Regional Outlook 2021 - Country notes

# United Kingdom

## Progress in the net zero transition

## EMISSIONS

| 2018 OECD average: | 2018 UK average: | UK target: |
|---|---|---|
| 11.5 $tCO_2e$/capita | 6.9 $tCO_2e$/capita | net zero GHG emissions by 2050 |

### Large regions (TL2)

**Figure 1. Estimated regional greenhouse gas emissions per capita**

Tons $CO_2$ equivalent ($tCO_2e$), large regions (TL2), 2018


Production-based greenhouse gas (GHG) emissions per capita generated in most UK large regions are below 10 $tCO_2e$ per capita. All UK large regions have lower emissions per capita than the OECD average of 11.5 $tCO_2e$ per capita.

Estimated emissions per capita in Scotland are more than three times higher than in Greater London.

### Small regions (TL3)

**Figure 2. Contribution to estimated GHG emissions**

By type of small region, 2018

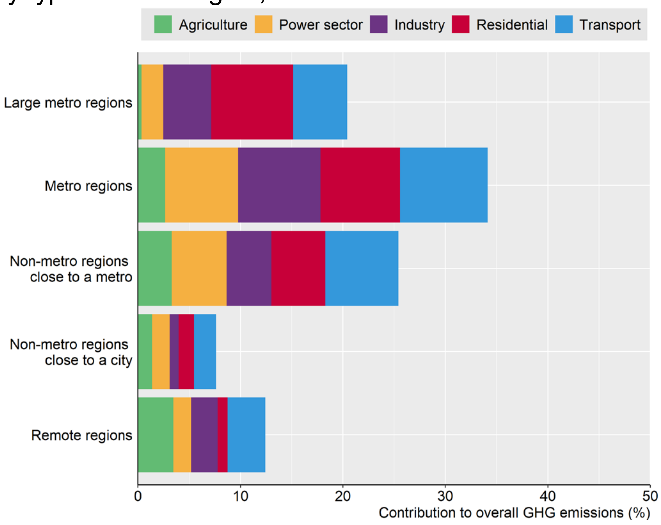
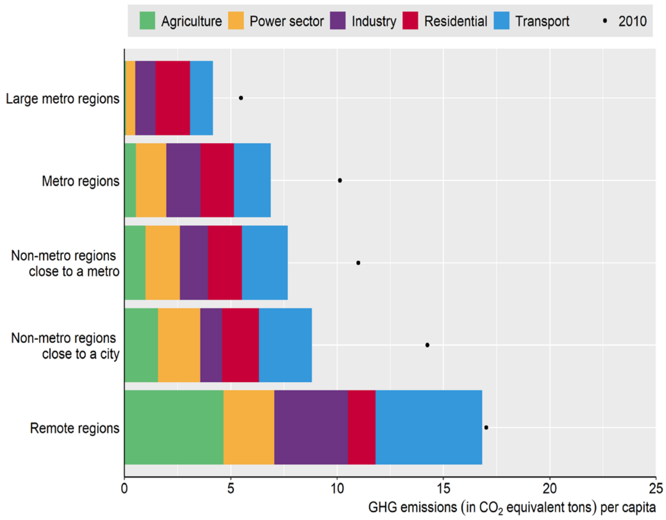



**Figure 3. Estimated GHG emissions per capita**

By type of small region, 2018




Across the OECD, metropolitan regions emit more greenhouse gases than remote regions. In the UK, a similar pattern can be seen. Emissions per capita in the UK's remote rural regions are much higher than in metropolitan regions. Emissions per capita have fallen substantially since 2010 except in remote regions.

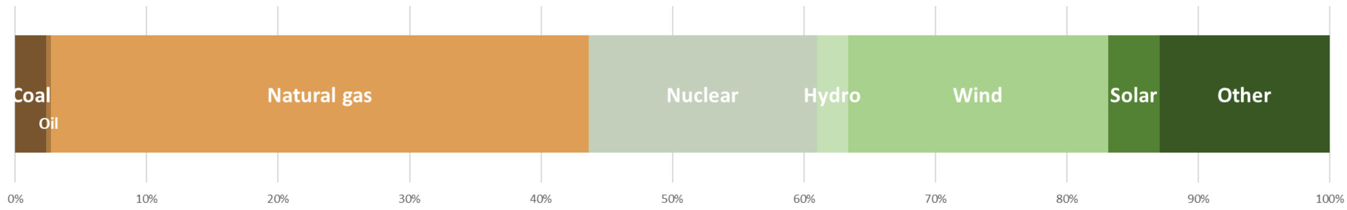
Target notes: Emissions targets included in the Net Zero Tracker database from ECIU before January 25, 2021 are considered.

Figure notes: Figures 1, 2, 3 and the OECD average show OECD calculations based on estimated greenhouse gas emissions data from the European Commission's Joint Research Centre (ECJRC). The Emissions Database for Global Atmospheric Research of the ECJRC allocates national greenhouse gas emissions to locations according to about 300 proxies. . See Box 3.7 in the 2021 *OECD Regional Outlook* for more details.

## ENERGY

### UK electricity mix

**Figure 4. National electricity generation by energy source in 2019**

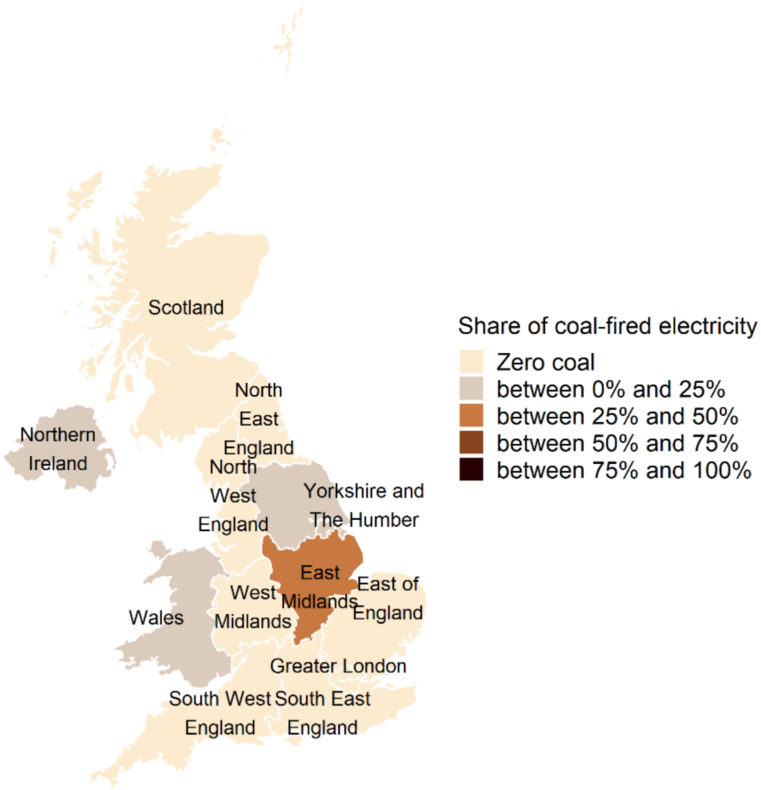



### Share of coal-fired electricity generation

| 2019 OECD average: 23% | 2019 UK average: 2% | 2030 well below 2°C benchmark for Europe: <2%<br>2030 1.5°C benchmark for OECD countries: 0% |
|---|---|---|

**Figure 5. Regional coal-fired electricity generation estimates**

Per cent of total electricity generation, large regions (TL2), 2017




Most regions do not use coal in electricity generation anymore. Only the East Midlands still used coal for just over 25% of its electricity generation in 2017. Coal-fired electricity generation has been declining steadily. No new capacity is planned or being built.

## Wind power

| 2019 OECD average: 8% | 2019 UK average: 20% | 2030 well below 2°C benchmark for Europe: >27% |
|---|---|---|

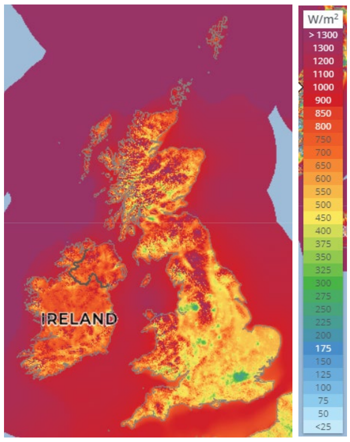
### Figure 6. Regional wind power generation estimates

Per cent of total electricity generation, large regions (TL2), 2017


Regional wind electricity generation is estimated using facility level data for 89% of UK's wind capacity.

### Figure 7. Wind power potential

Mean wind power density (W/m²)




Source: Map produced by The Global Wind Atlas

## Solar power

| 2019 OECD average: 3% | 2019 UK average: 4% | 2030 well below 2°C benchmark for the EU: >11% |
|---|---|---|

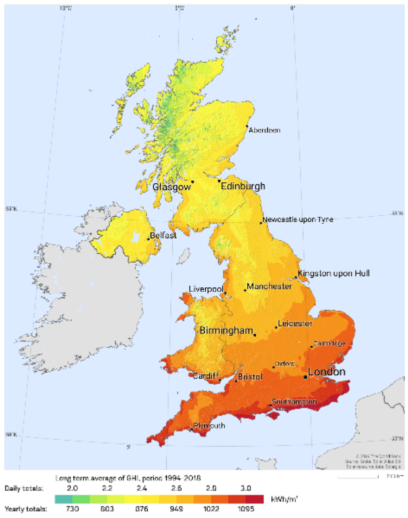
### Figure 8. Regional solar power generation estimates

Per cent of total electricity generation, large regions (TL2), 2017


Regional solar electricity generation is estimated using facility level data for 63% of UK's solar capacity.

### Figure 9. Solar power potential

Global horizontal irradiation (kWh/m²)




Source: Map produced by The Global Solar Atlas

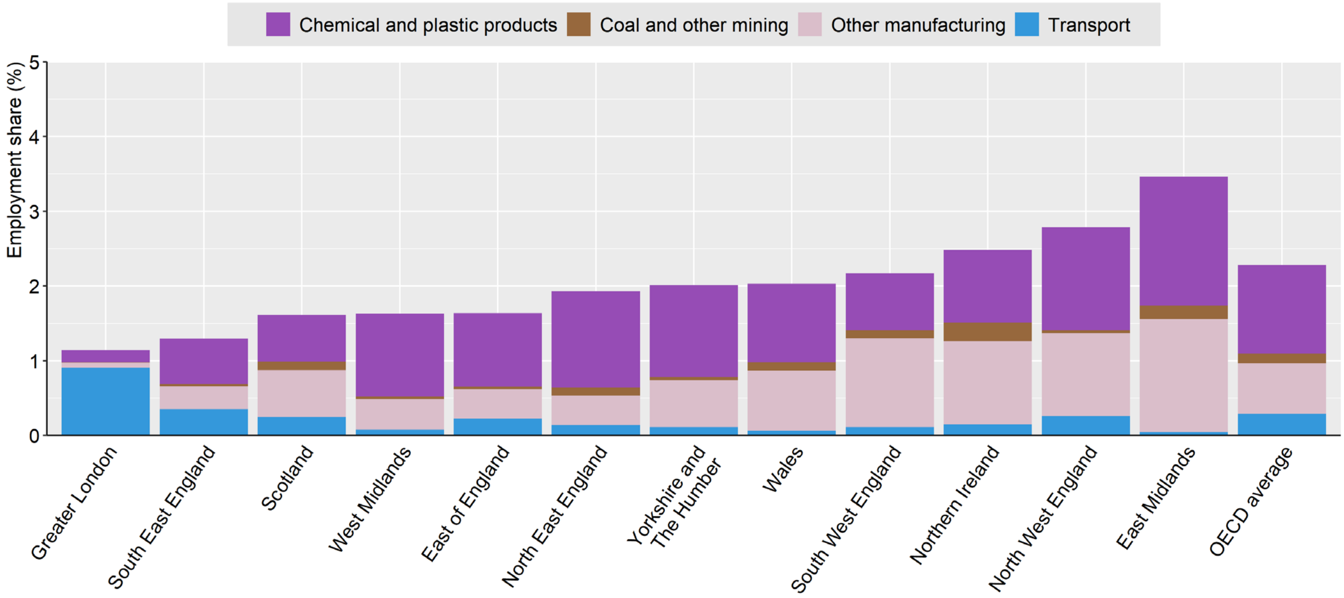
Wind power potential is trong in most regions. Regional wind power shares are highest in northern regions, where wind power density is highest, while solar power shares are highest in southern regions, where solar potential is highest.

Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. According to the Powering Past Coal Alliance (PPCA), a phase-out of unabated coal by 2030 for OECD countries is cost-effective to limit global warming to 1.5°C.
Figure notes: Figure 4 shows data from the IEA (2020). Figures 5, 6 and 8 show OECD calculations based on the Power Plants Database from the WRI. The database captures electricity generation from the power plants connected to the national power grid. As a result, small electricity generation facilities disconnected from the national power grid might not be captured. See here for more details. Figures 7 and 9 show the power potential of solar and wind. Mean wind power density (WPD) is a measure of wind power available, expressed in Watt per square meter (W/m²). Global horizontal irradiation (GHI) is the sum of direct and diffuse irradiation received by a horizontal surface, measured in kilowatt hours per square metre (kWh/m²).

## SECTORAL EMPLOYMENT RISKS

### Figure 10. Employment in selected sectors which may be subject to employment loss by 2040 if emissions are reduced in line with the Paris climate agreement

Per cent of total regional employment, large regions (TL2), 2017




There will be both employment gains and losses due to the transition to net zero greenhouse gas emissions. They may not be distributed in the same way across regions. Employment in sectors that may be subject to some job loss by 2040 as a result of policies to reduce emissions in line with the climate objectives in the Paris Agreement amounts to less than 3.5% in all UK regions. Most UK regions have less employment in these sectors than the OECD average. The East Midlands have a larger share, largely driven by chemicals. The selection of sectors is broad and based on employment effects simulated across OECD countries (See Box 3.9 of the 2021 *OECD Regional Outlook*). It does not take specific local characteristics into account.

Figure notes: Figure 10 is based on data from OECD Statistics. Sectors are selected based on macroeconomic simulations of a scenario limiting global warming to well below 2 degrees. See Box 3.9 in the 2021 *OECD Regional Outlook* for more details.

## TRANSPORT

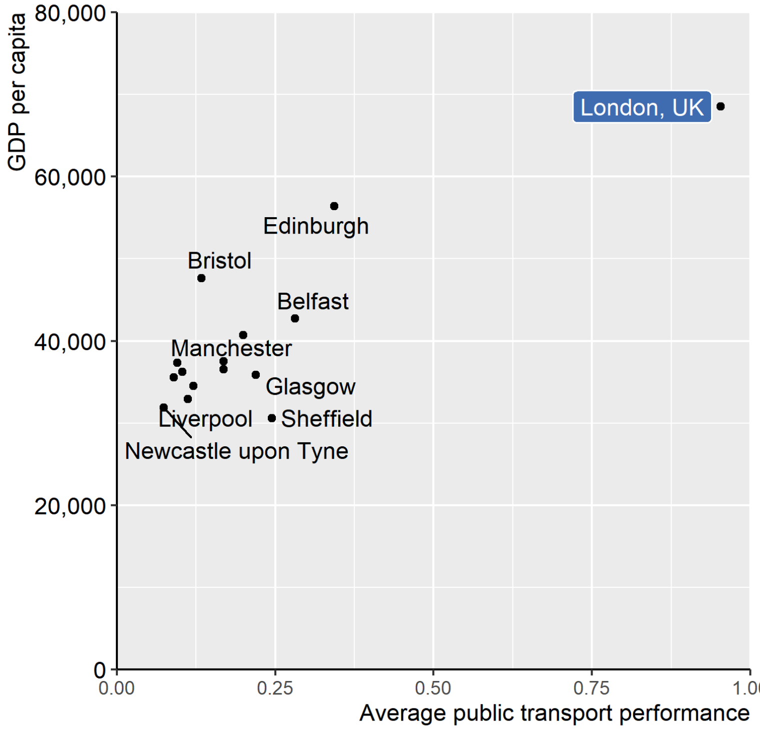
### Electrification of passenger cars

| 2019 UK average share of full-electric new passenger cars: 2% | Benchmarks for new zero-emission passenger car sales: IEA well-below 2°C benchmark: 100% by 2040. Aligned with net zero emissions by 2050: 100% by 2035 at the latest. 2030 cost-effective. | UK target sales of zero emission new passenger cars: 100% by 2035. Ban on sales of new combustion-engine vehicles by 2030. |
|---|---|---|

### Modal shift

Public transport performance data is available for a dozen of UK metropolitan areas. London has higher GDP per capita and better public transport performance than any other UK region. Inhabitants of the metropolitan area of London can on average reach 95% of the population living within 8 km in 30 minutes with public transport. Poorer metropolitan areas tend to have weaker public transport perfomance.

**Figure 11. Public transport performance in 2018**




Benchmark notes: In the IEA's Sustainable Development Scenario, OECD countries (such as the European Union, Japan and the United States) as well as China fully phase out conventional car sales by 2040. This scenario is aligned with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. The UK Committee on Climate Change finds that all new cars and vans should be electric (or use a low carbon alternative such as hydrogen) by 2035 at the latest to reach net zero GHG emission targets by 2050. A more cost-effective date from the point of view of users is 2030.
Figure notes: Figure 11 is based on data from ITF and OECD Statistics. See Box 3.10 in the 2021 *OECD Regional Outlook* for more details. GDP per capita is expressed in USD per head, PPP, constant prices from 2015.

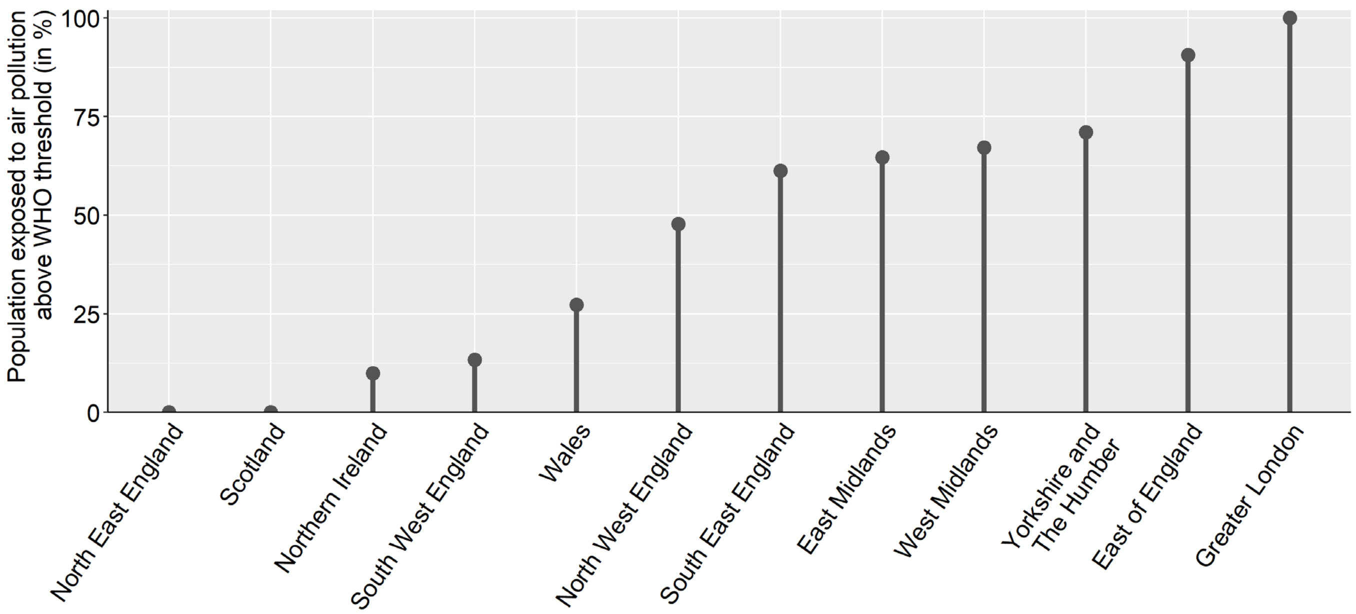
## AIR POLLUTION

**Large regions (TL2)**

| 2019 OECD share of population exposed above the WHO-recommended threshold: 62% | 2019 UK share of population exposed above the WHO-recommended threshold: 55% | WHO-recommended air quality threshold: PM2.5 annual mean concentration < 10 μg/m³ |
|---|---|---|

### Figure 12. Share of population exposed to levels of air pollution above the WHO-recommended threshold

Percentage of population exposed to above 10 μg/m³ PM2.5, large regions (TL2), 2019




Policies towards net-zero greenhouse gas emissions can bring many benefits beyond halting climate change. They include reduced air and noise pollution, reduced traffic congestion, healthier diets, enhanced health due to increased active mobility, health benefits through thermal insulation, and improved water, soil and biodiversity protection. Some are hard to quantify.

In most regions around 50% or more of the population is exposed to small particulate matter air pollution above the WHO threshold. Small particulate matter (PM2.5) is the biggest cause of human mortality induced by air pollution. Major disease effects include stroke, cardiovascular and respiratory disease. Air pollution amplifies respiratory infectious disease such as Covid-19. It affects children the most. It reduces their educational outcomes as well as worker productivity.

Figure notes: Figure 12 is based on data from OECD Statistics.