Regional Outlook 2021 - Country notes

Japan

Progress in the net zero transition

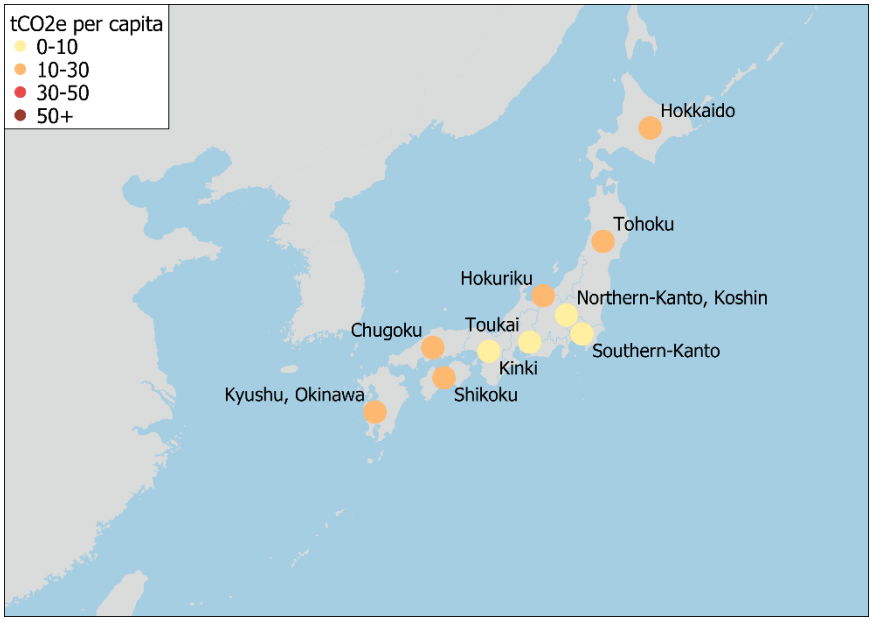
EMISSIONS

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



Greenhouse gas (GHG) emissions per capita generated in over half of Japanese large regions are below the OECD average. Those of Chugoku, Hokkaido, Shikoku and Kyushu, Okinawa are higher.

Estimated emissions per capita in Shikoku are more than three times higher than in Northern-Kanto, Koshin.

Small regions (TL3)

Figure 2. Contribution to estimated GHG emissions

By type of small region, 2018

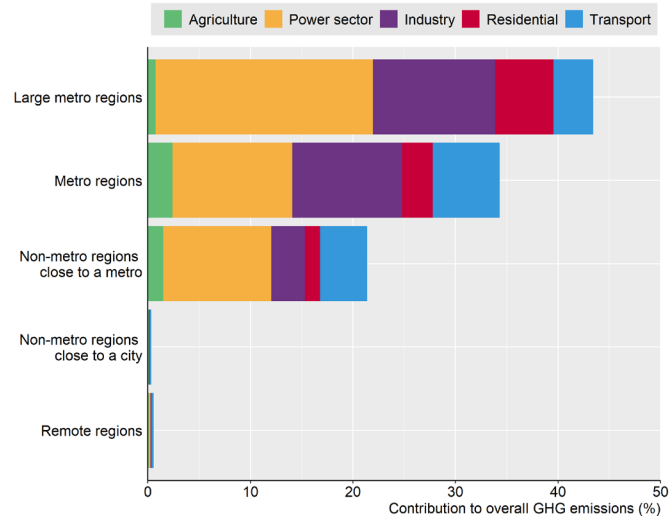
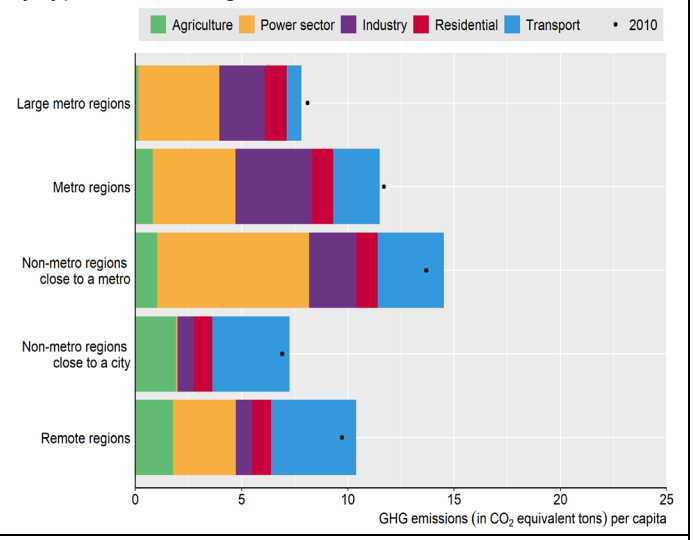


Figure 3. Estimated GHG emissions per capita

By type of small region, 2018



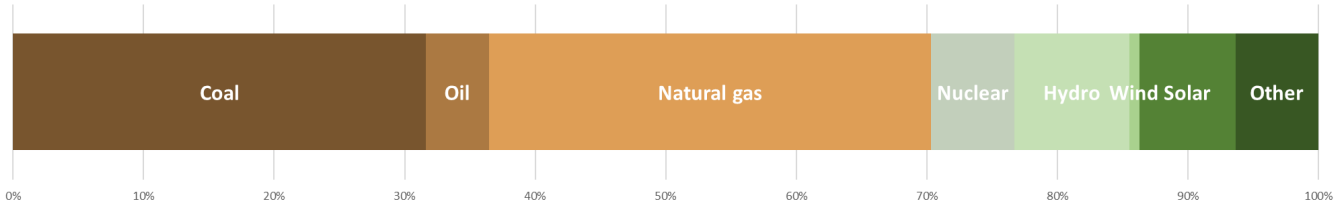
Across the OECD, metropolitan regions emit more greenhouse gases than remote regions. In Japan, this pattern is even stronger – in part because Japan has very few rural regions according to the OECD typology. Emissions per capita in Japanese remote rural regions are comparable to those in metropolitan 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

Japanese electricity mix

Figure 4. National electricity generation by energy source in 2019

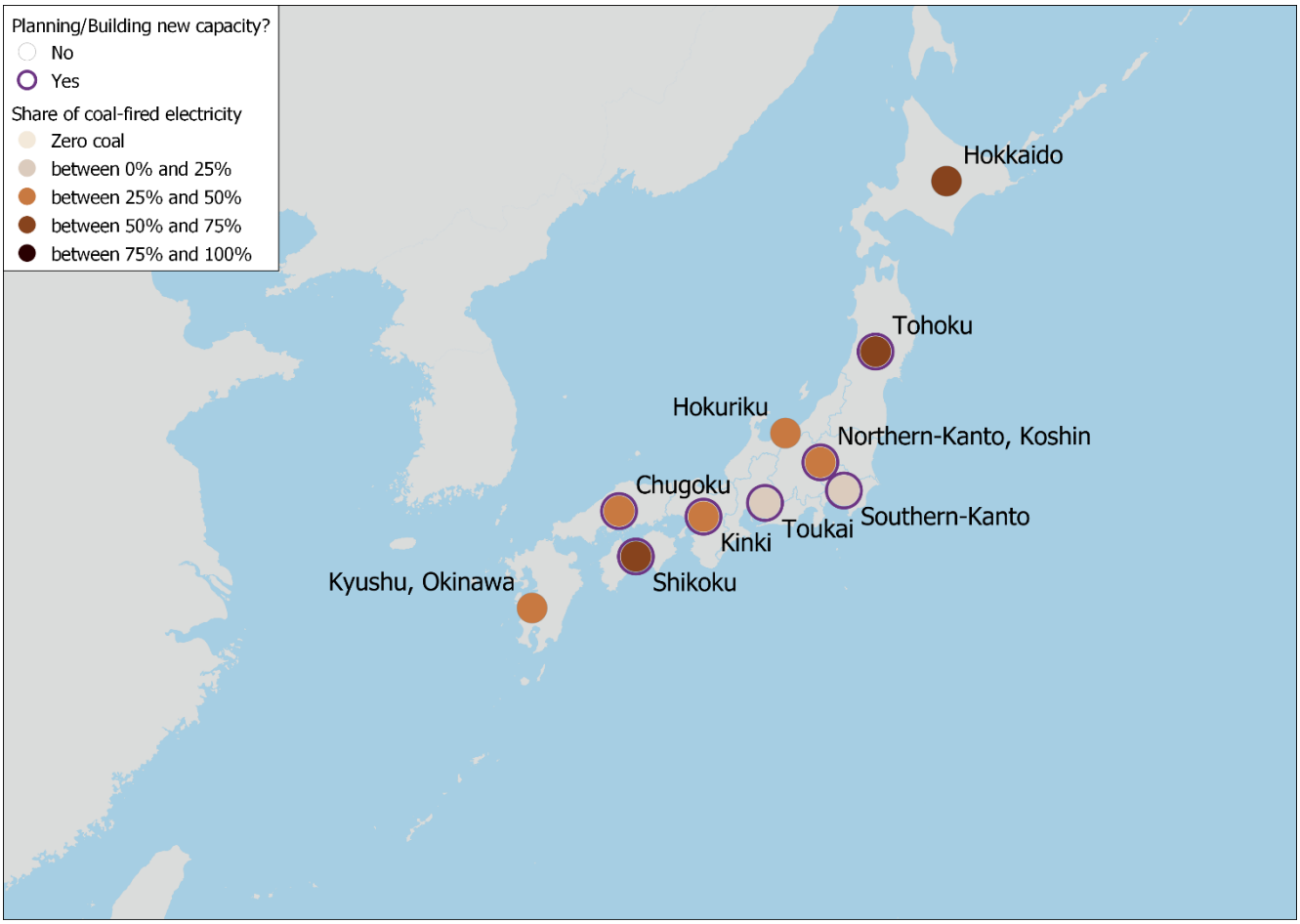


Share of coal-fired electricity generation

2019 OECD average: 23%	**2019 Japanese average: 32%**	**2030 well below 2°C benchmark for Japan: <4%** **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

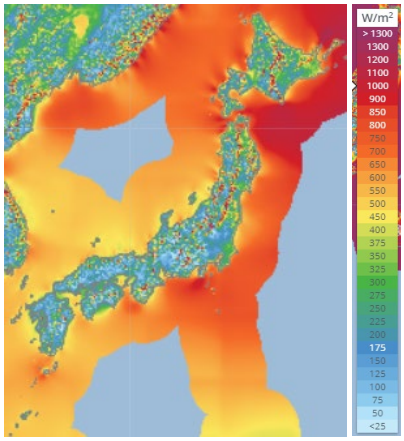


Most Japanese regions use coal in electricity generation and are still planning or building new capacity. For example, Shikoku, Tohoku and Hokkaido used coal for over 50% of electricity generation in 2017. Seeing that OECD regions should be phasing out coal by 2030 and the average lifespan of a coal power plant is 40 years, adding such capacity would expose regions to stranded asset risks, resulting in financial market risks and economic costs.

Wind power		
2019 OECD average: 8%	**2019 Japanese average: 1%**	**2030 well below 2°C benchmark for Japan: >11%**

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 Japanese average: 7%**	**2030 well below 2°C benchmark for Japan: >5%**

The national average wind share is far below the 2030 benchmark. Wind power density is highest offshore.

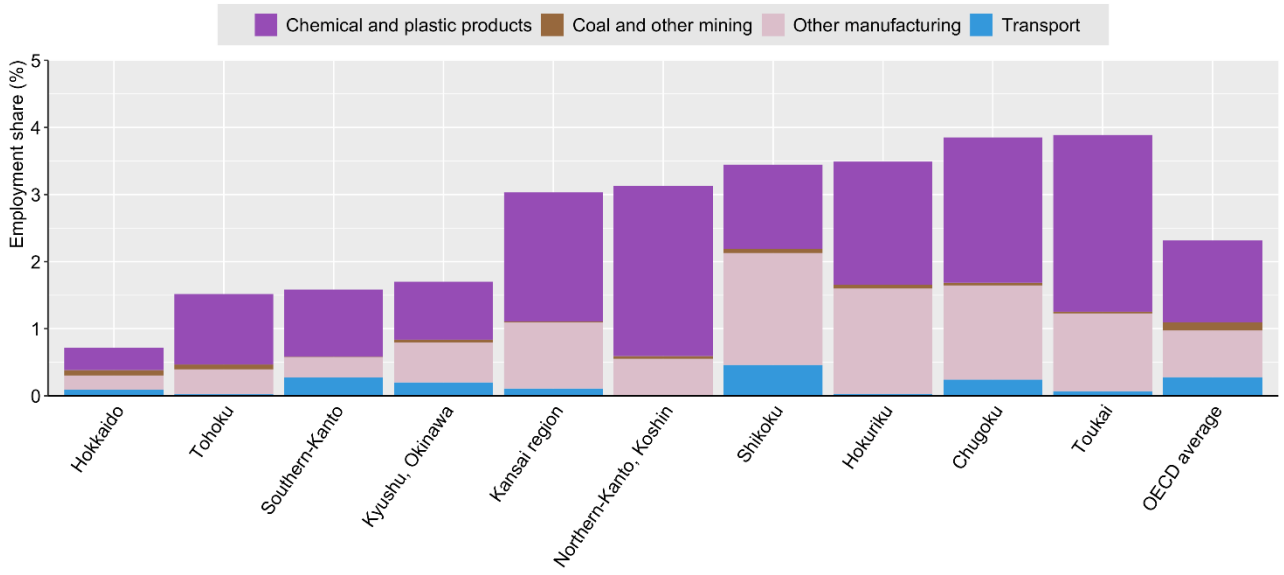
Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. 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. Figure 5 also includes coal plans (defined as new capacity announced, pre-permit, permit or in construction) from the Global Coal Plant Tracker published by Global Energy Monitor. 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 4% in all Japanese regions. The majority of Japanese regions have more employment in these sectors than the OECD average. Chugoku and Toukai 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 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.

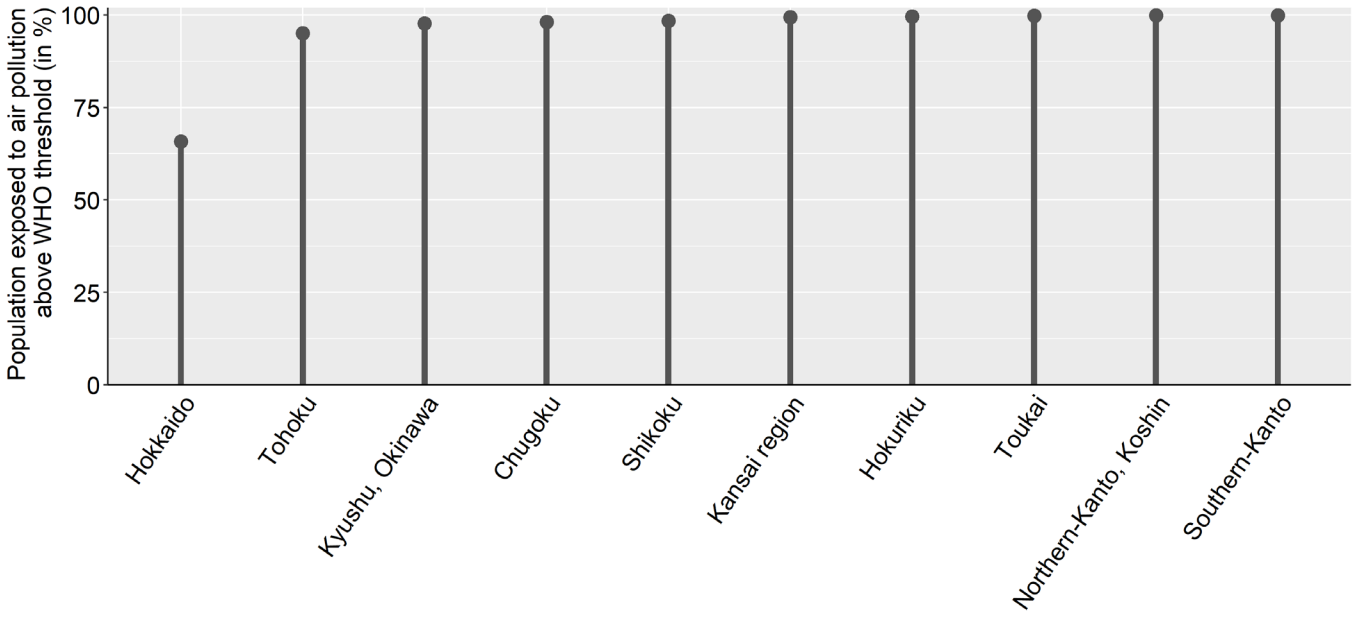
AIR POLLUTION

Large regions (TL2)

2019 OECD share of population exposed above the WHO-recommended threshold: 62%	2019 Japanese share of population exposed above the WHO-recommended threshold: 98%	WHO-recommended air quality threshold: PM2.5 annual mean concentration < 10 µg/m³

Figure 9. 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 close to 100% of the population is exposed to 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 9 is based on data from OECD Statistics.