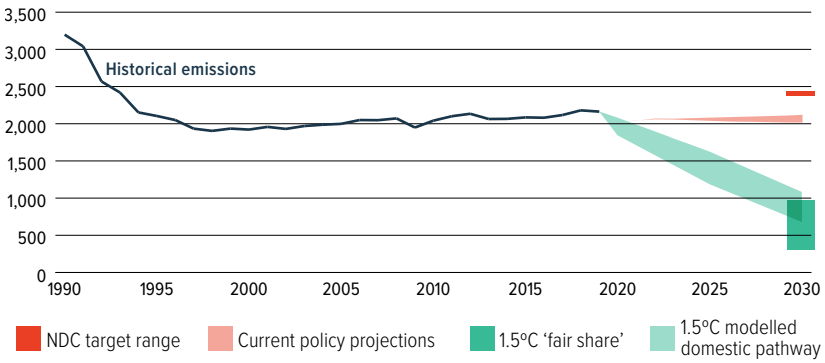
RUSSIAN FEDERATION

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]

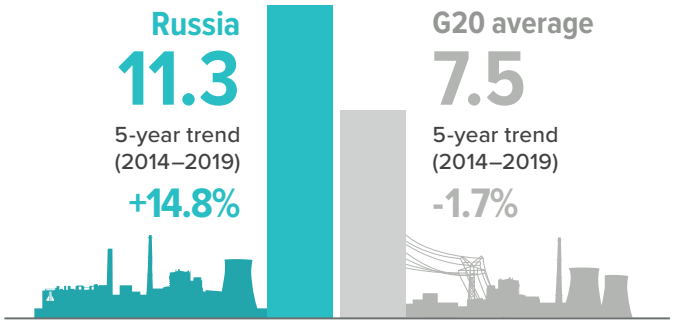


Russia's updated NDC target would decrease emissions 30% below 1990 levels: approximately 2,407 $MtCO_2e$ (excl. LULUCF). To keep below the 1.5°C temperature limit, analysis by the 1.5°C Pathways Explorer shows that its emissions would need to be around 767 $MtCO_2e$ by 2030, leaving an ambition gap of about 1,640 $MtCO_2e$. A 1.5°C 'fair share' contribution would require a strengthened domestic target, and 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



Russia's per capita emissions are 1.5 times the G20 average. Contrary to the G20 trend, total per capita emissions have increased by 14.8% from 2014 to 2019.

Gütschow et al., 2021; World Bank, 2022

RECENT DEVELOPMENTS

In March 2022, amendments to the Federal Law on Environmental Protection were adopted by the Duma that **postponed the creation of enterprise-level emissions monitoring systems** and the requirement to apply for environmental permits to 2024, further undermining already weak climate-related laws.

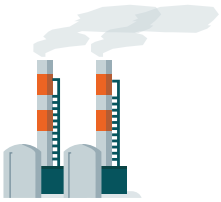
The Russian war on Ukraine and resultant sanctions have put **renewable energy projects operated jointly by Russian and foreign companies in doubt,** as foreign firms suspend plans or withdraw from the Russian market.

Russia's Transport Strategy until 2030, updated in November 2021, **contains few real updates when compared to previous versions,** with road transport assigned the largest portion of investment in 2025–2030 (35%).

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

The 2021 Strategy for Socio-economic Development announced GHG emissions reductions of 70% below 1990 levels, by 2030. **Russia needs to rapidly develop and implement policies and plans to bring reductions to fruition.**

As Europe accelerates its energy transition and seeks alternative fossil gas providers, Russia **should use its huge potential for renewables to replace fossil fuels** for domestic needs and exports.



Russia should follow the lead of its eastern region, Sakhalin, which is **implementing a carbon pricing scheme** as part of its 2025 net zero emissions target.

Contents

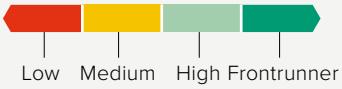
We unpack the Russian Federation's progress and highlight key opportunities to enhance climate action across:

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

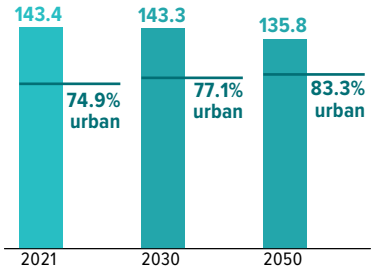
The Human Development Index (HDI) reflects life expectancy, level of education, and per capita income. The Russian Federation ranks very high.

0.82 very high

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

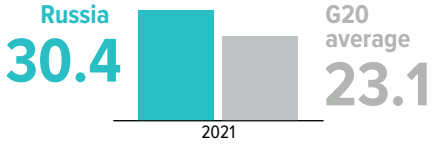


Russia's population is projected to decrease by 5% by 2050 and become more urbanised. Urban climate change-related risks are increasing, with widespread negative impacts on people, and their health, livelihoods and assets.

United Nations, 2018; World Bank, 2022

Gross Domestic Product (GDP) per capita

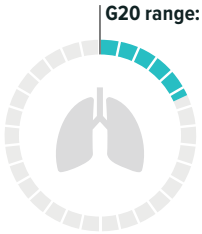
(thousand PPP constant 2015 international $ per person) in 2021



World Bank, 2021

Death rate attributable to ambient air pollution

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



0.33
per 1,000 people per year

Over 77,500 people die in Russia every year due to stroke, heart disease, lung cancer and chronic respiratory diseases as a result of outdoor air pollution. Compared to total population, this is still one of the lower levels in the G20.

Institute for Health Metrics and Evaluation, 2020

A JUST TRANSITION

The Russian economy continues to be heavily dependent on fossil fuels, with the Russian Federal State Statistics Service reporting that the oil and gas sector contributed 17.4% of the country's GDP in 2021. Russia views the rapid uptake of renewable energy sources across the globe fuelled by declining costs as a threat to its plans to expand domestic fossil fuel consumption, production and exports, as outlined in its Energy Strategy to 2035 adopted in 2020. While the war in Ukraine has limited Russia's access to the EU market, it plans to replace this key fossil fuel market with Asia by expanding its export infrastructure to the East. Instead of increasing Russia's dependency on jobs in the fossil fuels sector, which will be lost due to global trends, its government should initiate a process of Just Transition that would result in more jobs in the renewable energy, green hydrogen, and energy efficiency sectors.

Centre for Strategic and International Studies, 2022; ERI RAS/SKOLKOVO, 2019; Mitrova and Yermakov, 2019: Russian Federal State Statistics Service, 2022

ADAPTATION

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

Thawing permafrost threatens the Siberian portion of Russian railway networks. Up to 19% of road infrastructure is at risk in the period 2020–2050, at an estimated cost of EUR 5–10bn.

St. Petersburg is at risk of **regular flooding** due to sea level rise, particularly during periods of strong winds from the Gulf of Finland, which intensifies with stronger storm surges.

By August 2021, fires were being fought across more than 161,000km^2, and abandoned fires were burning across another estimated 20,000km^2; at times the smoke reached as far as the North Pole.

ADAPTATION NEEDS

Impacts of a changing climate

Exposure to warming

0.9°C
Higher

Between 2017 to 2021, the average summer temperatures experienced by people in Russia were 0.9°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

257m **Labour hours lost**
83% **increase**

In 2021, heat exposure in Russia led to the loss of 257 million potential labour hours, an 83% increase from 1990–1999.

Loss of earnings from heat-related labour capacity reduction

1.1bn **Loss in labour capacity (USD)**
0.7% **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 1.1 billion in 2021 in Russia, or 0.7% of its 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**: +7.1% at 1.5°C warming	1.4 times	1.7 times	2.1 times
Local **snowfall**: +1% at 1.5°C warming	1.6 times	1.7 times	2 times

Local precipitation is projected to increase by 7% above the 1986–2006 average, if global temperature rises by up to 1.5°C. More warming is projected to increase precipitation further: under a 3°C warming scenario, precipitation is projected to increase by twice that, but with increasing randomness, resulting in flash flooding. Local snowfall under 1.5°C warming is expected to increase by 1% from the 1986–2006 average snowfall. At 3°C of warming, the increase is expected to be twice what it would be under a 1.5°C scenario.

Fresh water	**At 2°C**	**At 2.5°C**	**At 3°C**
Surface run-off: +4.9% at 1.5°C warming	1.3 times	1.3 times	1.9 times
River discharge: +5.8% at 1.5°C warming	1.3 times	1.6 times	2.2 times
Total **soil moisture content:** +0.6% at 1.5°C warming	2.6 times	3.7 times	5.2 times

In Russia, the percentage of surface run-off and total soil moisture is projected to increase by 4.9% and 0.6%, respectively, over the baseline period of the 1986–2006 average, if global temperature rises by up to 1.5°C. This increase of surface run-off and moisture content would be 1.9 and 5.2 times greater, respectively, at 3°C of warming. Under 1.5°C of warming, river discharge would increase by 5.8% above the 1986–2006 average. This would be 2.2 times greater under a 3°C warming scenario.

Hazards	At 2°C	At 2.5°C	At 3°C
Number of people annually exposed to **heatwaves:** 11,211 at 1.5°C warming	2.5 times	4.5 times	5.7 times
Number of people annually exposed to **wildfires:** 28,204 at 1.5°C warming	1.6 times	2.3 times	2.7 times

The number of people annually exposed to hazards is expected to rise as the temperature increases. For example, the number of people annually exposed to wildfires in Russia is projected to be approximately 28,000 people above the reference period, at 1.5°C of warming, and 2.7 times greater than that if warming increases to 3°C. At 1.5°C of warming wildfires are projected to affect heatwaves more people than affected between 1986–2006, while at 3°C even that increase in people exposed to heatwaves is projected to be multiplied by 5.2 times.

Economic	At 2°C	At 2.5°C	At 3°C
Annual expected damage from **typhoon**: +7.3% at 1.5°C warming	2.1 times	3.1 times	3.6 times
Annual expected damage from **river flood:** -2.6% at 1.5°C warming	0.1 times	5.9 times	3.6 times
Labour productivity due to heat stress: -0.5% at 1.5°C warming	1.8 times	2.5 times	3.3 times

The annual expected damage from typhoons under 1.5°C warming is expected to increase by 7% from the 1986–2006 average. Damage from river floods is projected to decrease by 2.6% from the 1986–2006 average under 1.5°C warming, but is expected to fluctuate under different levels of warming, underlining the difficulties of putting adaptation measures in place. Labour productivity is projected to decrease by 0.5% under 1.5°C of warming, and this decrease would be 2.5 times larger at 2.5°C of warming, and 3.3 times 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	
National Action Plan of the First Stage of Adaptation to Climate Change for the Period up to 2022	2019														Unknown

While the National Action Plan was approved by Dmitry Medvedev in January 2020, the plan appears to have been orphaned in the government reshuffle that same month. Sources suggest that it listed 29 or 30 measures, most of which were critiqued as primarily bureaucratic, institutional, related to reporting requirements and "largely devoid of meaningful content".

Lo, 2020; Semenov, 2021; Zagoruichyk, 2022

Nationally Determined Contribution (NDC): Adaptation

TARGETS

None

ACTIONS

Not mentioned

MITIGATION

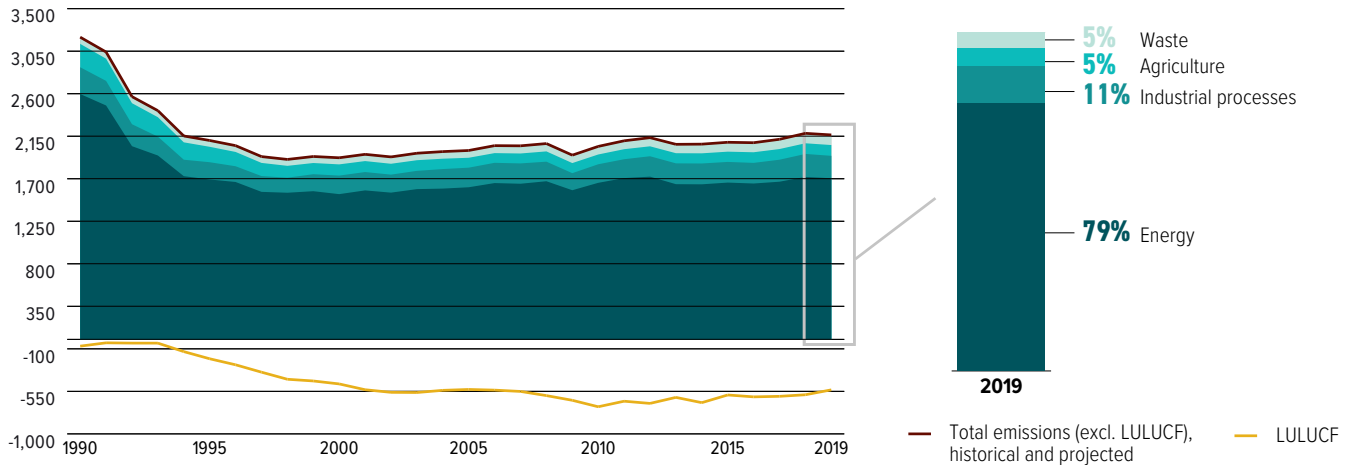
Paris Agreement: Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.

EMISSIONS OVERVIEW

Russia's total **greenhouse gas emissions (excl. LULUCF) decreased by 32.4% between 1990–2019.** In the same period, its **total methane emissions (excl. LULUCF) have decreased by 28.6%.**

GHG emissions across sectors[5]

Total sectoral GHG emissions ($MtCO_2e$/year)

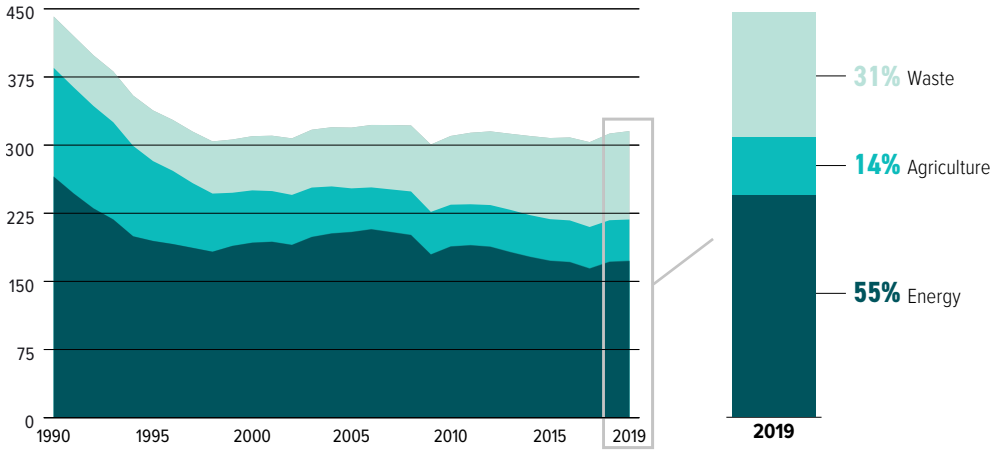


Russia's GHG emissions (excl. LULUCF) decreased by 32.4% between 1990–2019 to 2,163 $MtCO_2e$/yr. Emission reductions in the 1990s were driven by the economic collapse after the fall of the Soviet Union, largely due to a 41% and 31% decrease in energy and industry emissions, respectively. Since the 2000s, emissions from all sectors except agriculture have increased, and by 2019, total emissions (excl. LULUCF) were 13% higher than 2000 levels.

Gütschow et al., 2021

Methane emissions by sector

Total CH_4 emissions ($MtCO_2e$/year)



Russia did not sign the Global Methane Pledge at COP26 in November 2021.

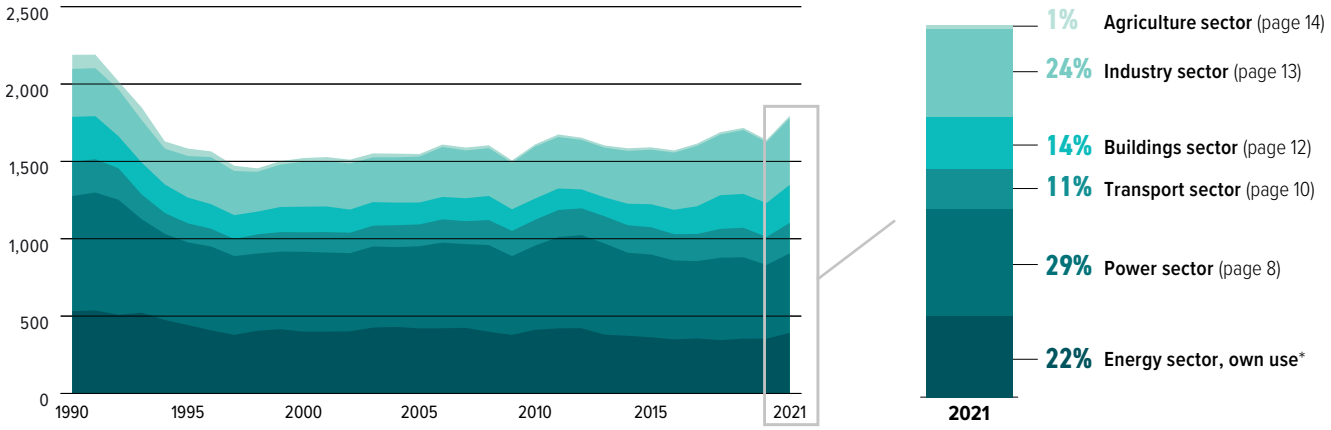
Participating countries pledged to undertake voluntary actions to contribute to a collective reduction of global methane emissions by at least 30% from 2020 levels by 2030. Further scrutiny of plans and implementation will be required.

Methane is a potent, though short-lived, greenhouse gas accounting for an estimated third of global warming. Overall methane emissions reduced sharply during the post-USSR economic collapse of the 1990s. Since then, total methane levels have fluctuated little. Energy emissions comprised between 55% and 64% of total emissions between 1990–2019, reaching the lowest levels (55%) in 2019. Waste emissions increased from 13% to 31%, while agriculture emissions decreased from 27% to 14% of the total.

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

Energy-related CO_2 emissions by sector

Annual CO_2 emissions ($MtCO_2$/year)



The largest driver of overall greenhouse gas emissions are CO_2 emissions from fuel combustion. In Russia, emissions have been slightly increasing since 1998, after a large decrease between 1990–1997. At 29%, electricity generation is the largest contributor, followed by the industry sector and the energy sector's own use at 24% and 22%, respectively.

Enerdata, 2022

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

ENERGY OVERVIEW

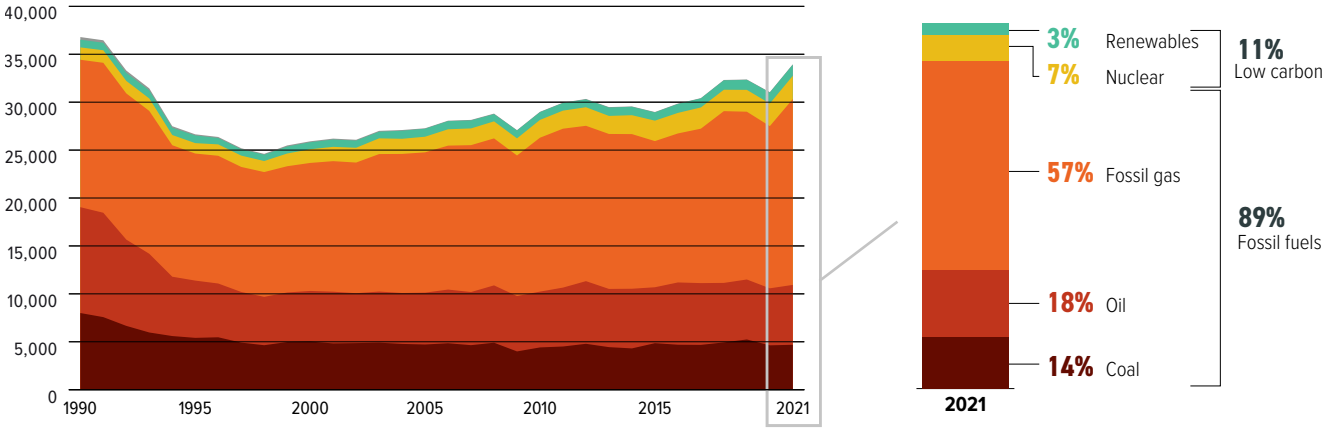
Russia is heavily reliant on fossil fuels, with fossil gas making up 57% of primary energy supply in 2021. Renewables made up just 3%, less than half the G20 average, with most coming from hydropower. Nuclear power generation, which has been gradually increasing over the last two decades, made up 7%.

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)

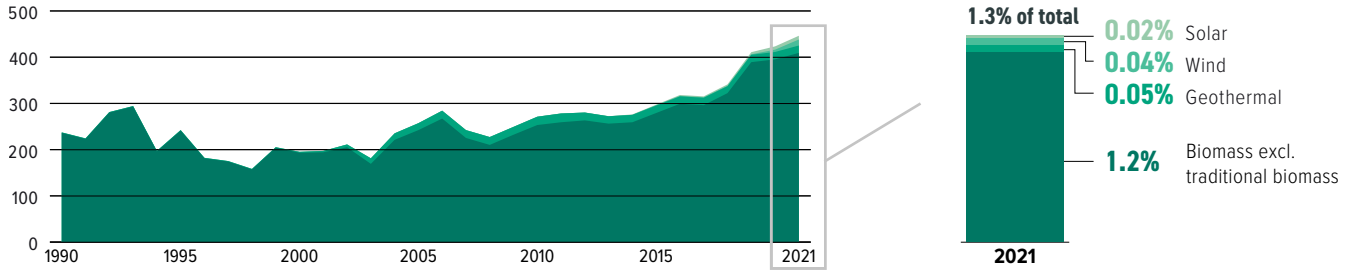


This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating and cooking, but also for transport fuels. Fossil fuels (oil, coal, and gas) make up 89% of Russia's energy mix, which is higher than the G20 average. Increasing energy consumption since the end of the 1990s was mainly satisfied by fossil gas, while the role of coal and oil remained stable after a decrease in the early 1990s. Due to a low starting base, renewable energy still plays a marginal role, despite some growth in recent years.

Enerdata, 2022

Solar, wind, geothermal and biomass development

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

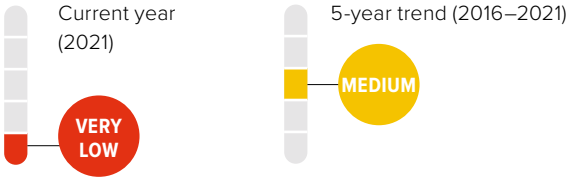


Solar, wind, geothermal and biomass, excluding traditional biomass, account for 1.3% of Russia's energy supply – the G20 average is 7.5%. The share in total energy supply has increased by around 23.5% in the last 5 years in the Russian Federation (2016–2021). Biomass (for electricity and heat) makes up the largest share.

Enerdata, 2022

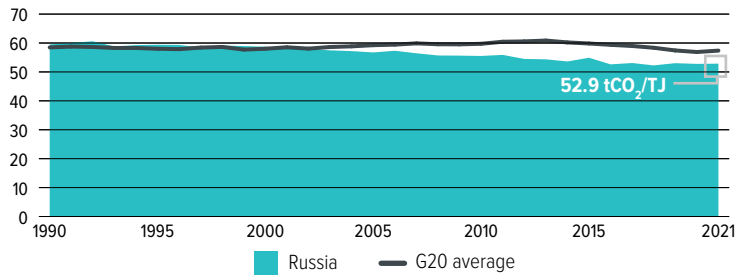
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

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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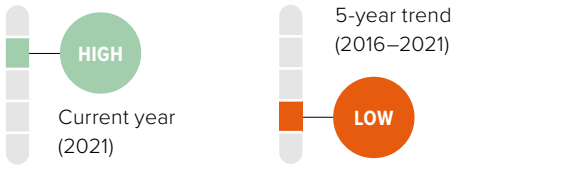
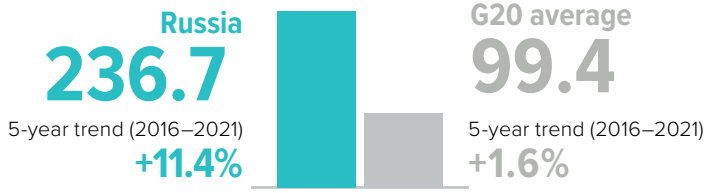


Carbon intensity is a measure of how much CO_2 is emitted per unit of energy supply. The emissions intensity of energy is slightly lower in Russia than the G20 average, at an average of 52.9 tCO_2/TJ in the past 5 years, largely due to the share of fossil gas, and a higher share of nuclear power. Russia's emissions intensity increased by 0.3% between 2016–2021, the opposite direction to the G20 trend.

Enerdata, 2022

Energy supply per capita

TPES per capita (GJ/capita) in 2021

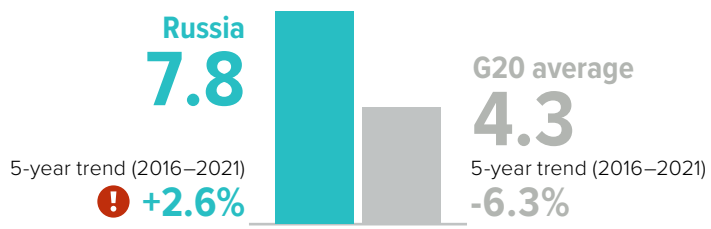


The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy. In 2021, energy supply per capita in the Russian Federation was 236.7 GJ, significantly higher than the G20 average of 99.4 GJ. Supply has also increased 7 times faster between 2016–2021 (11.4%) than the G20 average of 1.6% over the same period.

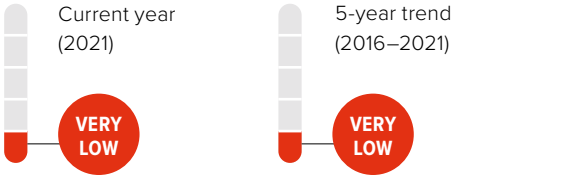
Enerdata, 2022; World Bank, 2022

Energy intensity of the economy

(TJ/million US$2015 GDP) in 2021



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



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. The energy intensity of the Russian economy is higher than the G20 average and has been increasing faster at 2.6% (2016–2021), compared to the G20's decrease of 6.3%, indicating a lack of efficiency measures in an already inefficient economy.

Enerdata, 2022; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat

Russia produced **14% of its electricity from coal in 2021 and 46% from fossil gas. Hydropower generation comprised approximately 19%** of total electricity generation in the country in 2021. Russia has approximately 12 GW of fossil gas and 1 GW of coal capacity in its future power pipeline.

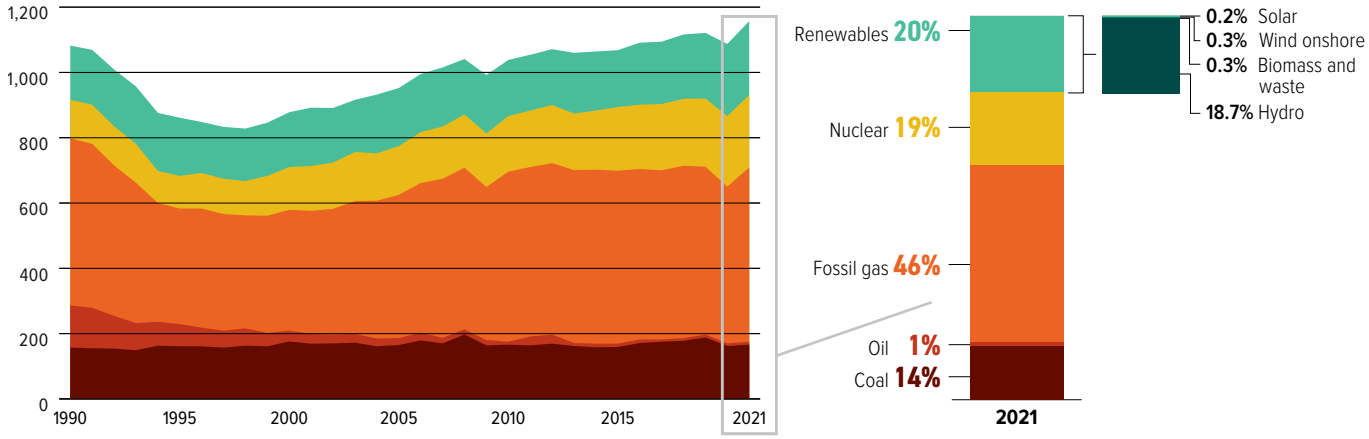
Power generation's share of energy-related CO_2 emissions in 2021: **29%**

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)

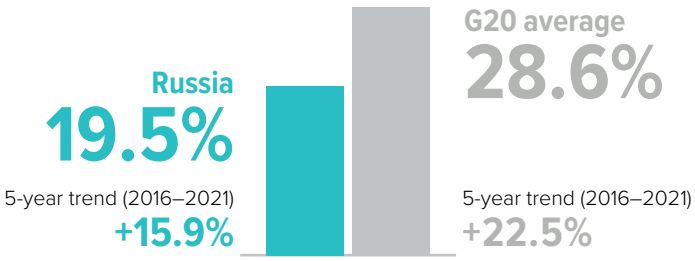


Russia generated 61% of its electricity from fossil fuels in 2021. The share of renewable energy in the power sector has been slightly increasing, making up approximately 20% of the 2021 power mix, almost all of it from hydropower. While onshore wind and solar have been increasing since 2019, they each contribute less than 1% to the power mix.

Enerdata, 2022

Share of renewables in power generation

(incl. large hydro) in 2021

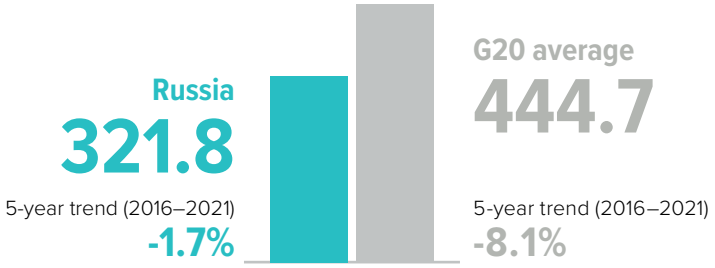


Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

Enerdata, 2022

Emissions intensity of the power sector

(gCO_2/kWh) in 2021



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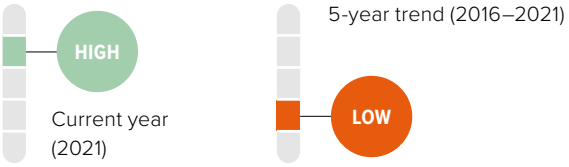


For each kilowatt hour of electricity, 321.8 g of CO_2 are emitted in Russia, lower than the G20 average of 444.7 gCO_2/kWh. This is due to the dominance of fossil gas in power generation, as well as considerable nuclear and hydropower generation. The downward trend in renewable energy can be attributed to a lack of investment.

Enerdata, 2022

POLICY ASSESSMENT

Renewable energy in the power sector

Russia is unlikely to meet its modest 2024 target of a 4.5% share of non-hydro renewables in electricity generation. The capacity supply agreements for renewables are entering the second round for up to 6.7 GW of new capacity to come online between 2023–2035, with USD 4.58bn provided. However, with stringent local content requirements and the sanctions imposed in response to Russia's Ukraine invasion, this will likely prevent joint ventures with foreign companies; therefore, the implementation of these projects is questionable, earning Russia a "low" rating.

Lin, 2022; Tissot and Bogdanov, 2020

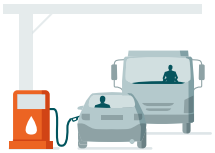
Coal phase-out in the power sector

Russia has no plans to phase out coal in the power sector, but rather envisages an increased role for coal in its Energy Strategy 2035. With about 1 GW of coal generation in the pipeline now, Russia is targeting an increase in coal consumption to 196m tonnes by 2035. This is further confirmed in its strategy for socio-economic development with low GHG emissions by 2050, whereby coal-fired power plants would continue to operate with an intended use of unproven carbon capture and storage technologies.

Global Energy Monitor, 2022a; Russian Federation, 2020c, 2021b

TRANSPORT SECTOR

Emissions from energy used to transport goods and people



Emissions from transport have been steadily on the rise in Russia since 1998. While they declined in 2020 as a result of pandemic response measures, emissions rebounded strongly in 2021, continuing the pre-pandemic upward trajectory. Oil remains the dominant fuel.

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

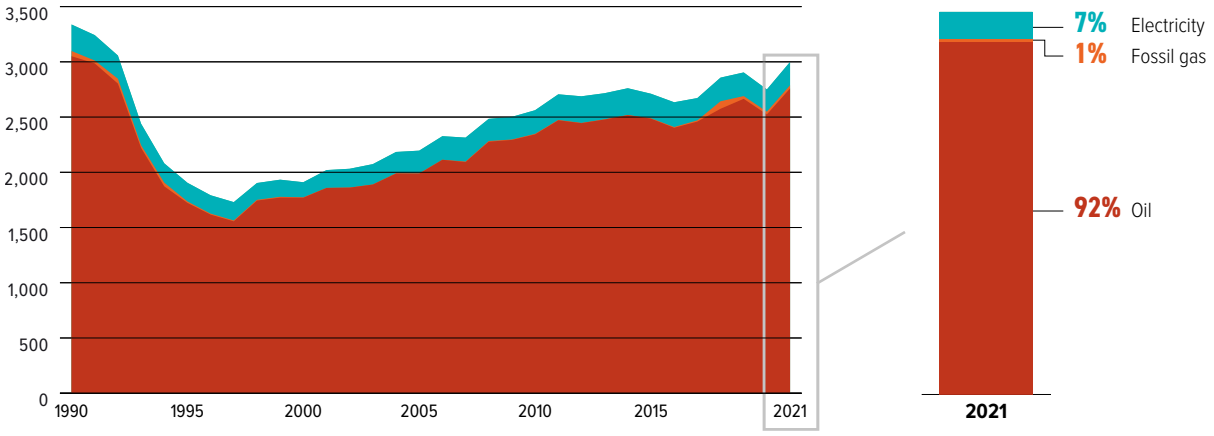
11% Direct **1.7%** Indirect

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)

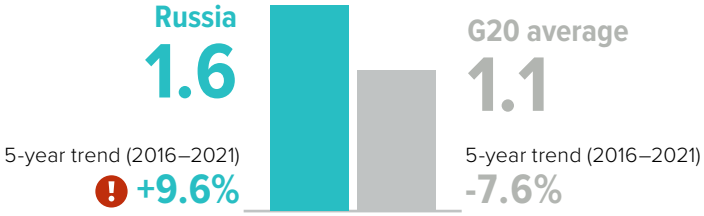


Electricity and biofuels make up only 7% of the energy mix in transport.

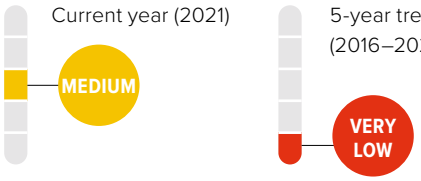
Enerdata, 2022

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

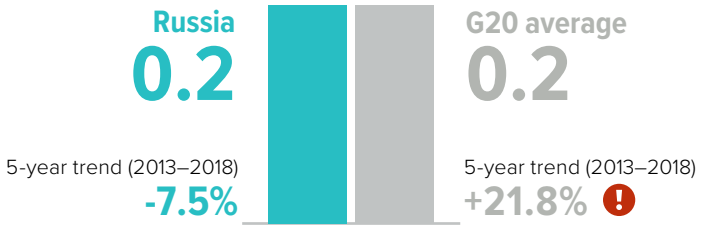


Per capita emissions in 2021 and the 5-year trend have been impacted by COVID-19 pandemic response measures and resulting economic slowdowns. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2022, please see the Highlights Report at www.climate-transparency.org

Enerdata, 2022; World Bank, 2022

Aviation emissions per capita[6]

(tCO_2/capita) in 2018



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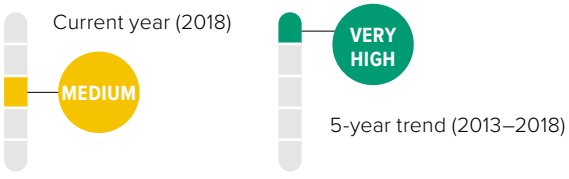


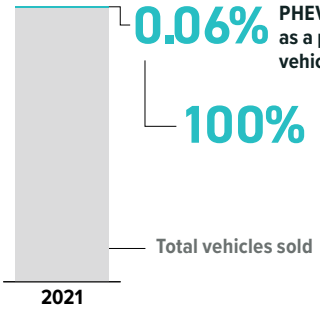
Enerdata, 2022; IEA, 2021a; World Bank, 2022

Motorisation rate

257
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.

AEB Automobile Manufacturers Committee, 2022
** These data are not comparable to other G20 Members*

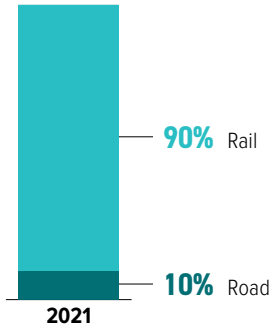
Modal split passenger transport

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

No data available for Russia

Modal split freight transport

(% of tonne-km): road, rail



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

Russia has no plan to phase out fossil fuel cars, and the sales of electric vehicles (EVs), while increasing before Russia invaded Ukraine, was vanishingly small, registering just 2,254 units in 2021. The government is to provide a subsidy of up to 25% of the purchase price of an EV built in Russia, and has begun a programme to construct EV charging stations with funding of about USD 21.3m. However, given the lack of domestic EV production and sanctions, the policies are likely to be ineffective.

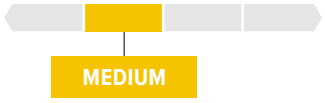
Russian Federation, 2021a, 2022; S&P Global, 2022; Stolyarov et al., 2021

Phase out fossil fuel heavy-duty vehicles

There are currently no plans in Russia to phase out fossil fuel heavy-duty vehicles (HDVs). The concept for the development and use of electric road transport in Russia refers mainly to buses and trucks. However, in its forecast of 15% of new vehicles purchased in 2030 being EVs, a "significant" part is made up of light-duty vehicles, with a smaller role for HDVs. The concept focuses predominantly on encouraging production in Russia.

Russian Federation, 2021a

Modal shift in (ground) transport

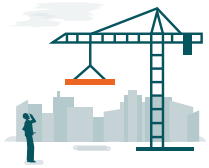


A number of Russian strategic documents target improvements in public transport and the rail network, including the 2030 Transport Strategy, the Russian Railway's long-term investment programme to 2025. Some of the targeted measures include investments in high-speed rail, improving the rail freight network capacity, constructing 16,000 km of new rail routes, and a 33% increase in passenger numbers between 2008–2030. Russia's 2020 draft long-term climate strategy includes a "large-scale change in the structure of cargo and passenger turnover in favour of less carbon intensive modes of transport".

Russian Federation, 2020c, 2021c; Russian Railways, 2017

BUILDINGS SECTOR

Emissions from energy used to build, heat and cool buildings



Direct and indirect emissions from the buildings sector in Russia account for 12.1% and 8.5% of total energy-related CO_2 emissions, respectively. Per capita emissions from the buildings sector are twice that of the G20 average.

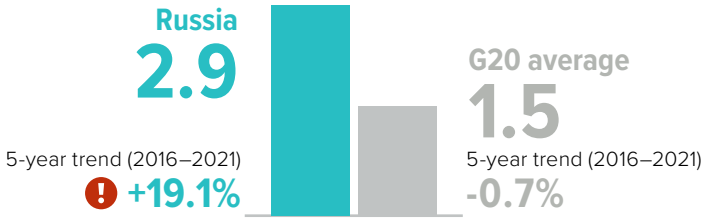
Buildings sector's share of energy-related CO_2 emissions in 2021: **12.1%** Direct **8.5%** Indirect

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.

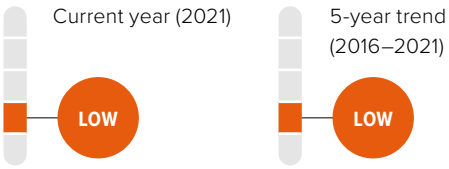
Climate Action Tracker, 2020; Rogelj et al, 2018

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 emissions occur directly (burning fuels for heating, cooking, etc.) and indirectly (from grid-electricity for air conditioning, appliances, etc.). Buildings-related emissions per capita in 2021 were nearly twice as high as the G20 average. This reflects the high fossil fuel share of the electricity mix. In contrast to the G20 average decrease, Russia has increased the per capita buildings emissions by 20% (2016–2021).

Enerdata, 2022; World Bank, 2022

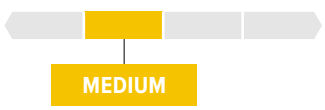
POLICY ASSESSMENT

Near zero energy new buildings

In 2020, Russia abolished a set of mandatory energy efficiency requirements for the construction of new buildings that would have reduced energy use in new buildings from 2018. In Russia's 2020 draft Energy Efficiency Action Plan, there are provisions mandating automated heating controls, energy efficiency surveys for new apartment buildings, and the banning of certain heating systems; however, these have yet to be implemented. The development of programmes incentivising the construction of near zero energy buildings is scheduled for the third quarter of 2022.

Russian Federation, 2020a, 2020b

Renovation of existing buildings



Russia's 2020 draft Energy Efficiency Action Plan includes a target of ensuring that all major upgrades to housing results in a minimum C-rating for energy efficiency from 2022, but includes no specific renovation rate. Subsidies for work on existing apartments to achieve the minimum C-rating are planned for implementation from Q3 2022, while funds are planned for energy audits to determine the energy rating before and after renovations, from Q3 2021. The impact of the ongoing economic recession on these plans as a result of the Western sanctions on Russia remain to be seen.

Russian Federation, 2020a

INDUSTRY SECTOR

Emissions from energy use in industry

Direct and indirect emissions from industry in Russia make up 24.1% and 10.2% of energy-related CO_2 emissions, respectively. Russia lacks effective policies to increase the energy efficiency of the industry sector, nor any effective policies to reduce emissions and to decarbonise the sector.

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

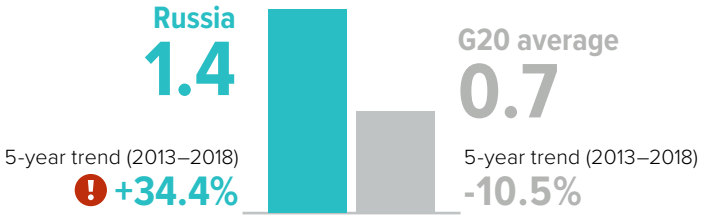
Rogelj et al., 2018

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

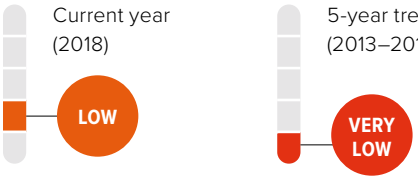
24.1% Direct **10.2%** Indirect

Industry emissions intensity[7]

(kgCO_2e/USD2015 GVA) in 2018



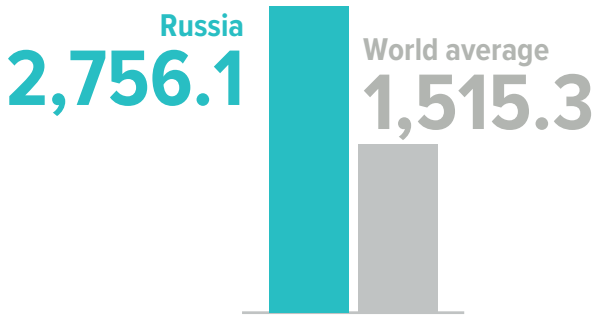
Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



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

Russia's draft 2020 Energy Efficiency Action Plan outlines timelines for the development of numerous national standards and requirements to improve the energy efficiency of the Russian industry sector. However, none of these have been released, despite a number of scheduled release dates since early 2021. The draft action plan targets a slight improvement to the energy intensity of cast iron (-0.3%) and a moderate improvement in cement and clinker production (-17%) by 2030.

Russian Federation, 2020a

LAND USE SECTOR

Emissions from land use change and forestry

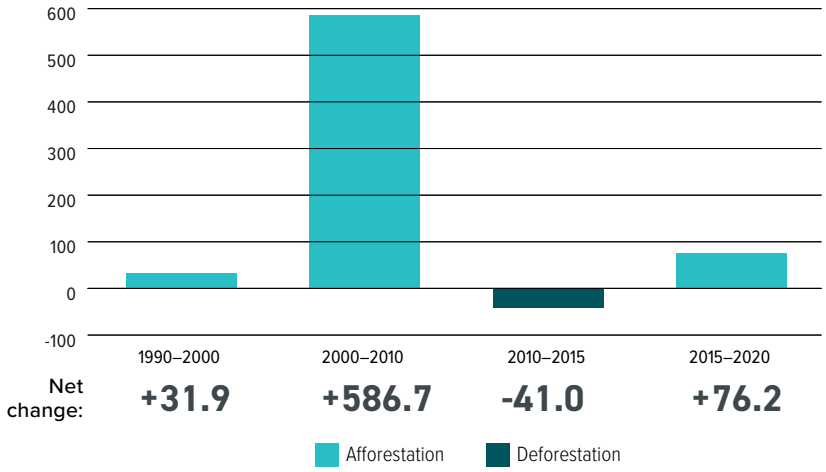
To stay within the 1.5°C limit, the Russian Federation needs to make the land use and forestry sector a net sink of emissions, e.g., by halting the expansion of boreal fires, discontinuing the degradation of peatlands, converting cropland into wetlands, and by creating new forests.

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

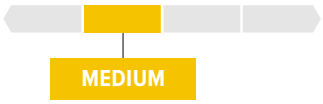


Between 2015–2020, Russia gained 76.2 kha of forest area per year. This does not, however, take into consideration the large extent of unmanaged forests that are being lost to wildfires and illegal logging.

Global Forest Assessment, 2020

POLICY ASSESSMENT

Target for net zero deforestation



Russia has no credible policies for reducing its current large-scale deforestation, including significant illegal logging. Reforestation projects are unable to replace forest cover lost to wildfires, and the size of Russia's emissions sink is expected to halve between 2020–2030 under current policies. In 2021, Russia's Environment Ministry decreed that its unmanaged forests would be treated equally to its managed forests to increase its absorption figures, violating a key element of international climate reporting set by the UNFCCC. This further exacerbates what some scientists have claimed is an already exaggerated level of managed forests claimed by Russia.

Falyakhov, 2022; Light, 2021; Russian Federation, 2019

AGRICULTURE SECTOR

Emissions from agriculture

The Russian Federation's agricultural emissions are primarily from the digestive processes and manure of livestock (mainly cattle) and the cultivation of organic soils. A 1.5°C compatible pathway requires behavioural and dietary shifts and less fertiliser use.

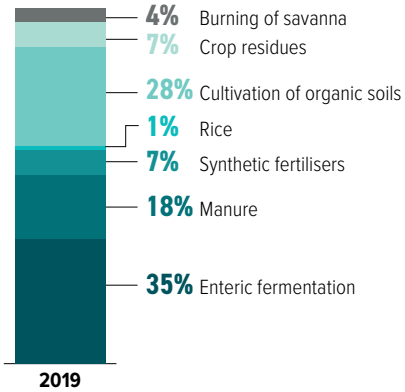
Methane emissions need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Rogelj et al., 2018

Emissions from agriculture

excluding energy emissions, in 2019

97.1
$MtCO_2e$ in 2019



In Russia, the largest sources of GHG emissions in the agriculture sector are the digestive processes and manure of livestock (mainly cattle) and the cultivation of organic soils. Adapting the diets of livestock and improving manure storage and handling as well as switching to approaches that facilitate soil carbon sequestration could help reduce emissions from this sector.

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

At least 30% reduction in GHG emissions below 1990 levels by 2030 (incl. LULUCF)

ACTIONS

- Increasing energy efficiency in all sectors of the economy
- Developing the use of non-fuel and renewable energy sources
- Protecting and improving the quality of natural sinks and storage of GHGs
- Financial and tax stimuli to reduce anthropogenic GHG emissions

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 Russia's climate targets, policies and finance as "critically insufficient". The "critically insufficient" rating indicates that Russia's climate policies and commitments reflect minimal, to no action, and are not at all consistent with the Paris Agreement. In November 2020, Russia put forward an updated emissions reduction target of at least 30% below 1990 levels by 2030. This updated target does not represent an increase in climate action, as it is simply the lower bound of the previous target's range (25–30%). The CAT rates the updated NDC target as "highly insufficient" when compared to modelled domestic pathways and "critically insufficient" when compared with its 'fair share' emissions allocation. It is also not providing adequate climate finance, so is rated "critically insufficient". The weak target will be easily met under existing policies and action, which the CAT rates as "highly insufficient".

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 2020
Net zero target	No
Interim steps	Yes: at least -30% by 2030
Sectoral targets	Yes: 4.5% non-hydro renewables by 2024

FINANCE

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

In 2020, Russia spent more than USD 9bn on fossil fuel subsidies, with petroleum production receiving the largest share. Approximately USD 5.4bn per year in public finance has been invested in energy projects in Russia, 59% of it supporting fossil fuel projects. Russia has no carbon tax nor emissions trading scheme (ETS) in place, but a pilot ETS is being implemented on Sakhalin Island, potentially paving the way for future regulation.

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

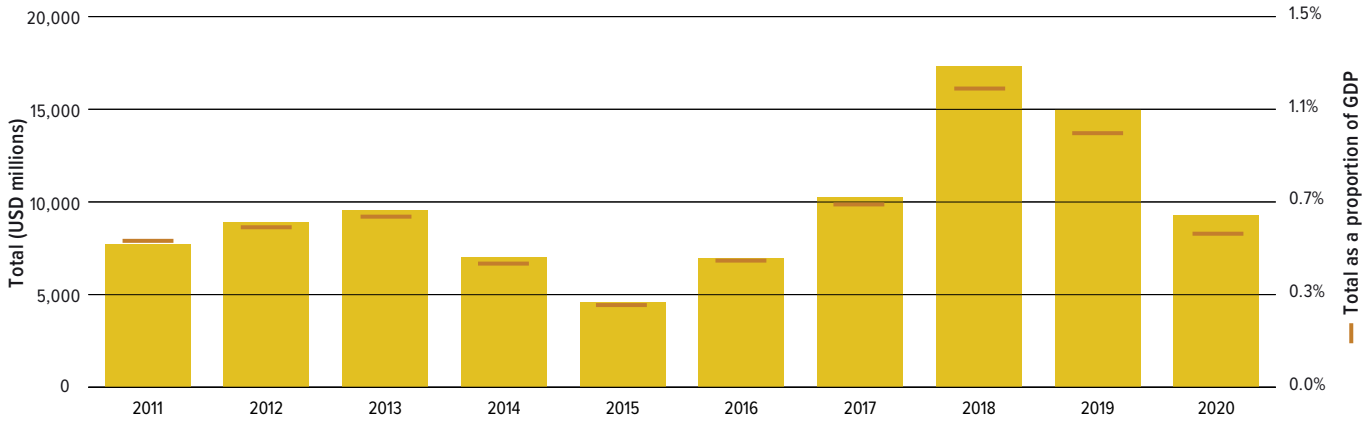
Rogelj et al., 2018

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

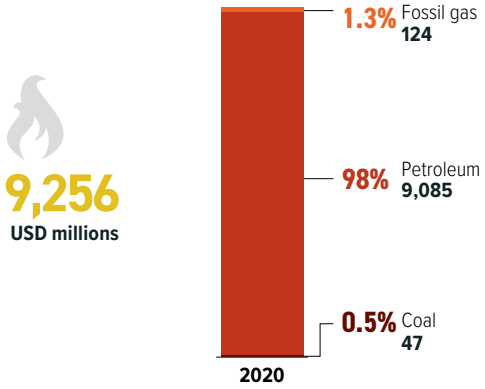
(USD millions)



OECD-IEA Fossil Fuel Support Database, 2022

Fossil fuel subsidies by fuel type

(USD millions) in 2020



Russian subsidies to fossil fuels rose sharply to a peak of USD 17.3bn in 2018 before falling to USD 9.3bn in 2020. These support measures applied almost exclusively to petroleum over other fuel types, and production over consumption.

The largest single subsidy measure of 2020, at USD 2.8bn, encouraged the extraction of oil from smaller and depleted sites by lowering tax rates. The exemption for depleted sites was removed in 2021, which points to a reduction in this support measure.

The COVID-19 pandemic and the global collapse in oil prices led Russia to a budget deficit and to reform its tax system by abolishing some extraction tax subsidies. However, following the energy crisis – compounded by Russia's invasion of Ukraine – Russian fossil fuel export revenues have soared.

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

Carbon pricing and revenue

Russia does not have a national carbon tax nor an ETS. In 2019, there was some talk about introducing a carbon tax. The framework drafted by the government included different regulatory mechanisms, such as a cap-and-trade system of emissions permits and tax breaks for companies reducing or capturing their emissions. However, the draft regulation did not go ahead due to widespread protests. In Russia, companies do not even have to account for their emissions. However, experiments are being led in the far-east island of Sakhalin with a pilot ETS, potentially paving the way for further developments countrywide.

I4CE, 2022; Sauer and Collett-White, 2019; Stambler, 2020

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.

Russia has taken some steps toward greening its financial system. In July 2021, the Central Bank of Russia (CBR) recommended that public joint stock companies disclose environmental, social and governance (ESG) information, in line with the recommendations of the Task Force on Climate-Related Financial Disclosure (TCFD). From 2023, major GHG emitters (more than 150,000 tCO_2 per year until 2024, when this threshold set by the Russian government will be lowered to 50,000 tCO_2 per year) will be required to report on their GHG emissions. No liability for non-compliance has yet been suggested.

In September 2021, the Russian government issued the first level of the Russian taxonomy laying out the criteria for two types of sustainable activity: green and adaptational. The energy criteria were based on the recommendations of the Technical Expert Group on sustainable finance of the EU (EU TEG). The exact measures of government support and remuneration for sustainable projects are still under discussion.

Green Finance Platform, 2021; Saenko and Shiposha, 2022; Task Force on Climate-Related Financial Disclosures, 2021

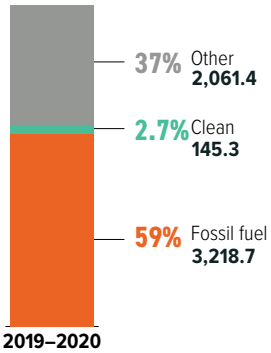
PUBLIC FINANCE

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)

5,425
USD millions



Between 2019 and 2020 Russia provided an average of USD 5.4bn in public finance per year to energy projects. Of this amount, 59% went to fossil fuels, almost exclusively to fossil gas. The largest amount of financing, USD 2.7bn, was provided in 2020 to build 25 energy-from-waste plants in Russia that will save an estimated 80 landfill sites from emerging and 60,000 hectares of land. Other significant investments include USD 1.3bn in finance towards the Amur gas processing plant in 2020.

Oil Change International, 2022

Provision of international public support

Russia is not listed in Annex II of the UNFCCC and is, therefore, not obliged to provide climate finance under the Convention. It is, however, an Annex I country, and submits biennial reporting to the UNFCCC. Despite the voluntary nature of contributions, it has provided international public finance to the Global Environment Facility (GEF) Trust Fund and the Green Climate Fund. While Russia may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

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 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

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