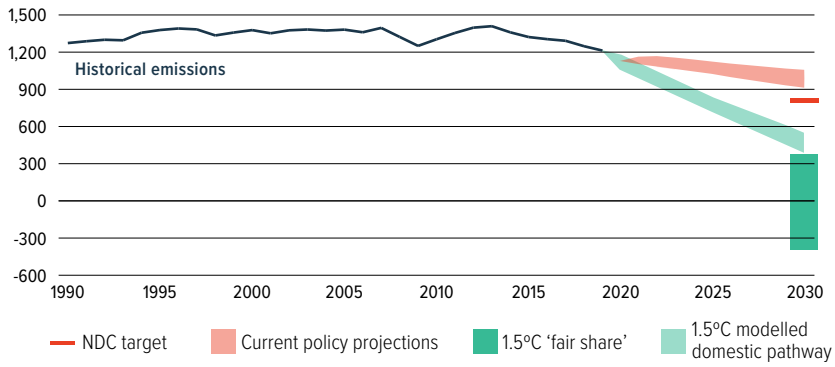
JAPAN

Climate Transparency

CLIMATE TRANSPARENCY REPORT: COMPARING G20 CLIMATE ACTION 2022

NOT ON TRACK FOR A 1.5°C WORLD

1.5°C compatible emissions pathway ($MtCO_2e$/year)[1]

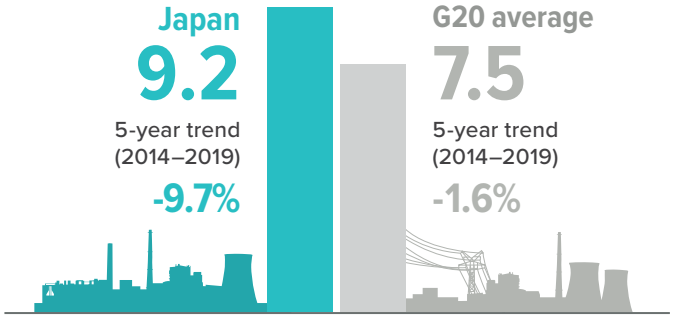


Japan's updated NDC target would decrease emissions 36% below 1990 levels, or to approximately 813 $MtCO_2e$ (excl. LULUCF). To keep below the 1.5°C temperature limit, analysis by the 1.5°C Pathways Explorer shows that Japan's 2030 emissions would need to be around 475 $MtCO_2e$ by 2030, leaving an ambition gap of about 338 $MtCO_2e$. A 1.5°C 'fair share' contribution by Japan requires it to strengthen its domestic target and provide substantial support for emissions reductions in developing countries.

Climate Action Tracker, 2022a; 2022b; Climate Analytics, 2022; Gütschow et al., 2021

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS ABOVE G20 AVERAGE

tCO_2e/capita[2] in 2019



Japan's per capita emissions are 1.23 times the G20 average. Total per capita emissions have decreased by 9.7% from 2014 to 2019.

Gütschow, et al., 2021; World Bank, 2022

RECENT DEVELOPMENTS

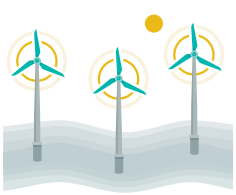
In October 2021 Japan updated its NDC emissions reduction target to 46% below 2013 levels by 2030, a significant step forward from its previous NDC target of 26%.

The government approved a new Strategic Energy Plan that still envisions a 19% share of unabated coal for Japan's 2030 power generation mix.

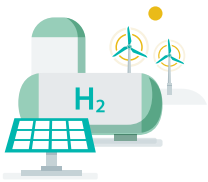
In 2022, the government revised several energy laws to promote Zero Energy Houses/Buildings, and a "non-fossil-fuel" energy transition; just some of the measures necessary to reduce its emissions.

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

Given its large contribution to the country's overall emissions, **phasing out unabated coal by 2030** would be a critical step for Japan to be more ambitious than the updated NDC.



Further **developing renewable energy, particularly offshore wind**, would allow Japan to decarbonise the power sector, produce green hydrogen, and reduce its reliance on overseas fossil fuels.



A decarbonised power sector would facilitate emissions reductions in the industry, buildings and transport sectors.

Contents

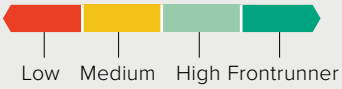
We unpack Japan's progress and highlight key opportunities to enhance climate action across:

Legend

Trends show developments over the past five years for which data are available. A red exclamation mark indicates negative trends from a climate protection perspective.

Decarbonisation Ratings[3] assess a country's performance compared to other G20 Members. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

Policy Ratings[4] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



SOCIO-ECONOMIC CONTEXT

Human Development Index

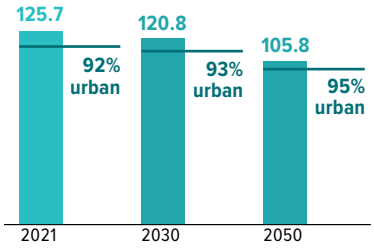
The Human Development Index (HDI) reflects life expectancy, level of education, and per capita income. Japan ranks very high.

0.92 very high

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

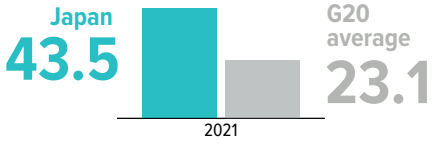


Japan's population is projected to decrease by 16% by 2050, and become more urbanised. Coupled with the fact that the country's population is rapidly ageing, heat-related climate impacts in urban areas are of particular concern.

United Nations, 2018; World Bank, 2022

Gross Domestic Product (GDP) per capita

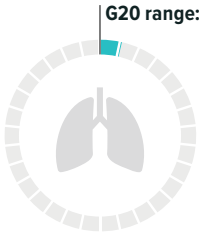
(thousand PPP constant 2015 international $ per person) in 2021



World Bank, 2021

Death rate attributable to ambient air pollution

(death rate per 1,000 population per year, age standardised) in 2019



0.1
per 1,000 people per year

Over 42,600 people die in Japan every year due to stroke, heart disease, lung cancer and chronic respiratory diseases as a result of outdoor air pollution. This is one of the lower levels in the G20.

Institute for Health Metrics and Evaluation, 2020

A JUST TRANSITION

In its updated Long-Term Strategy (LTS), submitted to the UNFCCC in October 2021, Japan lists the "just transition of the workforce" as one of six key pillars to achieve its goal of carbon neutrality by 2050. Recent assessments of Just Transition point out that the location of existing fossil fuel plants and carbon-intensive industrial sites differ from those with the greatest renewable energy potential. As such, careful consideration must be given to both the retraining and relocation of workers. On the other hand, the need for upgrading infrastructure, retro-fitting housing, and introducing public health measures provides opportunities for those areas which will need to transition away from carbon-intensive industry to do so in a just and equitable manner.

Chapman and Okushima, 2019; The Government of Japan, 2021; Kuriyama, 2019; Mabon et al., 2022

ADAPTATION

Paris Agreement: Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.

Due to dense urbanisation along its rivers and coastline, **Japan is particularly vulnerable to flooding**. Recent years have seen extreme flooding events result in loss of life and significant economic damages.

Japanese energy infrastructure is already and increasingly at risk of damage from floods caused by heavy precipitation and typhoons. In 2018, and again in 2019, a million households were left without power following typhoons.

Extreme heat is a major concern for Japan's ageing and urbanised population. Increasing temperatures also create suitable conditions for the spread of diseases such as Dengue, Zika, and Malaria.

ADAPTATION NEEDS

Impacts of a changing climate

Exposure to warming

0.8°C
Higher

Between 2017 to 2021, the average summer temperatures experienced by people in Japan were 0.8°C higher than the 1986–2005 average global mean temperature increase of 0.3°C.

Changes in the ability to work due to exposure to excessive heat

1.1bn **Labour hours lost**
16% **decrease**

In 2021, heat exposure in Japan led to the loss of 1.1 billion potential labour hours, a 16% decrease from 1990–1999.

Loss of earnings from heat-related labour capacity reduction

19.4bn **Loss in labour capacity (USD)**
0.38% **of GDP**

Extreme heat can make it unbearable or even dangerous to work in a range of economically important sectors. The potential income loss in 2021 – in the service industry, manufacturing, agriculture, and construction sectors – from labour capacity reduction due to extreme heat was USD 19.4bn in 2021, or 0.38% of GDP

Romanello et al., 2022; World Meteorological Organization, 2022

Exposure to future impacts at 1.5°C warming and higher

Different levels of global warming are projected to have a wide range of impacts of varying severity across the world. The percentages at 1.5°C are calculated as an increase/decrease from the reference period of 1986–2006. Using the projected impacts at 1.5°C of warming as a reference, we compare impacts that may occur at higher levels of warming.

Climatic	**At 2°C**	**At 2.5°C**	**At 3°C**
Local **precipitation**: +1.4% at 1.5°C warming	2.9 times	4 times	3.9 times
Local **snowfall**: -22.6% at 1.5°C warming	1.4 times	1.7 times	2 times

Average local precipitation is projected to increase by 1.4% if global temperature rises by up to 1.5°C above the average for the 1986–2006 reference period. At 2.5°C of warming, precipitation is projected to increase by 4 times the increase at 1.5°C of warming. Local snowfall is expected to decrease under a 1.5°C scenario by 22.6% from the average for the reference period of 1986–2006. At 3°C of warming, snowfall is projected to decrease twice as much.

Fresh water	**At 2°C**	**At 2.5°C**	**At 3°C**
Surface run-off: +0.2% at 1.5°C warming	10.8 times	18.4 times	13.1 times
River discharge: -0.4% at 1.5°C warming	-3.8 times	-7.1 times	-3.2 times
Total **soil moisture content:** -0.6% at 1.5°C warming	1.7 times	2.1 times	4 times

Surface run-off is projected to increase by 0.2% above the reference period of 1986–2006, at up to 1.5˚C of warming, and 13 times that level at 3°C. Total soil moisture is projected to decrease by 0.6% from the reference period, up to 1.5°C. At 3°C, this loss of moisture would be 4 times as great. While river discharge is projected to fluctuate with greater levels of warming, making forward planning ever more challenging, the loss of soil moisture content is likely to increase steadily.

Hazards	At 2°C	At 2.5°C	At 3°C
Number of people annually exposed to **heatwaves:** 1,634,318 at 1.5°C warming	2.5 times	3.9 times	5.9 times
Number of people annually exposed to **wildfires:** 32 at 1.5°C warming	50.1 times	404.8 times	762.4 times

At 1.5°C of warming, it is projected that approximately 1.6 million people annually would be exposed to heatwaves in Japan. The people exposed to heatwaves is projected to increase nearly 4 times at 2.5°C warming, and nearly 6 times that at 3°C warming. While under 1.5°C of warming few people are expected to be exposed to wildfires in Japan, the number is projected to escalate dramatically, and not in a linear fashion either, as temperatures rise. Under 3°C warming, thousands of people could be exposed to wildfires.

Economic	At 2°C	At 2.5°C	At 3°C
Annual expected damage from **typhoons:** +4.8% at 1.5°C warming	2.1 times	2.9 times	3.4 times
Annual expected damage from **river flood:** +135.5% at 1.5°C warming	0.4 times	0.6 times	5 times
Labour productivity due to heat stress: -1.7% at 1.5°C warming	1.6 times	2.2 times	3 times

The annual expected damage from river flooding is expected to increase by 136% from the reference period average, at 1.5°C of warming, while that from typhoons would increase by almost 5%. Damage from such events would increase further with greater warming. Labour productivity is projected to decline by 1.7% from the 1986–2006 average, under 1.5°C of warming, and this decrease would be 3 times larger at 3°C of warming.

For further assessments of impacts under different warming scenarios, and a detailed explanation of the methodology, go to https://climate-impact-explorer.climateanalytics.org

Climate Analytics, 2021

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)												Monitoring & evaluation process
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
Climate Change Adaptation Plan	2018	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Renewed every 5 years and informed by climate change impact assessments from the Ministry of Environment

Mainstreaming adaptation in disaster risk reduction, agriculture and biodiversity conservation is one of key principles of the Adaptation Plan. Basic measures for the finance and insurance sector are also included in the Plan.

Nationally Determined Contribution (NDC): Adaptation

TARGETS

Not mentioned

ACTIONS

Not mentioned

MITIGATION

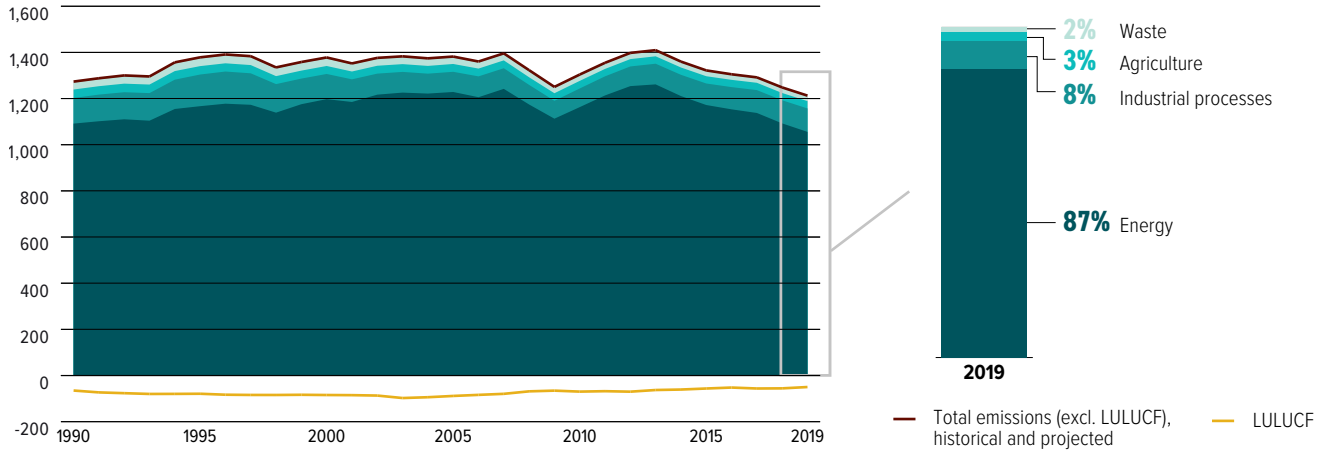
Paris Agreement: Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.

EMISSIONS OVERVIEW

Japan's total **greenhouse gas emissions (excl. LULUCF) have decreased by 4.8% (1990–2019)**. Over the same period, its total methane emissions (excl. LULUCF) have decreased by 35%.

GHG emissions across sectors[5]

Total sectoral GHG emissions ($MtCO_2e$/year)

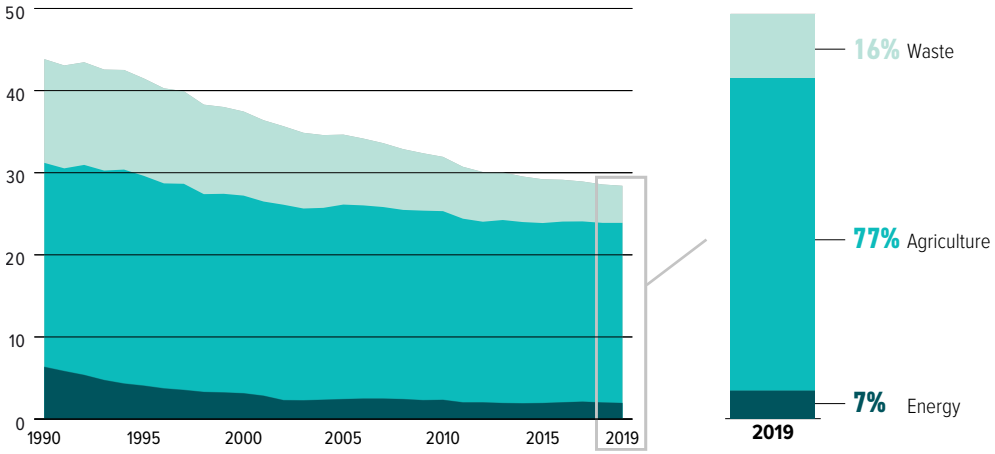


Japan's GHG emissions (excl. LULUCF) decreased by 4.8% from 1990–2019 to 1,212 $MtCO_2e$/yr. While emissions in non-energy sectors peaked in the mid-1990s, the overall increase of emissions until the 2013 peak was driven by energy-related emissions. The country's LULUCF sinks (in the form of forests) have also been decreasing – a 49% reduction between 2003, when sink levels peaked, and 2019.

Gütschow et al., 2021

Methane emissions by sector

Total CH_4 emissions ($MtCO_2e$/year)



Japan signed the Global Methane Pledge at COP26 in November 2021.

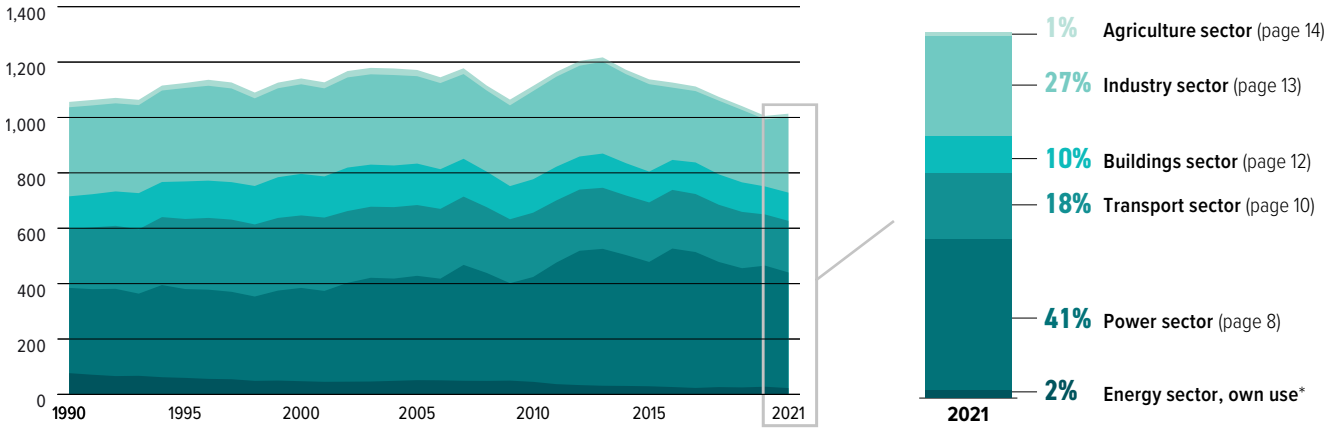
Participating countries pledged to undertake voluntary actions to contribute to a collective reduction of global methane emissions by at least 30% from 2020 levels by 2030. Further scrutiny of plans and implementation will be required.

Methane is a potent, though short-lived, greenhouse gas, accounting for an estimated third of global warming. Japan's methane emissions (excl. LULUCF) decreased by 35% between 1990–2019, to 28 $MtCO_2e$/yr. The majority of methane emissions came from the agriculture sector in 2019, as in 1990. While methane emissions from the energy and waste sectors have declined by 69% and 64%, respectively, over that period, the agriculture sector declined by only 12%. The decrease in energy sector methane emissions can be ascribed to measures like the reduction of flaring, venting, and leaking of methane, as well as changes in the composition of the energy mix.

Climate and Clean Air Coalition, 2021; Gütschow et al., 2021

Energy-related CO_2 emissions by sector

Annual CO_2 emissions ($MtCO_2$/year)

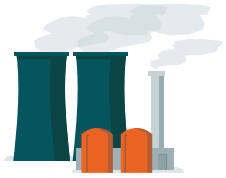


In Japan, the largest source of overall greenhouse gas emissions are CO_2 emissions from fuel combustion, which consistently account for around 86% of the annual total. These emissions have been decreasing since 2013 and have been the major cause of overall emissions reductions since. In 2021, the power generation sector was the largest contributor to CO_2 emissions from fuel combustion, with a 41% share, followed by industry and transport, with 27% and 18%, respectively.

Enerdata, 2022

**Includes energy-related CO_2 emissions from extracting and processing fossil fuels.*

ENERGY OVERVIEW



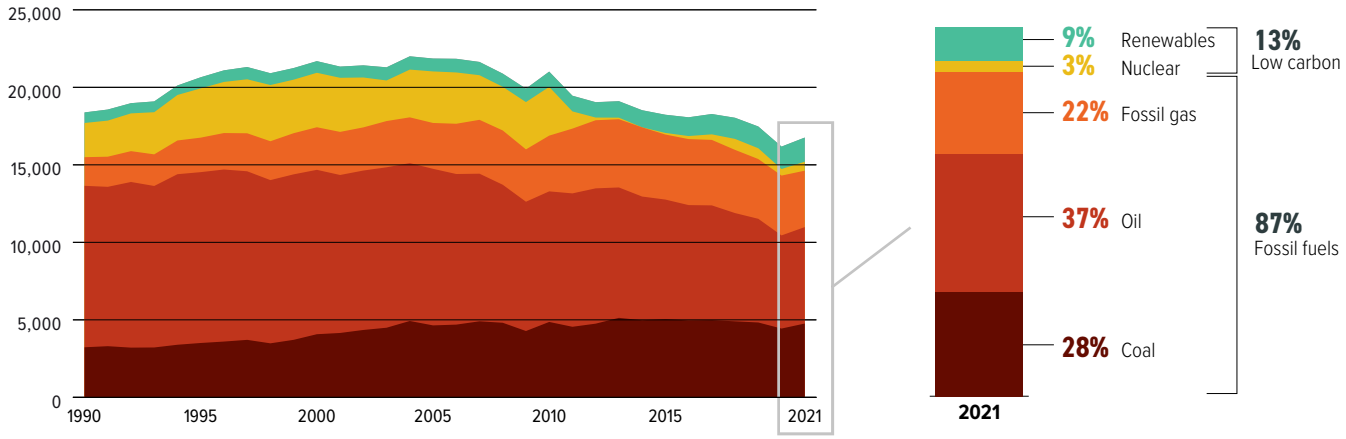
Fossil fuels make up 87% of Japan's energy mix. While the relative use of fossil fuels remains above 2010 levels, the total amount of energy supplied by these sources has since decreased by 13%, driven by declining oil use and increasing fossil gas and renewables.

The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage.

Rogelj et al., 2018

Energy mix

Total primary energy supply (PJ)

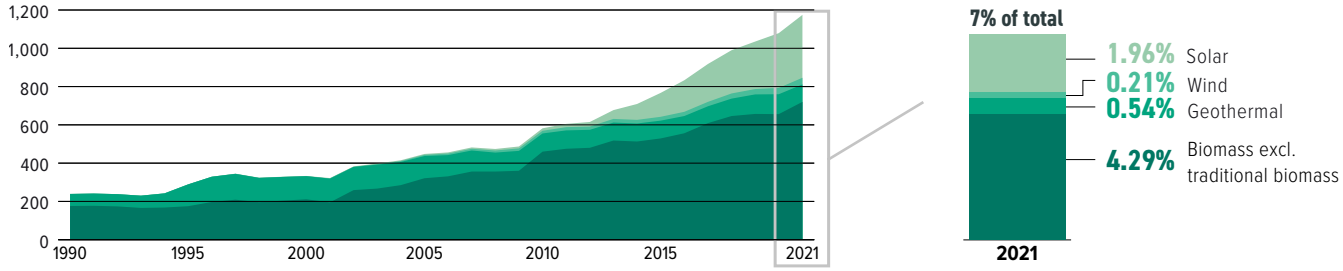


This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating and cooking, but also for transport fuels. Fossil fuels make up 87% of Japan's energy mix, which is higher than the G20 average. Energy supply peaked in 2004, and the decrease since then has been mainly driven by a reduction in oil and nuclear (from 2011). Over the same period, coal use has declined slightly while gas use has increased significantly. Renewable energy supply has almost doubled since 2004 but still only makes up 9% of the total energy supply.

Enerdata, 2022

Solar, wind, geothermal and biomass development

As a share of total primary energy supply (TPES) (PJ)

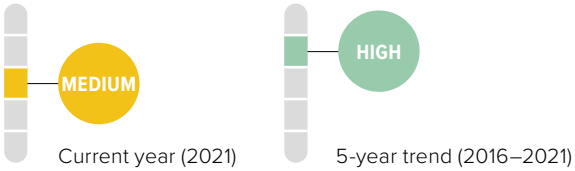


Solar, wind, geothermal and biomass (excl. traditional) account for 7% of Japan's energy supply – the G20 average is 7.5%. The renewables share of total energy supply increased 52% over the last 5 years (2016–2021), with biomass (for electricity and heat) contributing the most. Solar has recently increased rapidly, with average year-on-year growth of 37% between 2012–2021.

Enerdata, 2022

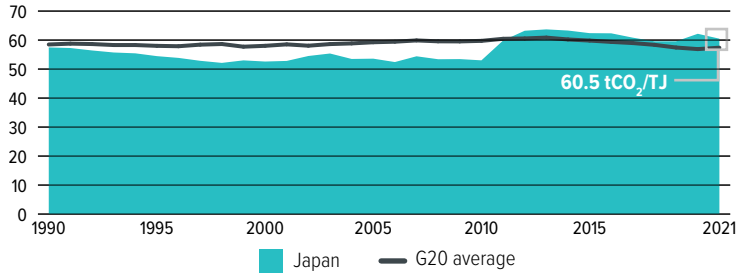
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



Carbon intensity of the energy sector

Tonnes of CO_2 per unit of TPES (tCO_2/TJ)



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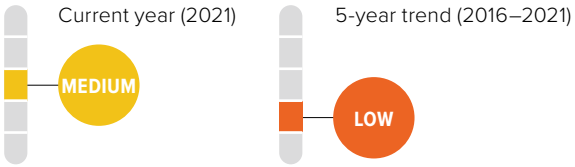


Carbon intensity is a measure of how much CO_2 is emitted per unit of energy supply. The emissions intensity of primary energy is 60.5 tCO_2/TJ, above the G20 average, and has been decreasing more slowly (1.2%) than the G20 average decrease of 4%. Japan's emissions intensity experienced a significant increase after the shut-down of nuclear power plants in 2011 and has not reverted to the previously lower levels.

Enerdata, 2022

Energy supply per capita

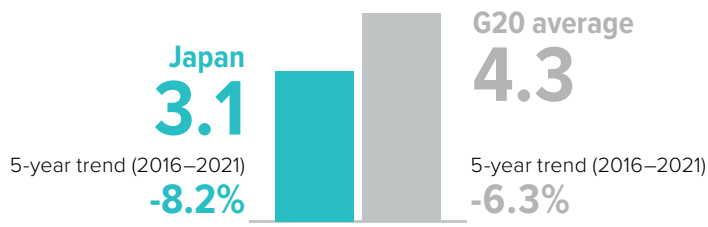
TPES per capita (GJ/capita) in 2021

The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy. Energy supply per capita in Japan was 133 GJ in 2021, well above the G20 average. Its energy supply per capita decreased by 10% between 2016–2021, whereas the G20 average increased 1.6% over the same period.

Enerdata, 2022; World Bank, 2022

Energy intensity of the economy

(TJ/million US$2015 GDP) in 2021



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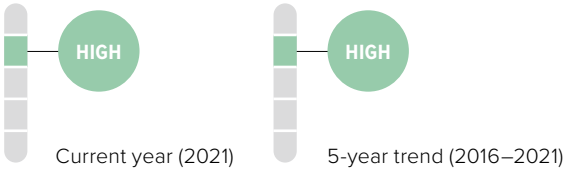


This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of decarbonisation, efficiency achievements, climatic conditions or geography. Japan's energy intensity is lower than the G20 average and has been decreasing at a slightly higher rate of 8% (2016–2021), compared to the G20.

Enerdata, 2022; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat

In 2021, Japan generated **29% of its electricity from coal and 38% from gas**. The government has indicated it will phase out "inefficient" coal plants by 2030; even so, the share of coal in the power mix will remain above 26%. However, renewable generation continues to increase rapidly.

Power generation's share of energy-related CO_2 emissions in 2021:

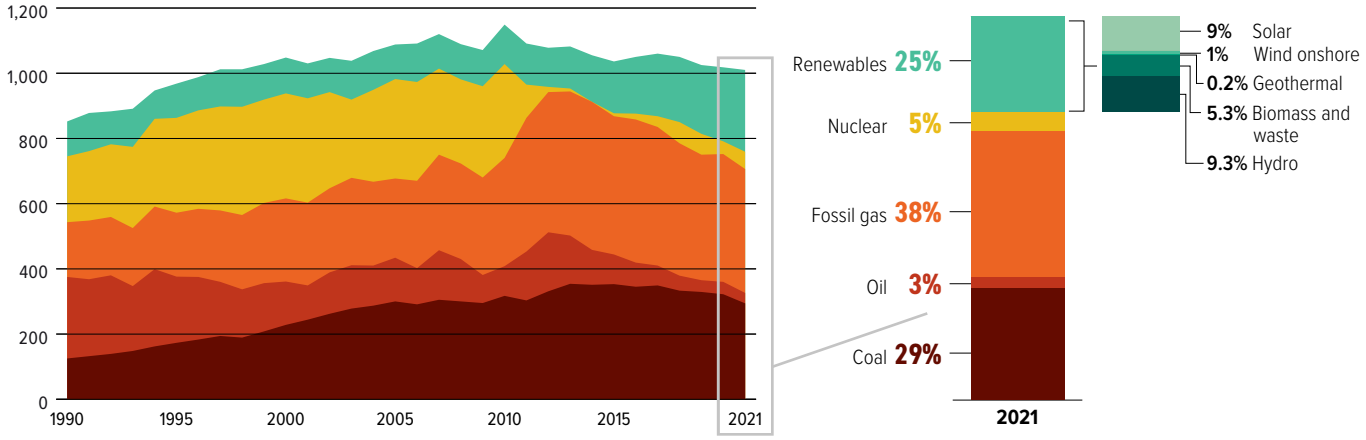
41% Direct

Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. By 2040, the share of renewable energy in electricity generation has to be increased to at least 75%, and the share of unabated coal reduced to zero.

Climate Action Tracker, 2020; Rogelj et al., 2018

Electricity generation mix

Gross power generation (TWh)

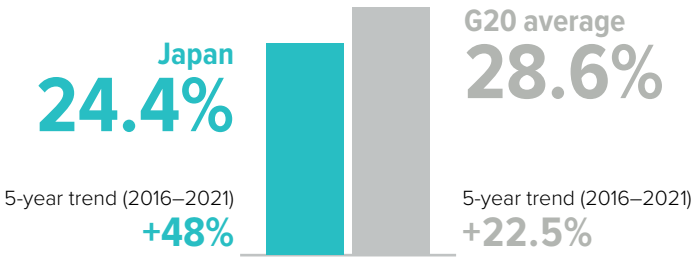


Fossil fuels generated 70% of Japan's electricity in 2021: fossil gas accounted for the largest share (38%), followed by coal and oil. Fossil fuel generation ramped up significantly after the 2011 shut-down of nuclear power plants, but peaked in 2013, at 87% of the mix. Since then, the proportion of renewables has increased, with the contribution of solar growing more than seven-fold.

Enerdata, 2022

Share of renewables in power generation

(incl. large hydro) in 2021



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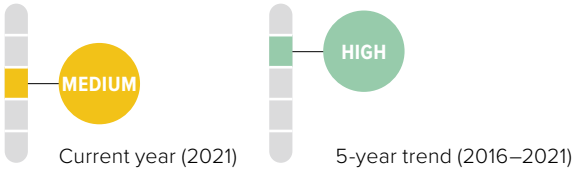
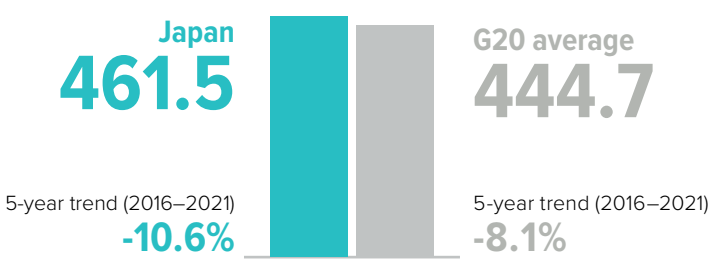


Enerdata, 2022

Emissions intensity of the power sector

(gCO_2/kWh) in 2021



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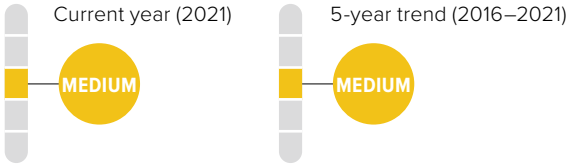


For each kilowatt hour of electricity, 462 g of CO_2 are emitted in Japan. Emissions from power generation have dropped by around 11% since 2016, a testament to the increasing role of renewables. However, the country's current emissions intensity is still above pre-2011 levels.

Enerdata, 2022

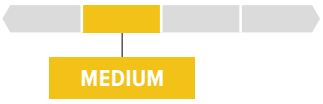
POLICY ASSESSMENT

Renewable energy in the power sector

In its LTS, Japan emphasises that due to low cost, scalability, and economic co-benefits, offshore wind will be key to making renewables a main source of power; with plans to expand the use of solar PV to enhance sector coupling; and geothermal can provide baseload power. The latest Strategic Energy Plan forecasts a 2030 share of renewables of 36–38%, but it has been critiqued as neither ambitious nor timely enough to succeed. The government has recently revised several energy laws to promote the "non-fossil-fuel" energy transition, optimising demand response, and reducing renewable energy barriers.

The Government of Japan, 2021; METI, 2021, 2022

Coal phase-out in the power sector

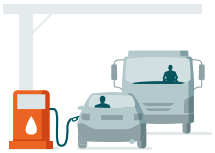


In July 2020, Japan announced it would phase out "inefficient" coal-fired power plants by 2030. The Sixth Strategic Energy Plan (2021), released in October 2021, indicates that coal's share in generation will decrease to 19% by 2030. Analysis of recent energy supply policy, however, indicates that the share of coal is more likely to be 26% or more, in the absence of actual measures to support the 19% target. While the government plans to increase efficiency standards for coal-fired power plants, it appears reluctant to set a phase-out date for all coal power.

Arai, 2021; Climate Action Tracker, 2022a; Organisation for Cross-Regional Coordination of Transmission Operators, 2022; Reuters, 2022

TRANSPORT SECTOR

Emissions from energy used to transport goods and people



Transport emissions continue to decrease since peaking in 2001. **While oil continues to account for 97% of transport energy, total energy use in the sector has decreased by 29% since 2001.** Although 30% of passenger transport is by rail, 92% of freight goes by road. Electric vehicles (EVs) still accounted for only 1% of new car sales in 2021.

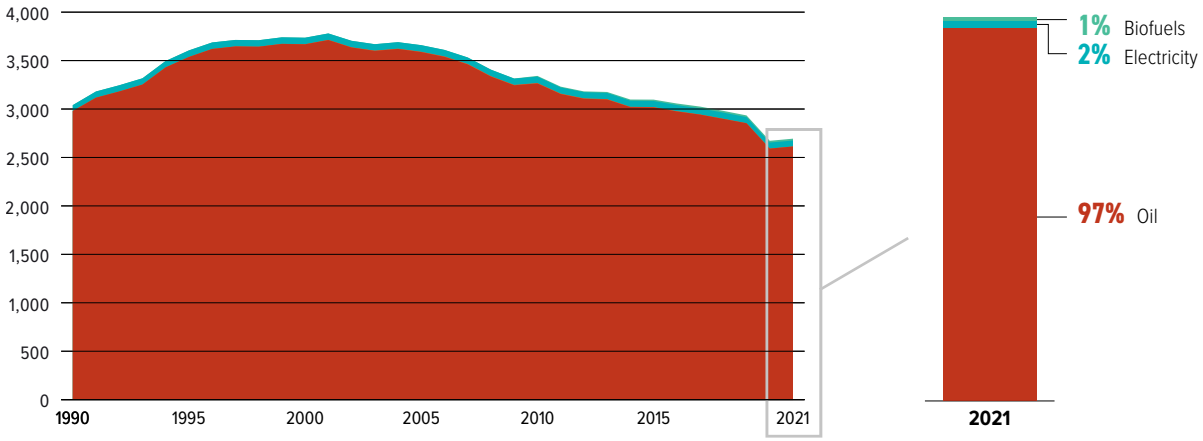
Transport's share of energy-related CO_2 emissions in 2021: **18.4%** Direct **0.8%** Indirect

The share of low-carbon fuels in the transport fuel mix must increase to between 40% and 60% by 2040 and 70% to 95% by 2050.

Climate Action Tracker, 2020; Rogelj et al., 2018

Transport energy mix

Final energy consumption by source (PJ/year)

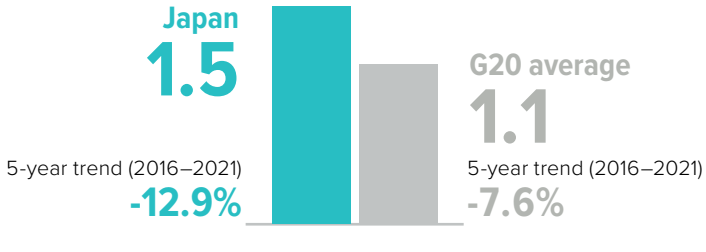


Electricity and biofuels make up only 3% of the energy mix in transport.

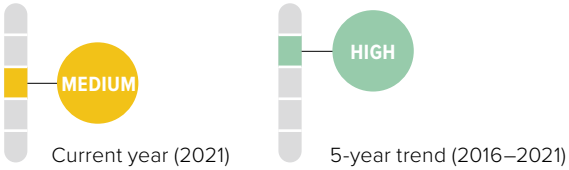
Enerdata, 2022

Transport emissions per capita

(excl. aviation) (tCO_2/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

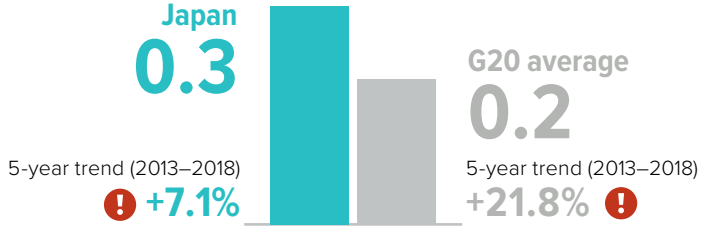


Per capita emissions in 2021 and the 5-year trend have been impacted by COVID-19 pandemic response measures and resulting economic slowdowns. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2022, please see the Highlights Report at www.climate-transparency.org

Enerdata, 2022; World Bank, 2022

Aviation emissions per capita[6]

(tCO_2/capita) in 2018



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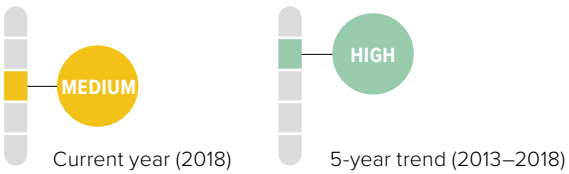
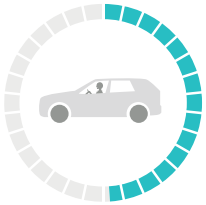


Enerdata, 2022; IEA, 2021; World Bank, 2022

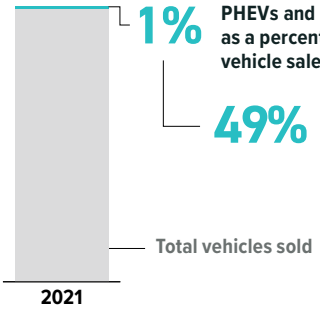
Motorisation rate



489.5
vehicles per 1,000 inhabitants in 2019

Enerdata, 2022

Market share of electric vehicles in new car sales (%)

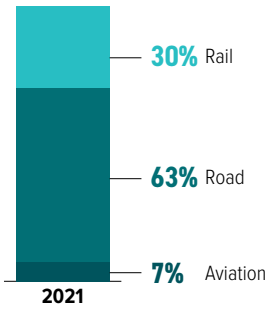


Battery-Electric Vehicles (BEVS) have greater emissions mitigation potential when they are powered by electricity produced by renewables because they have no internal combustion engine (ICE), whereas plug-in hybrids (PHEVs) still produce emissions when using the ICE.

IEA, 2022

Modal split passenger transport

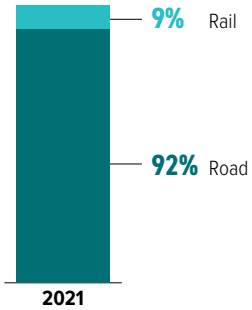
(% of passenger-trips): road, rail and air



Enerdata, 2022

Modal split freight transport

(modal split in % of tonne-km)



Due to data availability, only road and rail transport are included in the freight transport category. Other freight modes, e.g. waterways, are excluded due to lack of data for all countries.

Enerdata, 2022

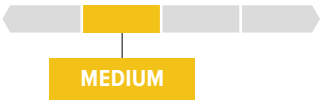
POLICY ASSESSMENT

Phase out fossil fuel cars

In its LTS, Japan set a target for EVs — which it defined as including relatively more polluting non-plug-in hybrids — to account for 20–30% of new vehicle sales by 2030. By 2040, EVs and "vehicles suitable for use of decarbonised fuels" will have a 100% market share for light-duty vehicles of eight tonnes or less. Japan could achieve 1.5°C compatibility only by excluding non-plug-in hybrids from the 2035 sales target. The concept of a fully EV fleet is highly contentious in Japan, seen in recent pushback from the government and national automotive industry against international target setting for zero-emissions vehicles.

Climate Action Tracker, 2022; Dooley and Ueno, 2021; The Government of Japan, 2021; Yamazaki and Abnett, 2022

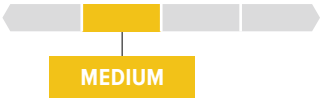
Phase out fossil fuel heavy-duty vehicles



Japan's LTS also states the government's aim to introduce 5,000 electric heavy-duty vehicles (HDVs) in the 2020s. Beyond this, the government plans to promote greater use of electric HDVs, and also to focus on reducing the price of hydrogen to make hydrogen-powered vehicles more viable. While no explicit phase-out for fossil fuel HDVs has been set, current standards require that the fuel efficiency of trucks and buses improve by 13.4% and 14.3%, respectively, from 2015 levels by 2025.

The Government of Japan, 2021; METI, 2019

Modal shift in (ground) transport



The transportation sector measures featured in Japan's LTS also include modal shifts in both passenger and freight transport. For passengers, the government seeks to promote light rail and bus rapid transit systems as well as facilitate the use of bicycles. For freight, the government seeks to promote a modal shift to rail and shipping, decarbonising these sub-sectors, and utilising digital technology to increase the efficiency of road transport.

The Government of Japan, 2021

BUILDINGS SECTOR

Emissions from energy used to build, heat and cool buildings

Direct and indirect emissions from Japan's buildings sector account for 9% and 22.7% of total energy-related CO_2 emissions, respectively. **Per capita emissions from the buildings sector are twice the G20 average.** While direct emissions steadily decreased over the past two decades, indirect emissions increased before declining from 2016. As such, energy-related emissions from buildings in 2021 were at the same level as 2002.

Buildings sector's share of energy-related CO_2 emissions in 2021:

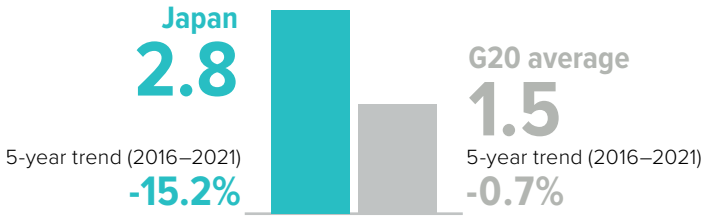
9.2% Direct **22.7%** Indirect

By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be 95–100% below 2015 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

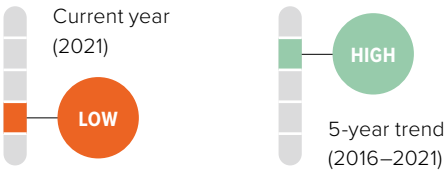
Climate Action Tracker, 2020; Rogelj et al., 2018

Buildings sector emissions per capita

incl. indirect emissions (tCO_2/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



Buildings sector emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (from grid-electricity for air conditioning, appliances, etc.). Buildings-related emissions per capita were almost twice the G20 average in 2021, reflecting the high shares of fossil fuels in the electricity mix. Japan has managed to decrease per capita buildings emissions at a rate of 15% between 2016–2021, substantially more than the average G20 decrease.

Enerdata, 2022; World Bank, 2022

POLICY ASSESSMENT

Near zero energy new buildings

Japan's Fourth Strategic Energy Plan (2014) aims to reduce the average net primary energy consumption of newly constructed buildings and houses to zero by 2030. Recent revision of the Building Energy Conservation Law makes energy conservation standards, currently limited to non-residential buildings with a floor area of 300m² or more, mandatory for all new residential and non-residential buildings from 2025. This is part of an overall aim to realise zero energy houses/buildings (ZEH/ZEB) by 2050.

Climate Action Tracker, 2022; The Government of Japan, 2021; METI, 2021; MLIT, 2022

Renovation of existing buildings

In Japan, retrofitting of existing buildings is part of an overall move towards zero energy buildings and houses. As per the LTS, this retrofitting includes the installation of rooftop solar and battery systems, energy-efficient renovation with high-performance heat insulating materials, and energy management using optimal control systems. Under the revised Building Energy Conservation Act, the Japan Housing Finance Agency has established a low-interest financing system to support energy efficiency renovations for existing residential and non-residential buildings.

The Government of Japan, 2021; MLIT, 2022

INDUSTRY SECTOR

Emissions from energy use in industry

As of 2021, direct and indirect emissions from industry in Japan make up 27% and 15% of energy-related CO_2 emissions, respectively. In absolute terms, direct emissions have decreased by 15% from the relatively stable 1990–2015 average, while indirect emissions have remained at about the same levels as the historical average. **While industry emissions intensity relative to GDP has decreased substantially over the last 5 years, the steel sector continues to be a substantial emitter.**

Industrial emissions need to be reduced by 65–90% from 2010 levels by 2050.

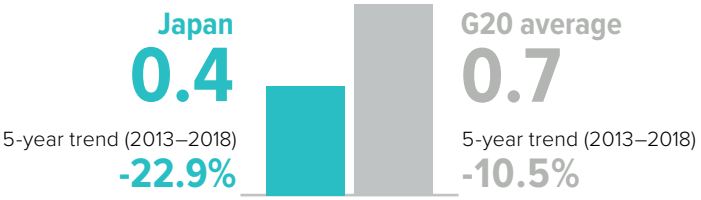
Rogelj et al., 2018

Industry sector's share of energy-related CO_2 emissions in 2021:

26.8% Direct **15%** Indirect

Industry emissions intensity[7]

(kgCO_2e/USD2015 GVA) in 2018



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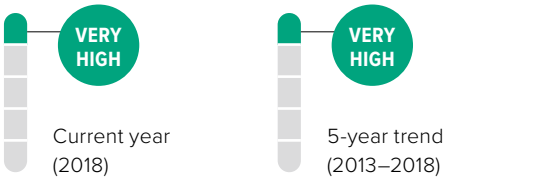


Enerdata, 2021; World Bank, 2022

Carbon intensity of steel production[8]

(kgCO_2/tonne product) in 2019

Steel production and steelmaking are significant GHG emissions sources, and challenging to decarbonise.

Enerdata, 2022; World Steel Association, 2021

POLICY ASSESSMENT

Energy efficiency

Japan's latest Strategic Energy Plan forecasts a reduction in final energy consumption of about 62 mkL of oil equivalent below 2019 levels by 2030. As reiterated in the LTS, rigorous energy efficiency measures will achieve this reduction. The LTS notes these measures will be required in the industrial, commercial, residential, and transport sectors. Japan has long focused on energy efficiency, as evidenced by its 1979 Act on the Rational Use of Energy, most recently revised in 2022, which covers ~90% of the industrial sector, buildings and transportation.

The Government of Japan, 2021; METI, 2021, 2022

LAND USE SECTOR

Emissions from land use change and forestry

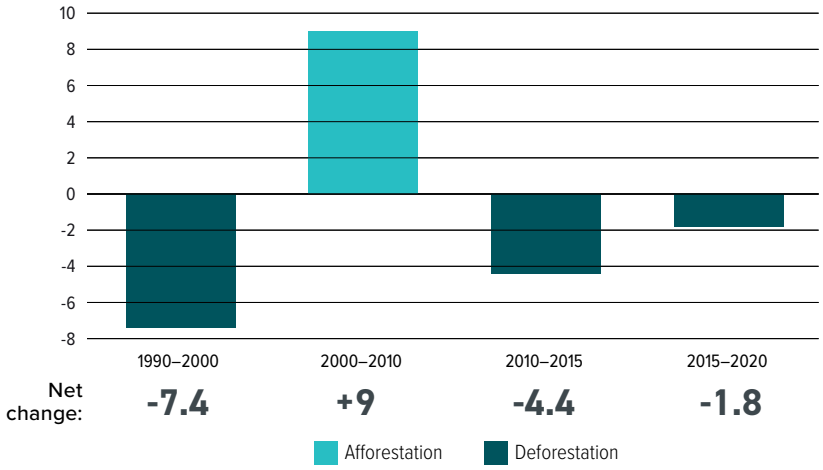
To stay within the 1.5°C temperature limit, Japan would need to enhance its net sink of emissions from the land use and forestry sector, e.g., **by conserving and restoring forests, afforesting abandoned farmland, halting the expansion of residential areas and greening existing urban spaces.**

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.

Rogelj et al., 2018

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year

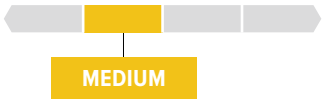


Japan's NDC assumes a carbon sink of 48 $MtCO_2$/yr in 2030. However, annual removals from the LULUCF sector, which peaked in 2003, have been decreasing at an average annual rate of 4% and stood at 50 $MtCO_2$ in 2019 with the aging of planted forests.

Global Forest Assessment, 2020

POLICY ASSESSMENT

Target for net zero deforestation



Japan implemented a Basic Plan for Forest and Forestry in 2016 that calls for the country to maintain a forest area of 25 Mha (about 70% of the country) and increase forest stock. The plan was revised in 2021 to support the "green growth" of forests and the domestic forestry industry in the context of strong competition with imported timber. Historically (1960s–1990s) Japan was one of the largest importers of tropical rainforest timber, contributing significantly to global deforestation, but the volume of both log and timber imports has since declined dramatically.

Government of Japan, 2019, 2021; MAFF, 2021; Sekiguchi and Ochi, 2021

AGRICULTURE SECTOR

Emissions from agriculture

Japan's agricultural emissions are mainly from rice cultivation and enteric fermentation (the digestive processes of livestock). A 1.5°C compatible pathway requires behavioural and dietary shifts and less fertiliser use.

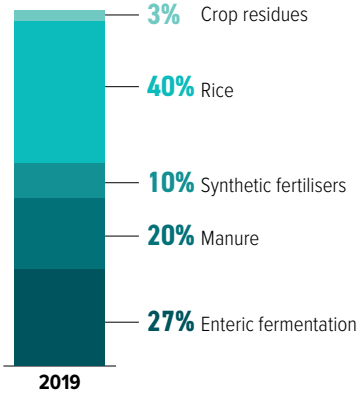
Methane emissions need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Rogelj et al., 2018

Emissions from agriculture

excluding energy emissions, in 2019

22.4
$MtCO_2e$ in 2019



The largest sources of GHG emissions in the agriculture sector are rice cultivation, enteric fermentation (digestive processes of livestock), manure and the cultivation of organic soils. Changing rice types, upgrading cultivation and clearance techniques, adapting the diets of livestock, improving manure storage and handling, and making dietary changes in favour of vegetables and fruits could all help to reduce emissions from this sector.

The FAO has altered the categorisation of emissions from drained organic soils/cultivation of organic soils to include a land-use-change component that might not have been included in last year's indicator; therefore, these emissions have been omitted in this graph.

FAO, 2022

MITIGATION: TARGETS AND AMBITION

The science from the IPCC on the risks of exceeding 1.5°C warming is clear. The UN science body has projected that to keep the 1.5°C goal alive, the world needs to roughly halve emissions by 2030.

However, despite the Glasgow Climate Pact (1/CMA.3) agreement to "revisit and strengthen" 2030 targets this year, progress on more ambitious targets has stalled. Without far more ambitious government action, the world is heading to a warming of **2.4°C with the current 2030 targets** and even higher warming of **2.7°C with current policies**.

Climate Action Tracker, 2021a, 2022c; IPCC, 2022; UNFCCC, 2021

AMBITION: 2030 TARGETS

Nationally Determined Contribution: Mitigation

TARGETS

Reduce greenhouse gas emissions by 46% below 2013 levels by 2030, and "continue efforts" to realise a 50% reduction.

ACTIONS

Sectoral emissions reduction targets and policy measures have been set to achieve the 46% emissions reduction target.

Climate Action Tracker (CAT) evaluation of targets and actions

Critically insufficient	Highly insufficient	**Insufficient**	Almost sufficient	1.5°C Paris Agreement compatible

The CAT evaluates and rates several elements of climate action: policies and actions, targets and a country's contribution to climate finance (where relevant) and combines these into an overall rating.

The CAT rates Japan's climate targets, policies and finance as "insufficient". The "insufficient" rating indicates that Japan's climate policies and commitments need substantial improvements to be consistent with the Paris Agreement's 1.5°C temperature limit.

The CAT rates Japan's 2030 domestic emissions reduction target as "almost sufficient" – consistent with 2°C of warming when compared to modelled domestic emissions pathways. While the target represents a significant improvement compared to its first NDC, Japan's new target is not stringent enough to limit warming to 1.5°C and needs further improvements. The CAT rates Japan's overall 'fair share' contribution as "insufficient" as its domestic target is almost 1.5°C compatible while its contribution to mitigation abroad through climate finance is "critically insufficient". Japan should both increase its emissions reduction targets and provide additional, predictable finance to others to meet its 'fair share' contribution. To achieve its target, Japan would need to enhance its current policies and actions.

This CAT analysis was updated in February 2022.
For the full assessment of the country's targets and actions, and the explication of the methodology, see www.climateactiontracker.org

Climate Action Tracker, 2022a

AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies. Long-term strategies are an essential component of the transition toward net zero emissions and climate-resilient economies.

Status	Submitted to UNFCCC, last update in 2021
Net zero target	Japan aims to reduce GHGs to net zero
Interim steps	Reduce GHG emissions by 46% below 2013 levels by 2030, and "continue efforts" to realise a 50% reduction.
Sectoral targets	No

FINANCE

Paris Agreement: Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.

In 2020, Japan spent almost USD 3bn on fossil fuel subsidies, above the annual amounts in the previous three years. This was mainly a result of a significant increase in fossil gas subsidies. Japan is the G20's largest provider of public finance for energy projects. Unfortunately, the vast majority of this (86%) goes towards fossil fuels.

Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025.

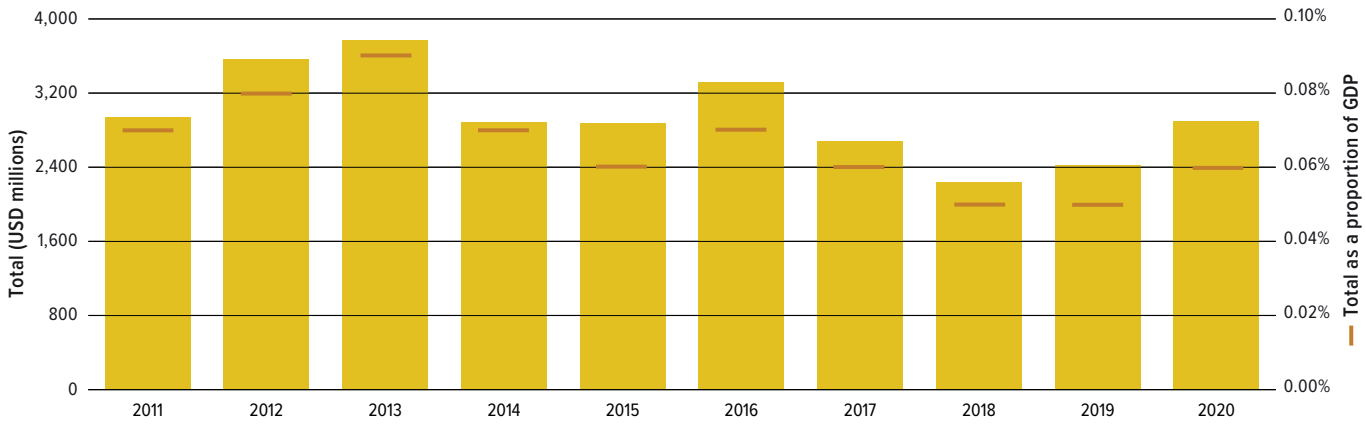
Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers raise public revenues and direct public resources. Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

Fossil fuel subsidies relative to national budgets

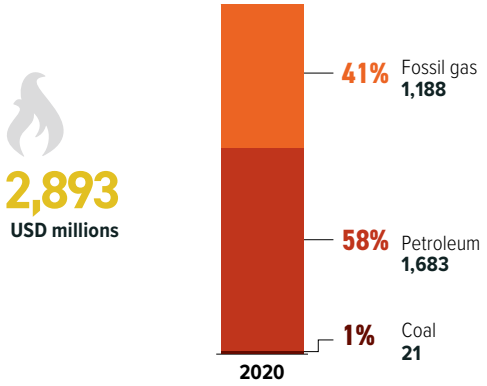
(USD millions)



OECD-IEA Fossil Fuel Support Database, 2022

Fossil fuel subsidies by fuel type

(USD millions) in 2020



Fossil fuel subsidies in Japan have fluctuated over the past decade but saw a considerable rise in 2020, to USD 2.9bn. Petroleum received 58% of the total, and fossil gas received 41%. Financial support to Japanese companies exploring oil and gas overseas was the largest single subsidy measure in 2020, and almost doubled over the previous year to USD 780m.

The Japanese government has implemented new fossil fuel subsidies in response to the current energy crisis, including support measures to oil wholesalers and tax cuts to gasoline. Japan also seeks alternatives to sanctioned Russian fossil gas, so subsidies for fossil fuel exploration may increase, but these had not yet come to fruition as of August 2022.

Energy Policy Tracker, 2022; OECD-IEA Fossil Fuel Support Database, 2022; Schnelle, 2022

Carbon pricing and revenue

Japan's 2012 national carbon tax covers 73% of domestic emissions and generated USD 2.3bn in 2021. Emissions cover all fossil fuels but were priced at a very low nominal price for 2021 (USD 2.59/tCO_2e). Subnational emissions trading schemes have been in place since 2010 and 2011 for the Saitama and Tokyo provinces, respectively. Under these schemes, 18–20% of total emissions are covered and priced at around USD 5/tCO_2e. No consistent revenue estimates are available for the subnational schemes.

I4CE, 2022

FINANCIAL POLICY AND REGULATION

Through policy and regulation, governments can overcome challenges to mobilising green finance, including real and perceived risks, insufficient returns on investment, capacity and information gaps.

Japan is taking steps to align its financial system with its climate goals. The government released its Basic Guidelines on Transition Finance in May 2021, including non-binding expectations on climate disclosure that are in line with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) – a body established in 2015 by the Financial Stability Board. In August 2021, the Japanese Financial Services Agency (JFSA) agreed to move toward mandatory disclosure based on the TCFD framework.

In 2021, the JFSA recommended that large companies – including those listed on the Tokyo Stock Exchange – should be required to disclose their exposure to climate-related risks; starting with prime 'blue chip' companies. Eventually this would be applicable to all companies submitting annual securities reports.

Prime Minister Kishida announced in June 2022 that disclosure of a range of non-financial information – including the climate risk exposure – would be mandatory in annual securities reports starting the following fiscal year.

The Bank of Japan announced a scheme in October 2021 to provide zero-interest funds to financial institutions for investments aimed at addressing climate change. To qualify for the scheme, institutions will be required to disclose climate risk based on TCFD recommendations.

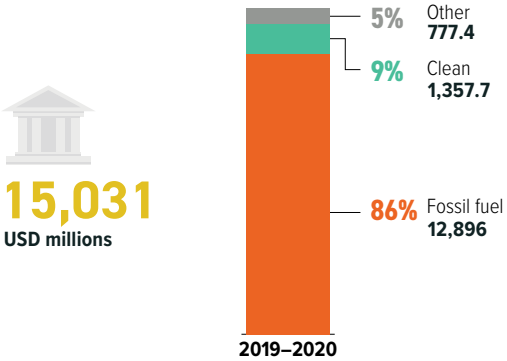
Financial Services Agency, 2021; Financial Services Agency et al., 2021; Kuroda, 2021; Nikkei, 2021, 2022; Task Force on Climate-Related Financial Disclosures, 2022

PUBLIC FINANCE

Governments steer investments through their public finance institutions, including via development banks both at home and overseas, and green investment banks. Developed G20 Members also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

Public finance for energy

USD millions (2019–2020 average)



Between 2019 and 2020 Japan provided an average of USD 15bn in public finance per year to energy projects, the largest amount out of all G20 governments. Of this amount, 86% went to fossil fuels, with 17% for coal and most of the rest for fossil gas. Three of the top four largest support measures, totalling USD 6.4bn, are aimed at developing gas fields in Mozambique. The other measure supported the development of gas fields in the Russian Arctic. The largest clean energy support measure was an investment in offshore wind capacity in the UK, for USD 770m.

Oil Change International, 2022

Provision of international public support

USD millions, annual average 2017 and 2018

Bilateral, regional and other channels:	Multilateral climate finance contributions:	Core/general contributions:
Annual average contribution	**Annual average contribution**	**Annual average contribution**
10,188.22	**224.41**	**1,840.86**

Annex II countries to the UNFCCC, including Japan, are obligated to provide climate finance and have committed to collectively mobilise USD 100bn a year to 2025, when this goal will be renewed, even though the target has never been met and has been criticised as inadequate.

Japan's total climate finance contribution was the largest amongst G20 Members in absolute value. It is also the highest contributor of bilateral climate finance relative to GDP. The country is seventh in terms of multilateral finance in absolute terms, and eighth relative to GDP. Since the 2013–2014 period, its bilateral and multilateral climate flows have increased over time, while core and general contributions continue to decrease slowly. Most funding is delivered through bilateral channels, including the Japanese Bank for International Cooperation (JBIC) and JICA.

Fair share of the USD 100bn climate finance goal:

This fair share analysis allocates responsibility for provision of the USD 100bn climate finance goal to each Annex II country based on their gross national income (GNI), cumulative territorial CO_2 emissions since 1990, and population size. It uses the UNFCCC Biennial Report data for 2017–2018 and climate-related finance data provided by the OECD Development Assistance Committee for 2019 and 2020.

Japan paid its fair share of the USD 100bn climate finance goal in 2020, after only paying two thirds of its share in 2019 and came close to it in 2017–2018. Most of the country's climate finance remains dedicated to mitigation, failing to achieve a balance with adaptation. Japan mostly provides its finance as loans rather than grants, demonstrating a smaller fiscal commitment than what the figures show and implying further debt for the recipient country.

Climate finance provided (USD billion) by Japan and its fair share of the USD 100bn goal:

9.37	2017–2018 average	**79%**	Progress towards fair share
7.52	in 2019	**63%**	Progress towards fair share
16.09	in 2020	**135%**	Progress towards fair share

Japan seems intent on continuing to pay its fair share of climate finance, given recent pledges. The country matched its previous contribution at the Green Climate Fund replenishment. At COP26, Japan committed to providing USD 14bn a year over 2021–2025 in addition to its commitment at the 2021 G7 meeting to end the use of ODA for coal.

Colenbrander et al., 2022; COP26 Presidency, 2021

Note: Data on the 'provision of international public support' corresponds to 2017–2018 as per the UNFCCC Fourth Biennial Report (BR). Parties are to submit data by December 2022 for subsequent years in the Fifth BR.

Endnotes

For more detail about sources and methodologies, please download the CTR Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2022

Where referenced, "Enerdata, 2022" refers to data provided in July 2022 and, due to rounding, graphs may sum to slightly above or below 100%.

1 The '1.5°C compatible pathway' is derived from global cost-effective pathways assessed by the IPCC's SR15, selected based on sustainability criteria, and defined by the 5th-50th percentiles of the distributions of such pathways achieving the long-term temperature goal of the Paris Agreement. Negative emissions from the land sector and novel negative emissions technologies are not included in the assessed models, which consider one primary negative emission technology (BECCS). In addition to domestic 1.5°C compatible emissions pathways, the 'fair share' emissions reduction range would almost always require a developed country to provide enough support through climate finance, or other means of implementation, to bring the total emissions reduction contribution of that country down to the required 'fair share' level.

2 'Land use' emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) data tables, converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

3 The Decarbonisation Ratings assess the current year and average of the most recent 5 years (where available) to take account of the different starting points of different G20 Members.

4 The selection of policies rated and the assessment of 1.5°C compatibility are primarily informed by the Paris Agreement and the IPCC's 2018 SR15. The Policy Assessment Criteria table below (on page 19) displays the criteria used to assess a country's policy performance.

5 In order to maintain comparability across all countries, this report harmonises all data with PRIMAP 2021 dataset to 2018. However, note that CRF data is available for countries which have recently updated GHG inventories.

6 This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

7 This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.

8 This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

Policy Assessment Criteria

	LOW	MEDIUM	HIGH	FRONTRUNNER
Renewable energy in power sector	No policies to increase the share of renewables	Some policies	Policies and longer-term strategy/ target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
Coal phase-out in power sector	No targets and policies in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
Phase out fossil fuel cars	No policies for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/ malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil fuel-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policies	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation + strategy to phase out emissions from freight transport by 2050
Modal shift in (ground) transport	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
Near zero energy new buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
Energy efficiency in industry	No policies	Mandatory energy efficiency policies cover more than 26–50% of industrial energy use	Mandatory energy efficiency policies cover 51–100% of industrial energy use	Policies + strategy to reduce industrial emissions by 75–90% from 2010 levels by 2050
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net zero deforestation	No policies or incentives to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation/ reforestation in place)	Policies + national target for reaching net zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

Bibliography

Arai, J. (2021). *Bucking Trend, Japan to Keep Coal Power Plants under Tougher Rules.* https://asia.nikkei.com

Chapman, A. and Okushima, S. (2019). *Engendering an Inclusive Low-Carbon Energy Transition in Japan: Considering the perspectives and awareness of the energy poor.* https://doi.org

Climate Action Tracker (CAT). (2020). *Paris Agreement Compatible Sectoral Benchmarks Study.* https://climateactiontracker.org

– – –. (2021a). *Climate Summit Momentum: Paris Commitments Improved Warming Estimate to 2.4°C.* https://climateactiontracker.org

– – –. (2022a). *Climate Action Tracker Country Assessments.* https://climateactiontracker.org/countries/

– – –. (2022b). *CAT Climate Target Update Tracker.* https://climateactiontracker.org/climate-target-update-tracker/

– – –. (2022c). *Despite Glasgow Climate Pact 2030 Climate Target Updates Have Stalled.* https://climateactiontracker.org/_

Climate Analytics. (2021). *Climate Impact Explorer.* http://climate-impact-explorer.climateanalytics.org

– – –. (2022). *1.5°C National Pathways Explorer.* http://1p5ndc-pathways.climateanalytics.org/

Cilmate and Clean Air Coalition. (2021). *Global Methane Pledge.* https://www.ccacoalition.org/en/resources/global-methane-pledge

Colenbrander, S. et al. (2022). *A Fair Share of Climate Finance? An Appraisal of Past Performance, Future Pledges and Prospective Contributors.* https://cdn.odi.org

COP26 Presidency. (2021). *Compilation of 2021-2025 Climate Finance Commitments.* https://ukcop26.org

Dooley, B. and Ueno, H. (2021). *Why Japan Is Holding Back as the World Rushes Toward Electric Cars.* https://www.nytimes.com/2021/03/09/business/electric-cars-japan.html

Enerdata. (2022). *Global Energy and CO_2 Data.* https://www.enerdata.net/research

Energy Policy Tracker. (2022). *G20 Countries.* https://www.energypolicytracker.org/region/g20

Financial Services Agency. (2021). *The JFSA Strategic Priorities July 2021–June 2022.* https://www.fsa.go.jp/en/news/2021/20211104/01.pdf

Financial Services Agency, et al. (2021). *Basic Guidelines on Climate Transition Finance.* https://www.fsa.go.jp/en/news/2021/20210524/04.pdf

Food and Agriculture Organization (FAO). (2022). *Emissions Totals: Agriculture.* http://www.fao.org/faostat

Global Forest Resources Assessment. (2020). *Annual Forest Expansion, Deforestation and Net Change Indicator.* Food and Agriculture Organisation. https://fra-data.fao.org/WO/fra2020/forestAreaChange/

Government of Japan. (2019). *Reporting on Progress Towards the Implementation of the United Nations Strategic Plan for Forests 2017–2030.* https://www.un.org

– – –. (2021). *The Long-Term Strategy under the Paris Agreement.* https://unfccc.int/sites/default/files/resource/Japan_LTS2021.pdf

Gütschow, J. et al. (2021). *The PRIMAP-hist National Historical Emissions Time Series (1850-2018), V.2.2.* Zenodo Open Access Repository. https://doi.org/10.5281/zenodo.4479172

Institute for Climate Economics (I4CE). (2022). *Global Carbon Accounts 2021.* https://www.i4ce.org/

Institute for Health Metrics and Evaluation (IHME). (2020). *Global Burden of Disease Study* 2020. http://ghdx.healthdata.org/gbd-results-tool

Intergovernmental Panel on Climate Change (IPCC). (2022). *Sixth Assessment Report, WGII Summary for Policymakers. Headline Statements.* https://www.ipcc.ch/report/ar6/wg3/resources/spm-headline-statements/

International Energy Agency (IEA). (2021). *Aviation.* https://www.iea.org/reports/aviation

– – –. (2022). *Global Electric Vehicle Outlook 2022.* https://www.iea.org/reports/global-ev-outlook-2022

Kuriyama, A. (2019). *Transition Management with "Just Transition" in Japanese Power Sector.* https://www.jstor.org/stable/resrep21812

Kuroda, H. (2021). *Opening Remarks at the TCFD Summit 2021.* https://www.boj.or.jp/en

Mabon, L. et al. (2022). *Just Transitions in Japan.* https://www.thebritishacademy.ac.uk/documents

Ministry of Agriculture, Forestry and Fisheries (MAFF). (2021). *Aiming for "Green Growth" through Forests, Forestry, and Lumber Industries.* https://www.rinya.maff.go.jp/j/press/kikaku/210615.html

Ministry of Economy, Trade and Industry (METI). (2019). *New Fuel Efficiency Standards for Trucks and Buses Formulated.* https://www.meti.go.jp/english/press/2019/0329_003.html

– – –. (2021). *Outline of Strategic Energy Plan Agency for Natural Resources and Energy.* https://www.enecho.meti.go.jp

– – –. (2022). *Cabinet Decision on the Bill for the Act of Partial Revision of the Act on the Rationalization etc. of Energy Use and Other Acts in Order to Establish Stable Energy Supply and Demand Structure.* https://www.meti.go.jp/english/press/2022/0301_004.html

Ministry of Land, Infrastructure, Transport and Tourism (MLIT). (2022*). The Cabinet Approved the Bill for the Partial Revision of the Law Concerning the Improvement of Energy Consumption Performance of Buildings to Contribute to the Realisation of a Decarbonised Society.* https://www.mlit.go.jp/report/press/house05_hh_000920.html

Nikkei. (2021). *Japan to Require 4,000 Companies to Disclose Climate Risks.* https://asia.nikkei.com

– – –. (2022). *Obligation to Include Non-Financial Information in the Report, Prime Minister Kishida "Indicate the Contents around Autumn".* https://www.nikkei.com/

OECD-IEA. (2022). *Fossil Fuel Support Database.* http://www.oecd.org/fossil-fuels/data

Oil Change International. (2022). *Shift the Subsidies Database.* http://priceofoil.org/shift-the-subsidies

Organisation for Cross-regional Coordination of Transmission Operators. (2022). *Aggregation of Electricity Supply Plans for FY2022, Japan.* https://www.occto.or.jp

Reuters. (2022). *Japan Reiterates Plan to Cut Reliance on Coal.* https://www.reuters.com

Rogelj, J. et al. (2018). "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development", in Masson-Delmotte, V. et al. (eds) *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C.* IPCC. https://www.ipcc.ch/

Romanello, M. et al. (2022). *The 2022 Report of The Lancet Countdown on Health and Climate Change.* https://www.thelancet.com/countdown-health-climate

Schnelle, D. (2022). *Japan's Energy Mix after the Ukraine Crisis.* https://www.eastasiaforum.org

Sekiguchi, K. and Ochi, K. (2021). *Japan Tapers Imports of Logs from Tropical Trees to Near Zero.* https://asia.nikkei.com

Task Force on Climate-Related Financial Disclosures (*TCFD).* (2022). *TCFD Supporters.* https://www.fsb-tcfd.org/supporters/

United Nations. (2018*). World Urbanisation Prospects.* UN Department of Economic and Social Affairs, Population Division. https://population.un.org/wup

United Nations Development Programme (UNDP). (2020). *Human Development Index Database.* http://hdr.undp.org/en/data#

United Nations Framework Convention on Climate Change (UNFCCC). (2021). *Decision 1/CMA.3, Glasgow Climate Pact.* https://unfccc.int/documents/460950

The World Bank. (2021). *GDP per Capita (constant 2015 US$).* https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

– – –. (2022). *Population, total.* https://data.worldbank.org/indicator/SP.POP.TOTL

World Steel Association. (2021). *Steel Data and Statistics.* https://www.worldsteel.org/

Yamazaki, M. and Abnett, K. (2022). *Exclusive: Japan Pushes to Remove Zero-Emission Vehicle Target from G7 Statement, Draft Shows.* https://www.reuters.com

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