Regional Outlook 2021 - Country notes

Norway

Progress in the net zero transition

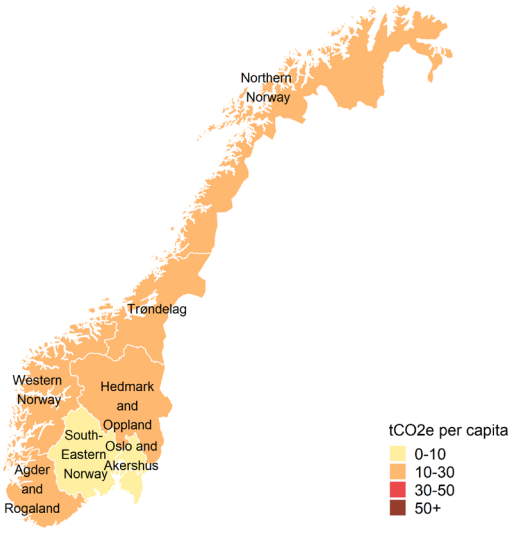
EMISSIONS

2018 OECD average: 11.5 tCO_2e/capita	2018 Norwegian average: 9.7 tCO_2e/capita	Norwegian target: 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



Greenhouse gas (GHG) emissions per capita generated in the majority of Norwegian large regions are above 10 tCO_2e per capita.

Estimated emissions per capita in Northern Norway are more than double those in Oslo and Akershus.

Small regions (TL3)

Figure 2. Contribution to estimated GHG emissions

By type of small region, 2018

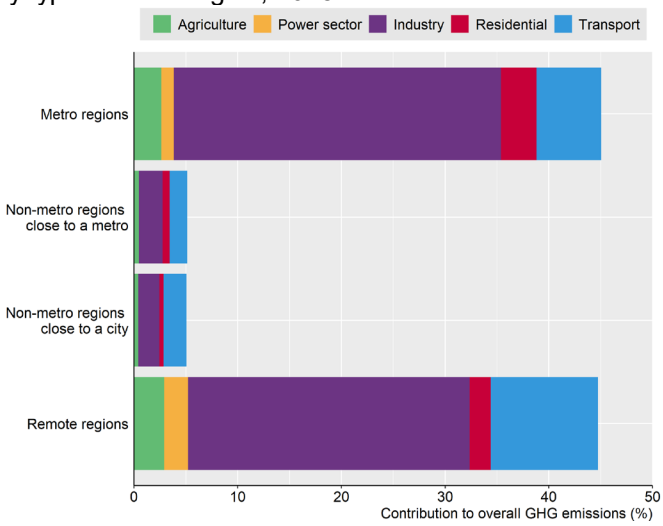
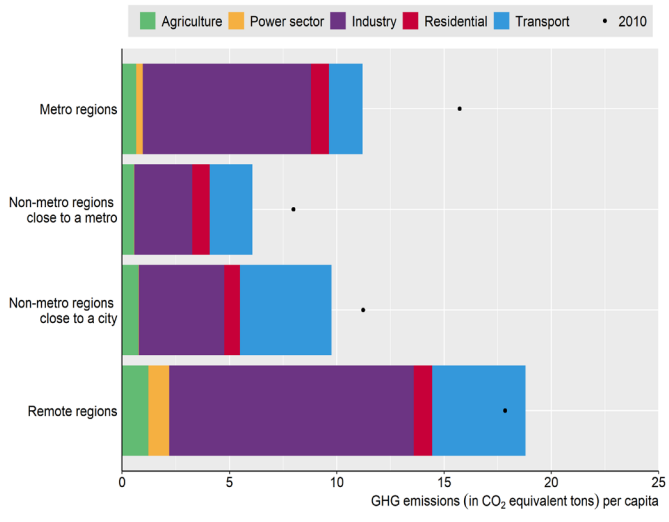


Figure 3. Estimated GHG emissions per capita

By type of small region, 2018



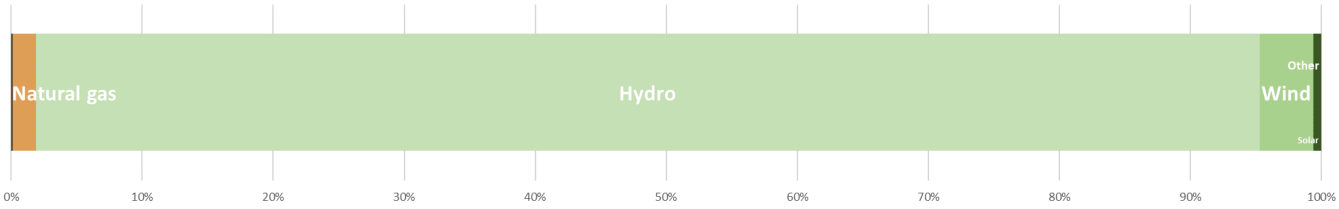
Across the OECD, metropolitan regions emit more greenhouse gases than remote regions. In Norway, this is more balanced. Emissions per capita in Norwegian remote rural regions are higher than in metropolitan regions.

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

Norwegian electricity mix

Figure 4. National electricity generation by energy source in 2019

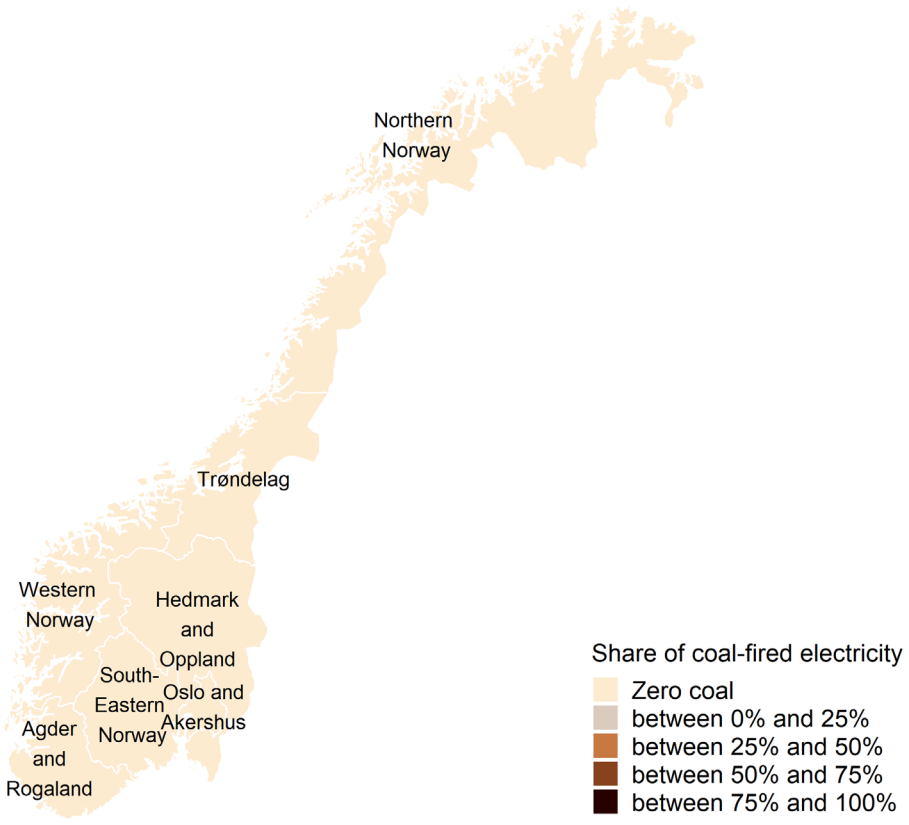


Share of coal-fired electricity generation

2019 OECD average: 23%	2019 Norwegian average: 7%	2030 well below 2°C benchmark for Europe: <2% 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



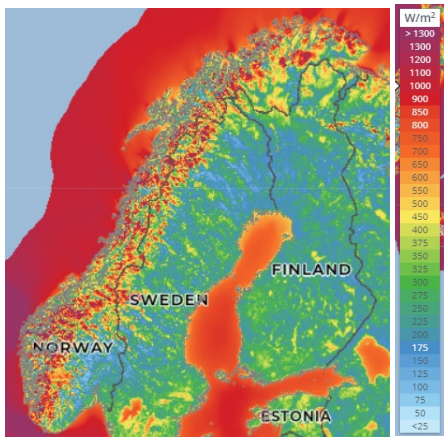
Norwegian regions do not use coal in electricity generation. No new capacity is planned or being build.

Wind power

2019 OECD average: 8%	2019 Norwegian average: 5%	2030 well below 2°C benchmark for Europe: >19%

Figure 6. Wind power potential

Mean wind power density (W/m²)



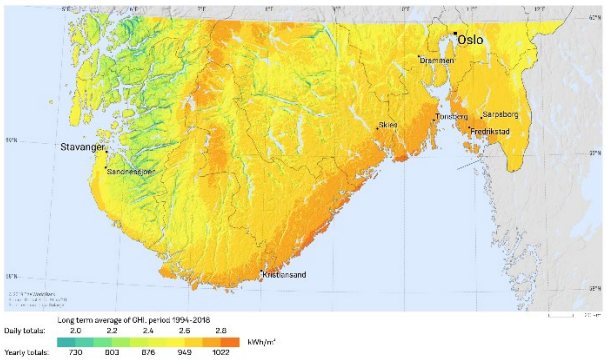
Source: Map produced by The Global Wind Atlas

Solar power

2019 OECD average: 3%	2019 Norwegian average: 2%	2030 well below 2°C benchmark for Europe: >15%

Figure 7. Southern Norway solar power potential

Global horizontal irradiation (kWh/m²)



Source: Map produced by The Global Solar Atlas

Although wind and solar shares are low, Norway has one of the largest shares of zero-emission electricity generation due to hydropower. Wind power density is very high in many onshore and offshore locations.

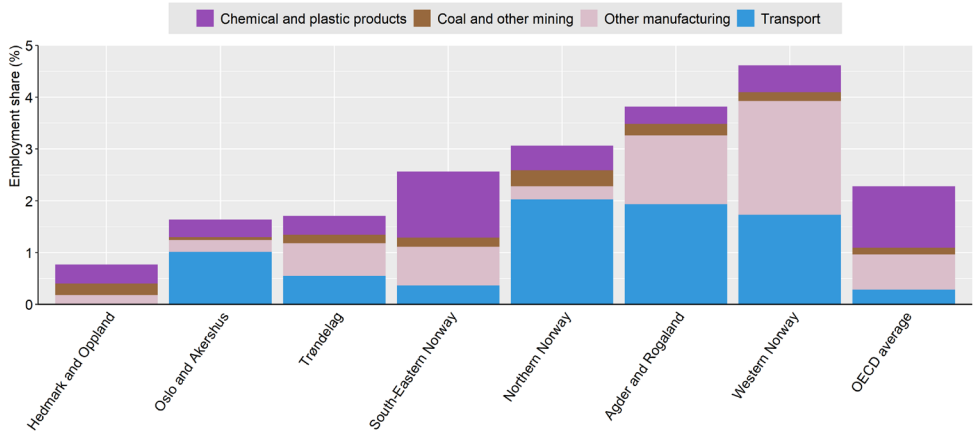
Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. 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). Figure 5 shows 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 6 and 7 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 8. 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

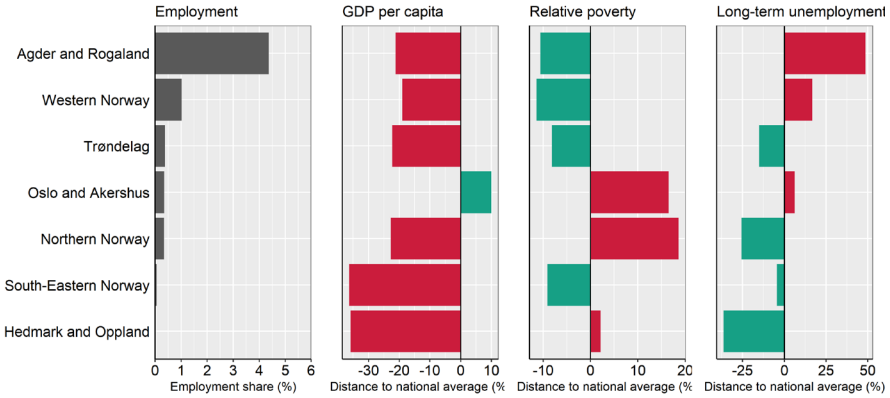


There will be both employment gains and losses due to the transition to net zero greenhouse gas emissions. They may not be distributed in the same way across regions. Employment in sectors that may be subject to some job loss by 2040 as a result of policies to reduce emissions in line with the climate objectives in the Paris Agreement amounts to less than 5% in all Norwegian regions. A majority of Norwegian regions have more employment in these sectors than the OECD average. Western Norway and Adger and Rogaland have a larger share, largely driven by transport and other manufacturing. 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.

Oil & Gas

Figure 9. Regions with employment in the extraction of crude petroleum, natural gas and manufacture of coke and refined petroleum products, and regional socio-economic indicators

Large regions (TL2) with employment in selected sector, 2017



While activities related to oil and gas extraction may not be subject to employment loss across all OECD countries, there will likely be regional impacts as the shares of both fossil fuels in the OECD energy supply mix will decrease according to Paris aligned scenarios. In Europe, oil and gas supply will decrease by 53% and 26% by 2040, respectively, in a well below 2 degrees scenario.[1] Employment in the sector is particularly strong in Adger and Rogaland. The transition to net-zero greenhouse gas emissions needs to be just, avoiding social hardship. Norwegian regions with the largest shares of employment in the oil and gas extraction sector have lower poverty risk but higher long-term unemployment and lower GDP per capita.

Reference: [1] IEA. (2020). World Energy Outlook 2020.

Figure notes: Figures 8 and 9 are based on data from OECD Statistics. In Figure 8 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. In figure 9, poverty risk is assessed from individuals' survey respondents indicating there have been times in the past 12 months when they did not have enough money to buy food that they or their family needed. Long-term unemployment is defined as unemployed for 12 months or more.

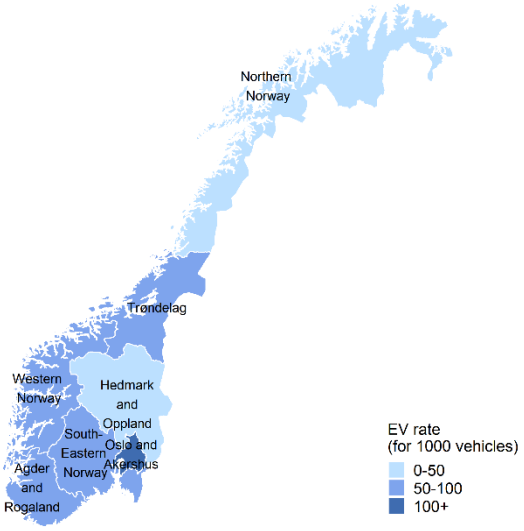
TRANSPORT

Electrification of passenger cars

2019 Norwegian average rate of full-electric road motor vehicles stock: 71 per 1000 vehicles	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.	Norwegian target sales of zero emission new passenger cars and light vans: 100% by 2025

Figure 10. Full-electric road motor vehicles stock

Per 1000 vehicles, large regions (TL2), 2018



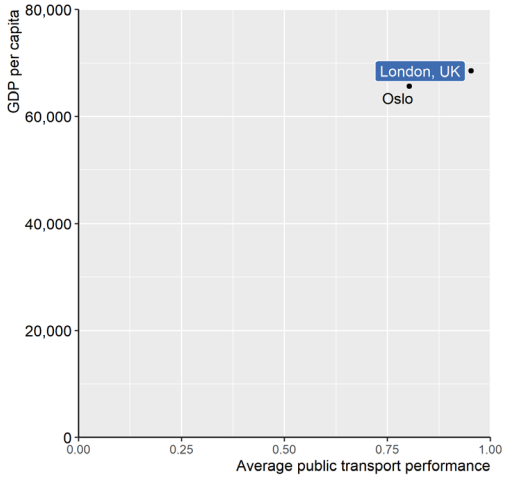
Norway has the highest rate of full-electric vehicles among OECD countries (for which data is available). Oslo and Akershus is the only large OECD region with over 100 full-electric vehicles per 100 vehicles in the current road motor vehicles stock.

Countries with a net zero target by 2050 will need to phase out sales of new conventional cars by 2035 at the latest (considering cars have an average useful life of 15 years). A phase-out by 2030 is more cost-effective.

Modal shift

Oslo has both high GDP per capita and good public transport performance. For comparison, London (UK) has among the highest public transport performance scores. Inhabitants of the metropolitan area of London can on average reach 95% of the population living within 8 km in 30 minutes by public transport.

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 10 is based on data from OECD Statistics. 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.

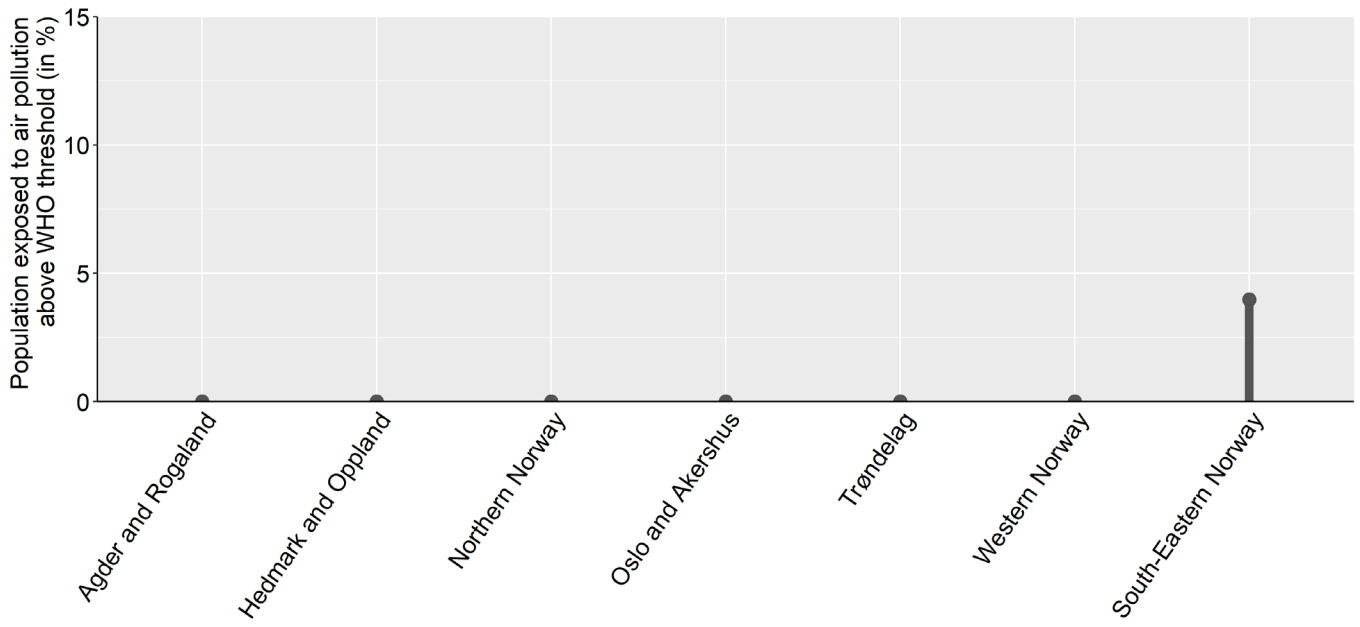
AIR POLLUTION

Large regions (TL2)

2019 OECD share of population exposed above the WHO-recommended threshold: 62%	2019 Norwegian share of population exposed above the WHO-recommended threshold: 1%	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.

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.