Regional Outlook 2021 - Country notes

Hungary

Progress in the net zero transition

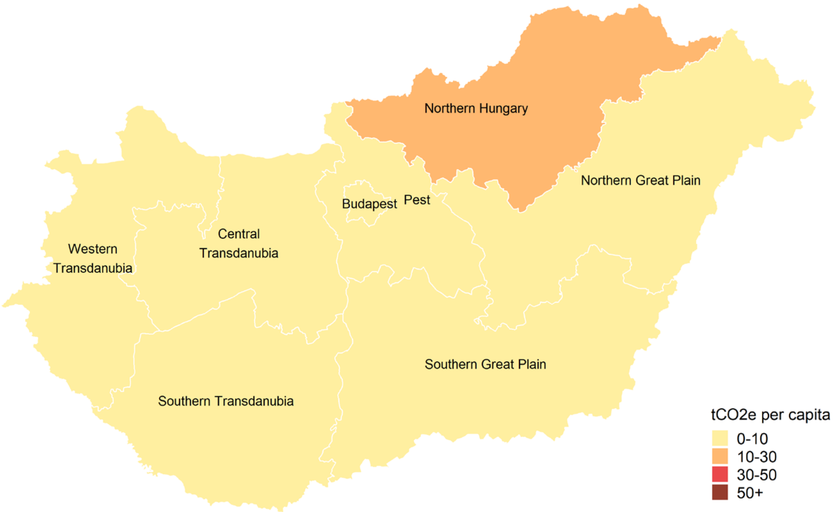
EMISSIONS

2018 OECD average:	2018 Hungarian average:	Hungarian target:
11.5 tCO_2e/capita	**6.5 tCO_2e/capita**	**net zero emissions by 2050**

Large regions (TL2)

Figure 1. Regional greenhouse gas emissions per capita

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



Greenhouse gas (GHG) emissions per capita generated in most Hungarian large regions are below 10 tCO_2e per capita. Only Northern Hungary has higher emissions per capita than the OECD average of 11.5 tCO_2e.

Estimated emissions per capita in Northern Hungary are almost three times higher than in Budapest.

Small regions (TL3)

Figure 2. Contribution to estimated GHG emissions

By type of small region, 2018

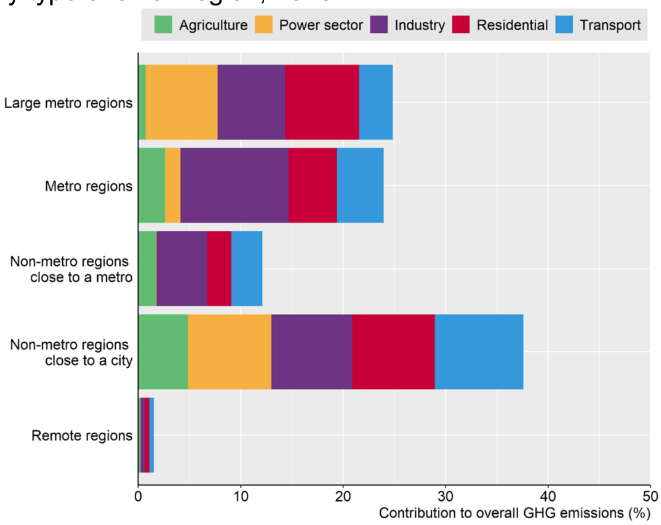
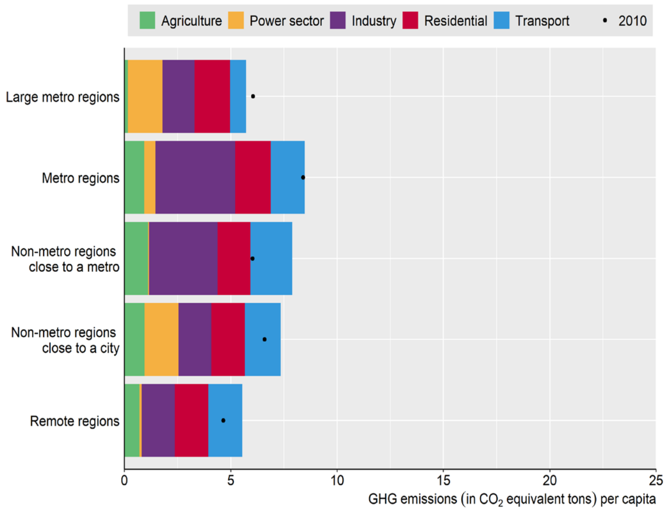


Figure 3. Estimated GHG emissions per capita

By type of small region, 2018



Across the OECD, metropolitan regions emit more greenhouse gases than remote regions. In Hungary, the same pattern can be observed. Emissions per capita in Hungarian remote rural regions are comparable to those in metropolitan regions. By contrast, in the average OECD country the emissions per capita in remote regions are higher.

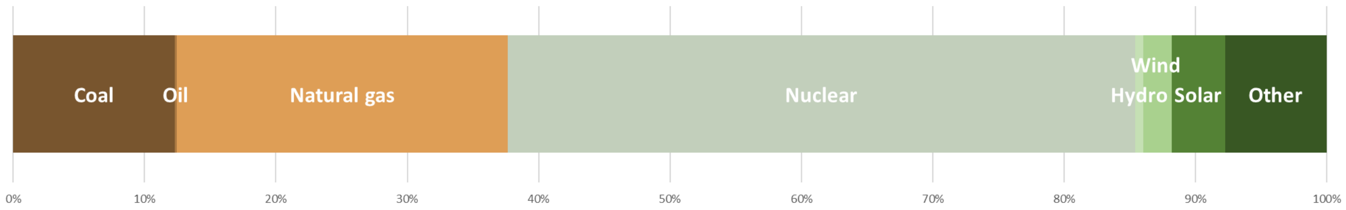
Target notes: Emissions targets included in the Net Zero Tracker database from ECIU before January 25, 2021 are considered.

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

Hungarian electricity mix

Figure 4. National electricity generation by energy source in 2019

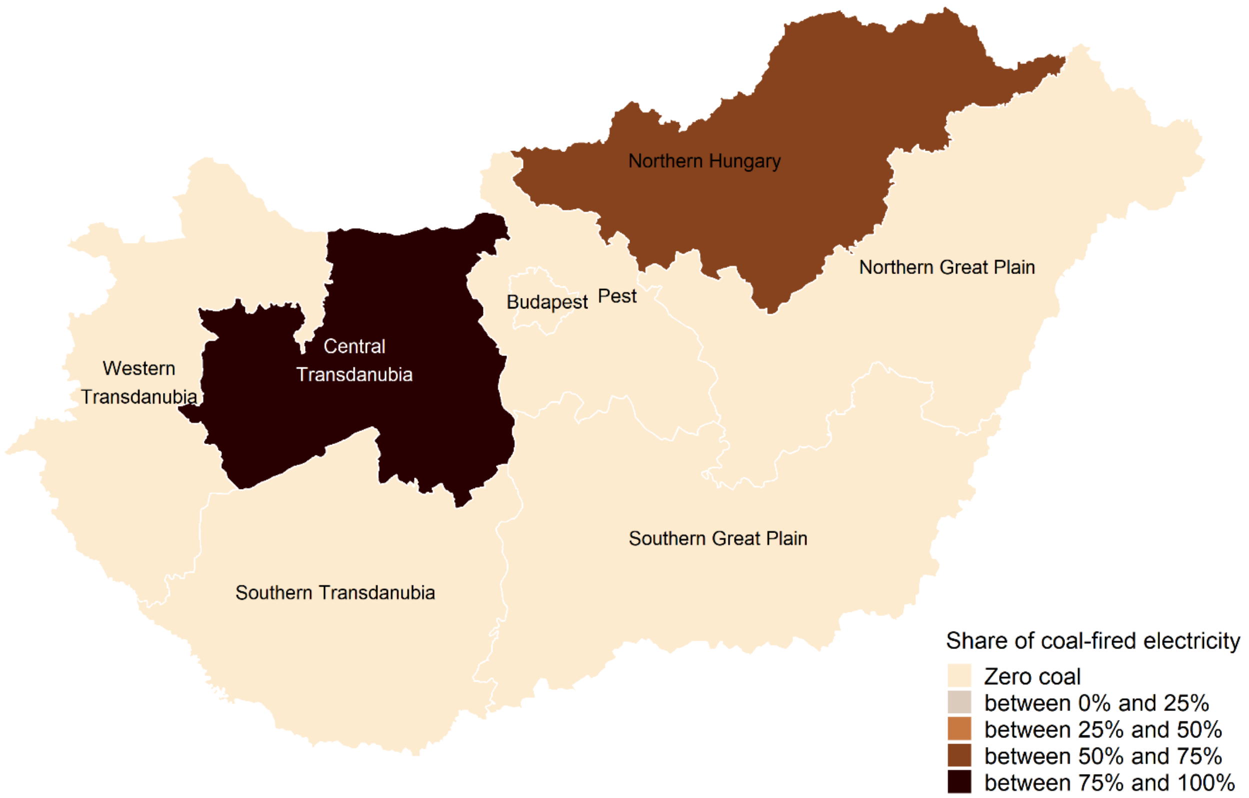


Share of coal-fired electricity generation

2019 OECD average: 23%	2019 Hungarian average: 12%	2030 well below 2°C benchmark for the EU: <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



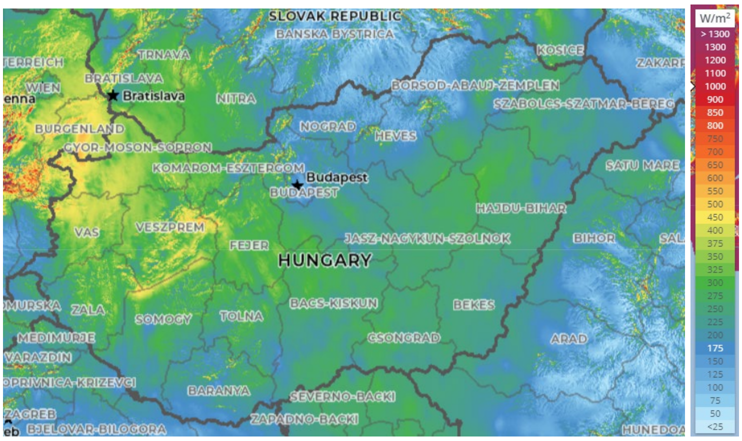
Most regions do not use coal in electricity generation. Some regions still relied largely on coal in 2017. However, electricity generated from coal fell by 18% between 2017 and 2019 across all Hungarian regions. For example, Central Transdanubia produced electricity exclusively from coal in 2017 but some coal-based power plants in Central Transdanubia were closed in recent years. No new capacity is planned or being built.

Wind power

2019 OECD average: 8%	2019 Hungarian average: 2%	2030 well below 2°C benchmark for the EU: >29%

Figure 6. Wind power potential

Mean wind power density (W/m²)



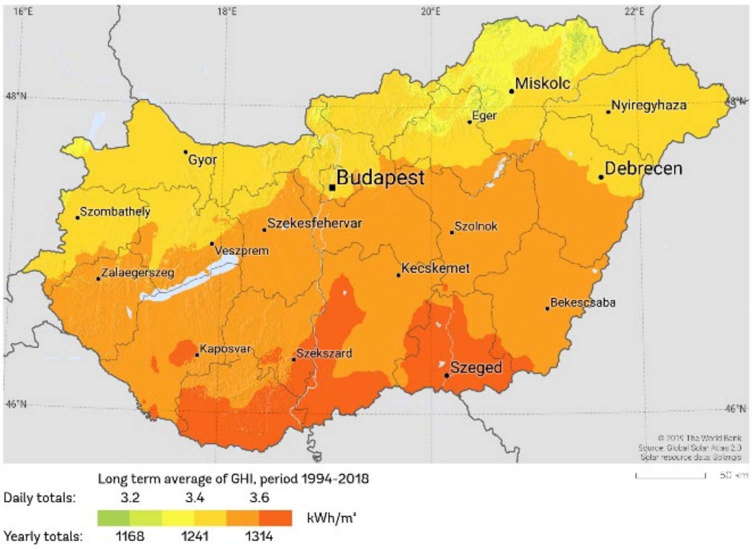
Source: Map produced by The Global Wind Atlas

Solar power

2019 OECD average: 3%	2019 Hungarian average: 4%	2030 well below 2°C benchmark for the EU: >14%

Figure 7. Solar power potential

Global horizontal irradiation (kWh/m²)



Source: Map produced by The Global Solar Atlas

The national average shares are still far below the 2030 benchmarks. However, Hungary has a large share of zero emissions electricity generation through nuclear power. Wind power density is higher in western regions, solar power potential is higher in the south.

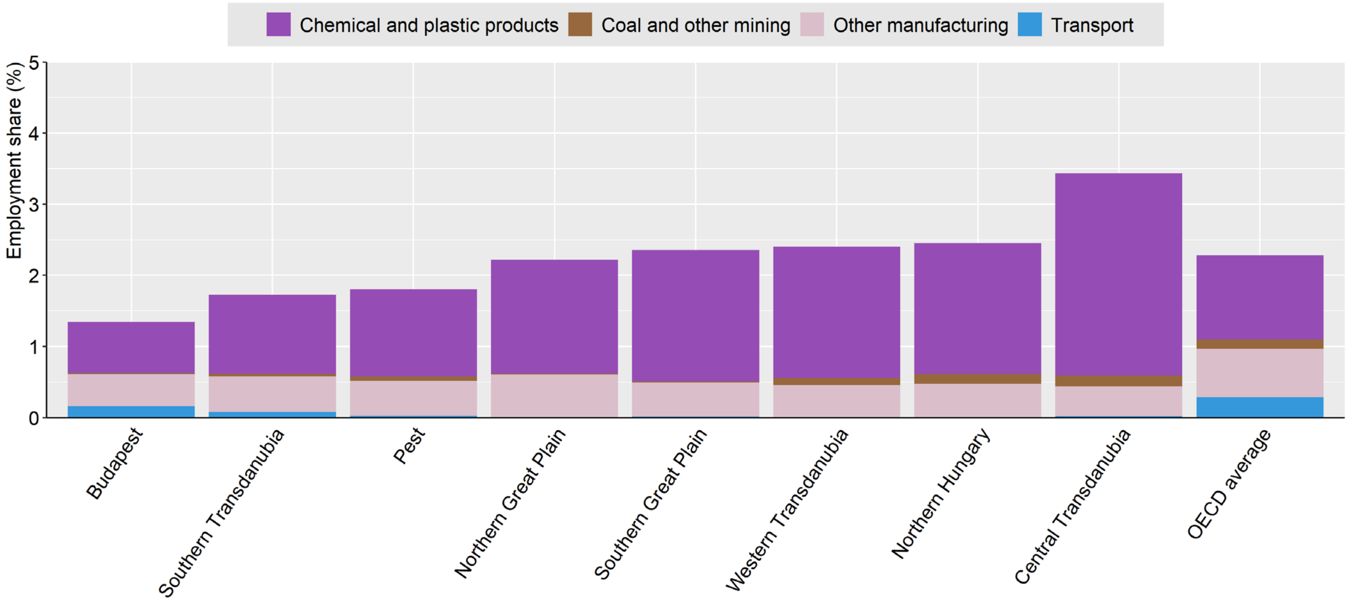
Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. 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 3.5% in all Hungarian regions. Half of Hungarian regions have less employment in these sectors than the OECD average. Central Transdanubia has the highest 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 8 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 Hungarian average share of full-electric new passenger car sales: 1%	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.	Hungarian target sales of zero emission new passenger cars: No full phase out date of internal combustion cars yet

Figure 9. Full-electric road motor vehicles stock

For 1000 vehicles, large regions (TL2), 2018

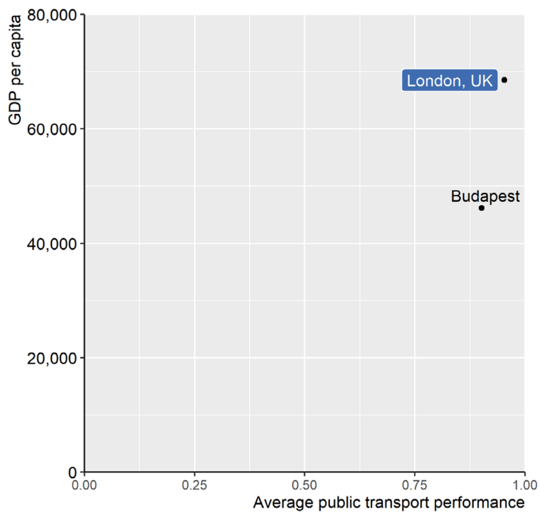
Most Hungarian regions have less than one full-electric vehicle per 1000 road motor vehicles. Budapest has, with about 5 full-electric vehicles per 1000 vehicles, the largest share of full-electric vehicles in its road motor vehicles stock. Pest follows with around two full-electric vehicles per 1000 road motor vehicles.

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

Budapest has relatively 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 10. 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 9 is based on data from OECD Statistics. Figure 10 is based on data from ITF and OECD Statistocs. 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.

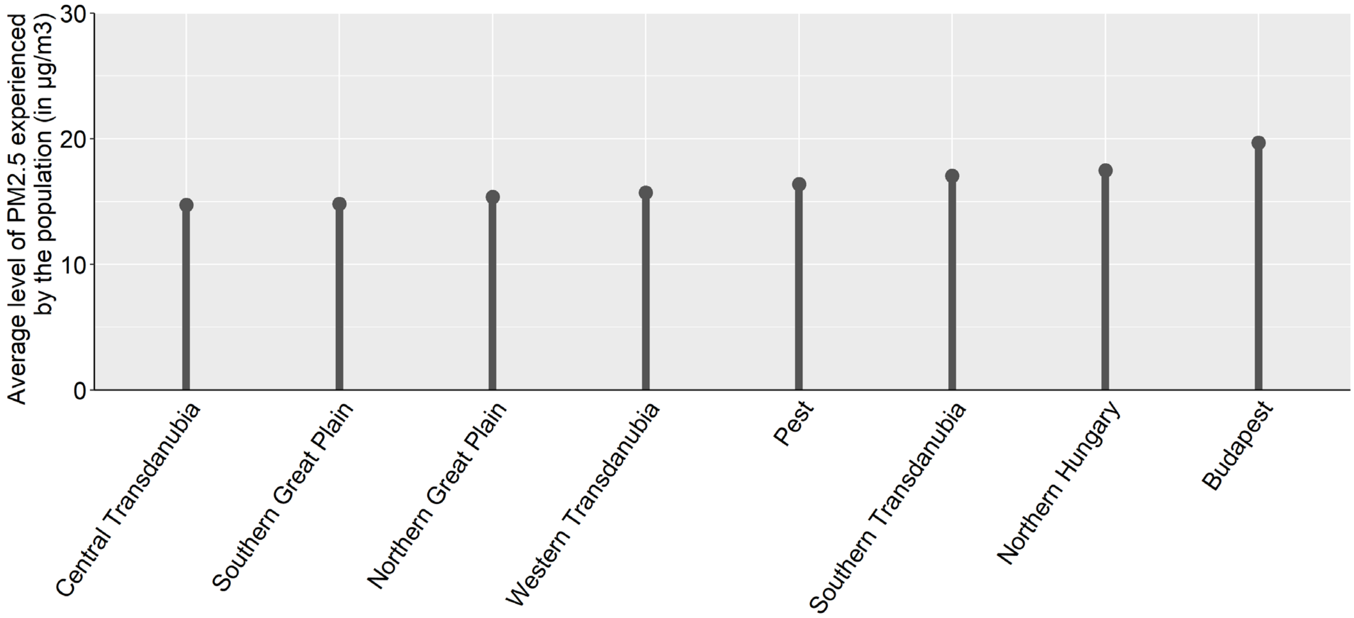
AIR POLLUTION

Large regions (TL2)

2019 OECD share of population exposed above the WHO-recommended threshold: 62%	2019 Hungarian share of population exposed above the WHO-recommended threshold: 100%	WHO-recommended air quality threshold: PM2.5 annual mean concentration < 10 µg/m³

Figure 11. Average level of air pollution in PM2.5 experienced by the population

In µg/m³, 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.

In all regions the population is on average exposed to small particulate matter pollution above the maximum level recommended by the World Health Organisation.

Figure notes: Figure 11 is based on data from OECD Statistics.