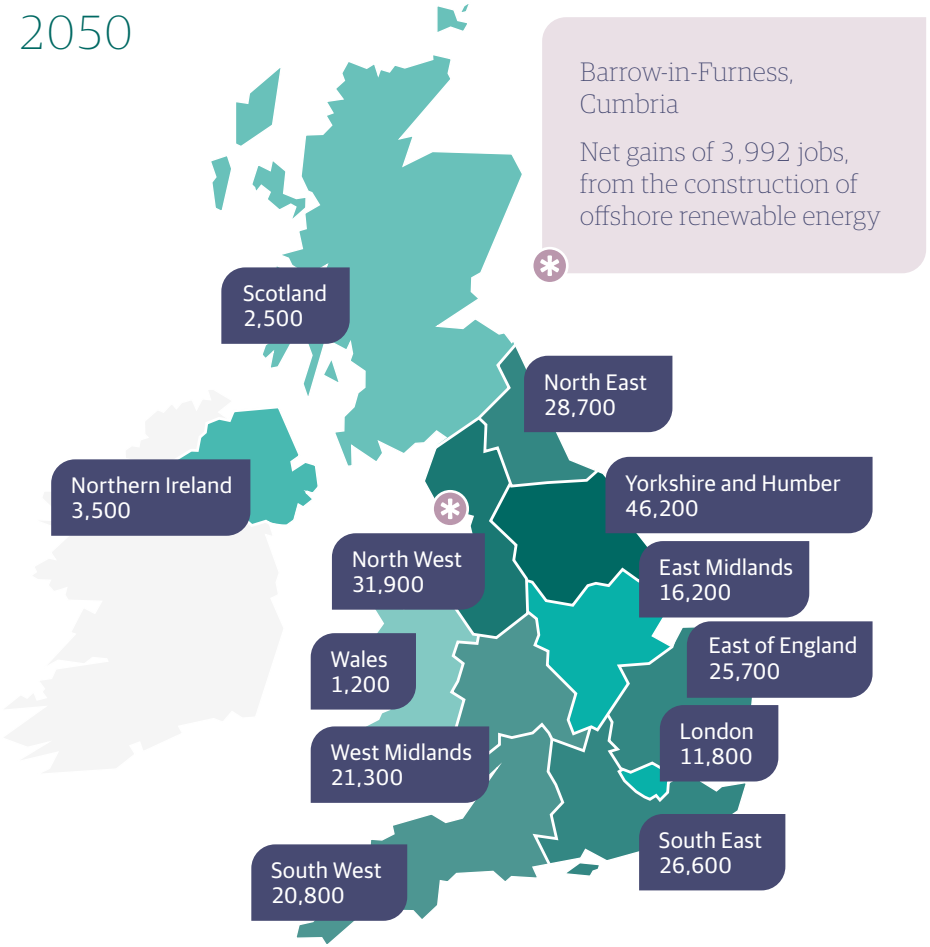
Across the UK

Tracking the regional differences in net job changes across the UK

2025



2050



Using investment to drive forward the just transition

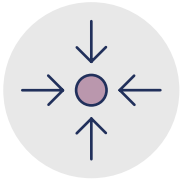
As this report has demonstrated, as well as being vital to building a more sustainable future for us all, the transition to net zero offers the prospect of bolstering the UK jobs landscape with nearly a quarter of a million additional job opportunities.

This is an overwhelmingly positive outcome for these industries as the UK strives to build a more resilient economy and meet its climate targets by 2050.

However, even though the long-term picture is positive for all regions, not all communities across the UK will enjoy this success to the same extent, or at the same time.

Because of this, it is crucial that investment in the UK's green future is focused on promoting a just transition that leaves no region, community or workforce behind, starting with each of the five following recommendations:

1



Make the just transition central to all investment strategies

First and foremost, investors should consider how to incorporate the just transition into their approach to responsible investment and climate action. To guide investors on how to do this, the Grantham Research Institute at the London School of Economics has published extensive frameworks on assessing portfolio exposure to the social dimension of the low carbon transition, holding a dialogue with stakeholders and integrating the just transition into investment strategies.

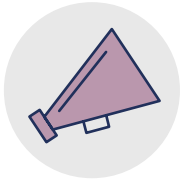
2

Allocate capital to communities that need it most

As shown earlier in this report, there are stark regional differences in the level of job growth (and decline) because of the low carbon transition. The financial community can help balance these differences by channelling capital to investment opportunities that benefit communities that would otherwise be hardest hit by the shift away from GHG-intensive industries. By participating in place-led initiatives, investors can develop financing strategies that connect national and international capital with specific locations, creating positive social impacts in the local areas that need it most. When doing so, it is important to engage with community stakeholders early in the process and undertake local context analysis.

Using investment to drive forward the just transition

3



Use investor action to challenge companies on their just transition strategy

By creating clear expectations for companies that are in the process of shifting away from GHG-intensive activities, investors can encourage actions that support worker rights and create a positive social impact. Investors can make clear they expect companies to embed processes and programmes that deliver this within their business models and governance systems, such as reskilling and retraining, redeployment, or retirement support. Again, company engagement with communities (alongside other relevant stakeholders) is key to delivering this in a way that reflects the needs of the people impacted by these changes.

4

Bolster due diligence into fast-growing sectors

This report has demonstrated the rapid level of job growth we can expect to see in sectors such as low carbon energy. As these new, low carbon industries expand quickly, investors must better understand how the companies in which they invest are addressing the just transition – if at all. An environmentally-sustainable economy must ensure decent work for all, with broad social inclusion; meaning it is not enough for these new industries to be low carbon alone.

Investors need to assess how well companies are measuring and reporting on their social, as well as environmental impacts; including the welfare of employees, supply chain management, and responsible engagement with communities. From these factors, investors can gauge which companies have effective strategies for a just transition. These qualities support long-term resilience, growth opportunities and true sustainability in company business models.

5

Continue to monitor and reassess the just transition

Finally, it is vital that investors continue to monitor and assess the positive and negative outcomes for workers and communities associated with the transition to net zero. Not only does this help to identify investment risks and opportunities but it will allow the investment community to continually update its just transition priorities, focusing investment in the sectors and regions where it is needed most.

By doing so, we can drive real change and put people and communities at the very centre of the transition to a more sustainable economy.

"If we are to achieve a 'just transition' to net zero in the UK, we must prioritise long-term social inclusion and resilience, through education, reskilling and retraining for workers. Unsurprisingly, this is especially vital in the areas of the UK that are most reliant on greenhouse gas intensive industries, so that as we decarbonise the economy, this does not come at a human cost. As investors, we can translate these just transition ambitions into action. Through collective action, we have a critical role to play in securing a more sustainable future for both people and planet."

Kate Elliot, head of Ethical, Sustainable and Impact Research at Rathbone Greenbank Investments

Methodology

Job loss calculations

The geographic focus of the assessment is the UK. In the case of England, Scotland and Wales, assessment has also been undertaken at a local authority district level. Due to data constraints, it was not possible to include local areas in Northern Ireland in this analysis. The year 2019 is used as the baseline because that is the most recent data for which comprehensive employment data is available at a disaggregated level for UK geographies, including local authority areas.

A 'direct' job refers to the headcount of jobs in companies or organisations that are expected to experience gains or losses in revenues as a result of the net zero transition.

Identification of the industries in the UK that are most vulnerable to net zero transition was undertaken using data published by the Department for Business, Energy, and Industrial Strategy (BEIS). The BEIS datasets provide estimates for the annual production of GHGs converted into thousands of tonnes of carbon dioxide equivalent (ktCO2e) across a range of industries, covering land-based industry, manufacturing sectors, utilities, and various service sector industries. The research identified the most significant GHG emitters in gross terms (i.e., annual volume of GHGs emitted). In addition, a number of sectors were also included that although relatively small in terms of overall volumes of GHGs emitted, are significantly above average in terms of the amount of GHG emitted per direct job found in that industry. Overall, the industries analysed account for 239,000 ktCO2e of GHG emissions in the UK. This total represents 75.4% of annual total CO2e emissions from the non-household portion of the UK economy as of 2018. The full list of industries examined is in the table to the right.

Having selected a shortlist of industries, the study then identified the overall numbers of jobs found in each sector or industry using datasets for England, Scotland and Wales published by the Office of National Statistics (ONS). Equivalent data covering Northern Ireland was obtained from the Northern Ireland Statistics and Research Agency (NISRA).

Assumptions regarding the scale and timing of likely job losses have been developed from sector-specific reviews of the scale and types of efforts likely to be needed to achieve reduced GHG emissions between now and 2050.

Business sector	GHG 2018 (ktCO2e)	% of total emissions by business sectors
Agriculture and related activities	46,398	14.6%
Electricity production – gas	45,540	14.4%
Electricity production – other fuels	21,106	6.6%
Crude petroleum and natural gas	19,997	6.3%
Waste collection and treatment	18,470	5.8%
Manufacture of petroleum products	13,278	4.2%
Road freight transport	12,195	3.8%
Manufacture of basic Iron and Steel	10,413	3.3%
Retail trade services	7,272	2.3%
Wholesale trade services	6,961	2.2%
Manufacture of cement	6,836	2.2%
Manufacture of chemicals	6,090	1.9%
Civil engineering	5,713	1.8%
Production and distribution of gas fuels	5,701	1.8%
Specialised construction works	5,250	1.7%
Construction of buildings	2,418	0.8%
Water transportation	2,103	0.7%
Air transportation	1,903	0.6%
Mining of coal and lignite	735	0.2%
Fishing and aquaculture	578	0.2%
Total of selected business sectors	**238,957**	**75.4%**
All other business sectors	88,360	24.6%
Total contribution by business sectors	**327,317**	**100.0%**

Methodology

Opportunity areas / job growth calculations

The predictions of future job gains and losses used in this report are underpinned by a set of UK regional business and labour market models that forecast future annual levels of workforce demand in each of the 12 UK standard regions across 94 sectors – covering business and public sector activities – up to year 2050. The models harness the history of data published by the Office for National Statistics to establish baseline trends for key indicators such as working age population, rates of self-employment, business formation rates, average earnings trends, economic output trends and productivity trends.

The model also utilises predicted future trends for economic participation as published by the UK Government's Office for Budget Responsibility.

The model does not use a single UK set of employment or productivity growth rates. Rather, it is built up from region-specific assumptions that reflect the underlying industrial structure, business demography and labour market characteristics (e.g. participation rates, occupational structure, skills, and qualifications levels) of each UK region, as well as the varying range of trends and trajectories that apply to each of the UK's regional economies.

The underpinning business and labour market model used to generate the baseline trajectory of future workforce demand was supplemented with additional research. This was designed to provide a source of assumptions used to measure future levels of workforce demand in sub-sectors that are considered likely to experience growth in demand as a consequence of policy decisions and/or potential changes in consumer preferences linked to net zero transition.

Research was undertaken to identify the sectors that have the potential to yield the most significant sources of new direct employment growth. The following 18 business activity categories were included for consideration in the assessment of future growth potential for the net zero economy:

Theme	Categories
Low carbon electricity	Offshore wind Onshore wind Marine energy Solar PV
Other low carbon energy	Carbon capture and storage Heat pumps Hydrogen boilers Hydrogen production and distribution networks Bioenergy
Energy efficiency	Insulation Lighting Control and monitoring technologies
Professional and public services enabling the low carbon economy	Building consultancy services Environmental testing and monitoring
Vehicles and transport infrastructure	Electric vehicles Charging infrastructure Fuel cells and Batteries Rail electrification and other green transport infrastructure

Rathbone Greenbank Investments

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