CLIMATE TRANSPARENCY REPORT | 2020

Comparing G20 Climate Action and responses to the COVID-19 Crisis

Climate Transparency

Catrina Godinho

Climate Transparency Report | Master

November 2020

OVERVIEW

IN A TIME OF UNCERTAINTY, THE G20 CAN SET A NEW COURSE TO A MORE SUSTAINABLE AND RESILIENT FUTURE

ABOUT CLIMATE TRANSPARENCY AND THIS REPORT

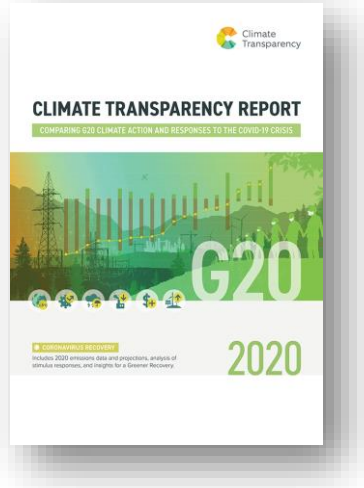
COMPARING G20 CLIMATE ACTION & RESPONSES TO THE COVID-19 CRISIS

Our **global partnership** brings together experts from research organisations and NGOs in the majority of the G20 countries.

Our mission is to **encourage ambitious climate action in the G20 countries**: we inform policy makers and stimulate national debate.

The Climate Transparency Report is **the world's most comprehensive annual review of G20 climate action**: we provide concise and comparable information on mitigation, finance and vulnerability.

The Climate Transparency Report | 2020 consists of this summary report and an in-depth country profile for each of the G20 countries.



Summary Report

Country Profiles

PARTNERS

Centro Clima
Center for Integrated Studies on Climate Change and the Environment - COPPE / UFRJ

Climate Analytics

University of Cape Town · iYunivesithi yaseKapa · Universiteit van Kaapstad

Beijing University of Technology 1960

FARN
Fundación Ambiente y Recursos Naturales

Germanwatch

icm
Iniciativa Climática de México

IESR
Institute for Essential Services Reform

IGES
Institute for Global Environmental Strategies

IDDRI

New Climate Institute

Humboldt-Viadrina Governance Platform

ODI

teri

DATA PARTNERS

Agora Verkehrswende

Climate Action Tracker

CCPI
Climate Change Performance Index

Enerdata
intelligence + consulting

FUNDERS

climateworks FOUNDATION

Supported by:
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European Climate Foundation

WORLD BANK GROUP

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PART 1:
G20 RESPONSES TO THE COVID-19 CRISIS

JOSEPH STIGLITZ

“The post-Corona recovery packages can lead to a greener and more just world. Unfortunately, many do not live up to that aspiration.
The Climate Transparency Report provides an excellent overview of the recovery programs with good examples as well as missed chances.”

Photo by Daniel Baud and the Sydney Opera House

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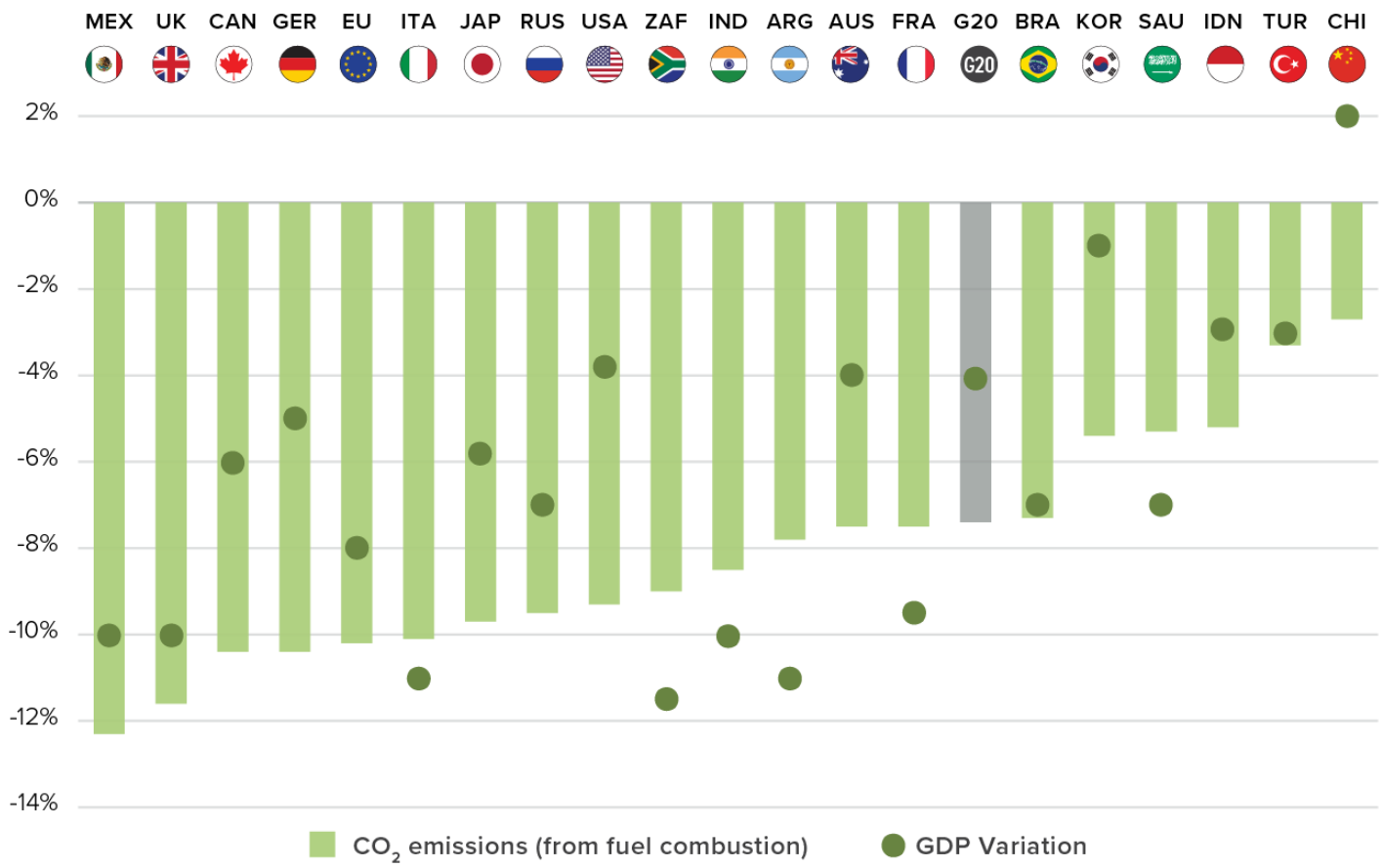
IMPACTS OF THE COVID-19 CRISIS ON CO_2 EMISSIONS

CO_2 EMISSIONS PROJECTED TO DECREASE BY 7.5% IN 2020

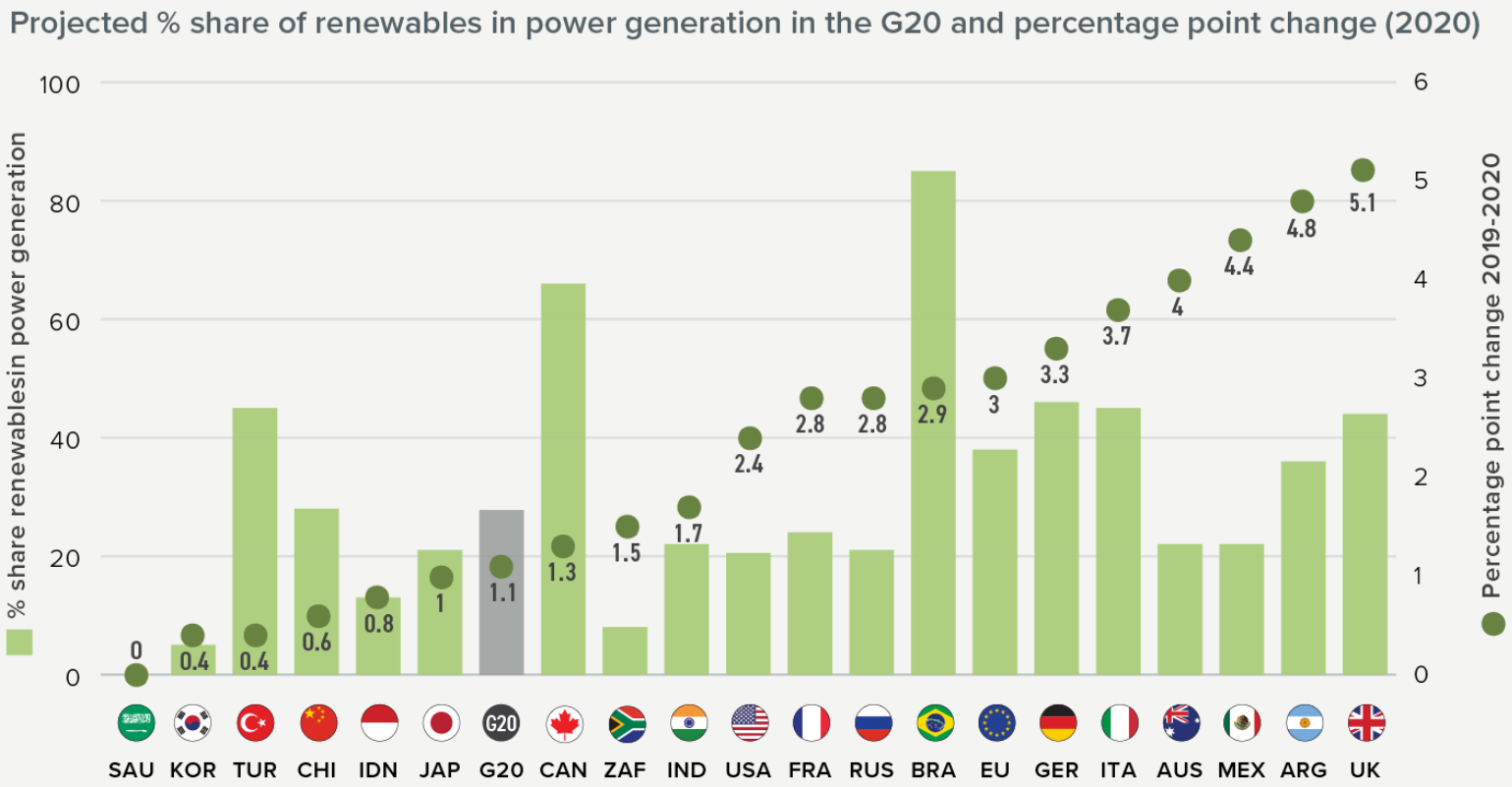
Projected % change in G20 GDP and energy-related CO_2 emissions (2020)



Source: Enerdata, 2020

SHARE OF RENEWABLES CONTINUE TO GROW IN 2020

THE SHARE OF RENEWABLES IN POWER GENERATION IS PROJECTED TO GROW IN ALL G20 MEMBERS



Source: Enerdata, 2020

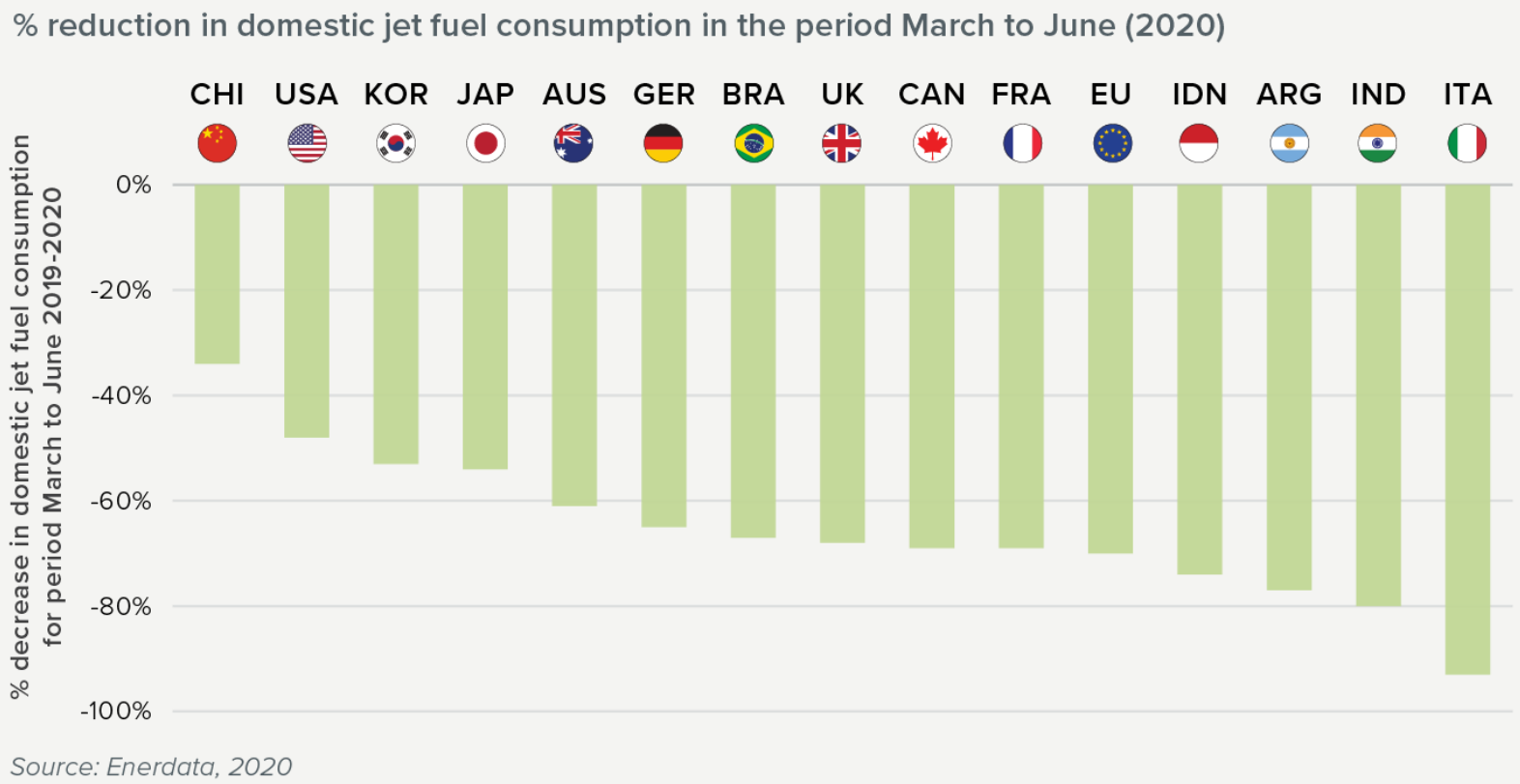
Several factors at play:

- renewables being cheaper,
- preferential access for renewables,
- and a reduction of peak demand, which is typically met with gas.

The gain in renewables is a signal of climate policies and economic factors at work in G20 countries.

DEMAND FOR AVIATION FUEL DECREASED STEEPLY IN 2020

AVIATION FUEL DEMAND DECREASED MARCH TO JUNE 2020 IN ALL G20 MEMBERS



Source: Enerdata, 2020

The pandemic has had an extreme impact on aviation demand.

Overall, airlines and airports have received at least USD 90bn in support.

G20 countries should take a long-term view and aid to the sector must be aligned with climate mitigation goals.

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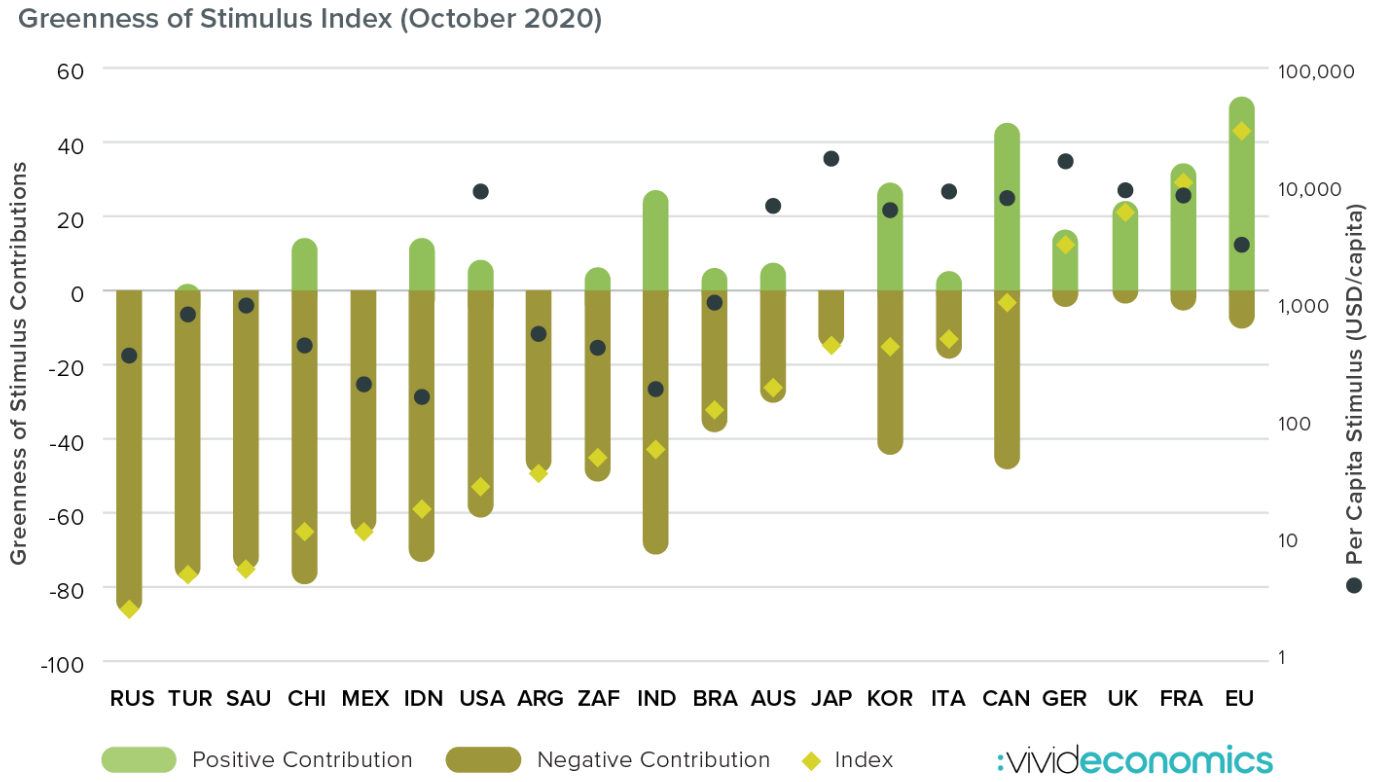
COMPARING G20 RECOVERY PACKAGES

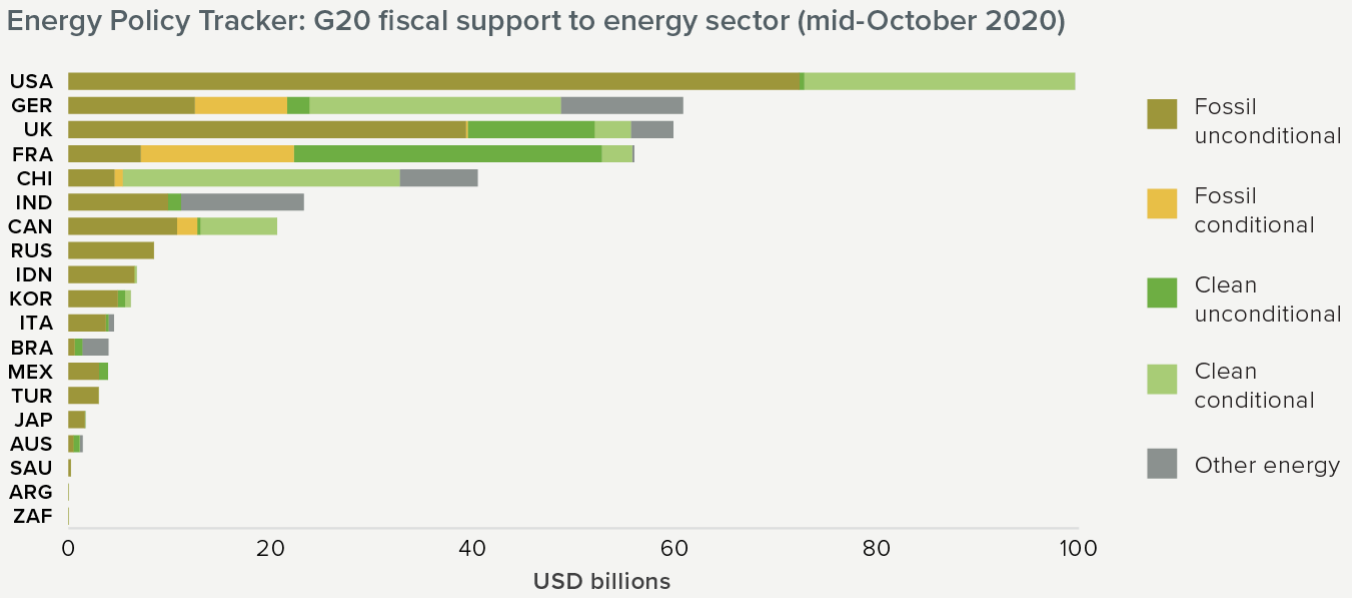
ONLY 4 G20 COUNTRIES HAVE MOSTLY GREEN STIMULUS RESPONSES

In 16 out of the G20 members, stimulus spending in environmentally relevant sectors seems to be leaning towards reinvigorating rather than reforming emissions-intensive, environmentally-damaging industries



G20 FISCAL SUPPORT IN THE ENERGY SECTOR

54% OF TOTAL G20 STIMULUS SUPPORT IN THE ENERGY SECTOR HAS BEEN DIRECTED TOWARDS FOSSIL FUELS



- 10 G20 countries are providing support to the domestic coal sector
- 10 countries are providing support to the gas sector
- 9 countries are providing support to the oil sector

However, 18 G20 countries (Saudi Arabia and Russia are the exceptions) are providing some support to green industries, focusing mainly on the expansion of renewable energy capacities and electric vehicles.

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5 PRINCIPLES & CO-BENEFITS FOR A GREEN RECOVERY

5 PRINCIPLES OF A GREEN RECOVERY

A GREEN RECOVERY CAN ACCELERATE CLIMATE ACTION & BRING SUBSTANTIAL CO-BENEFITS

1. **INVEST IN A SUSTAINABLE PHYSICAL INFRASTRUCTURE**
2. **INVEST IN EDUCATION, RESEARCH AND DEVELOPMENT**
3. **REINFORCE POLICY, REGULATIONS, & INCENTIVES FOR A SUSTAINABLE FUTURE**
4. **INVEST IN NATURE-BASED SOLUTIONS & THE ENVIRONMENT**
5. **INTRODUCE CONDITIONALITY FOR GREENER BAILOUTS**

CO-BENEFITS OF CLIMATE ACTION FOR A GREEN RECOVERY

CO-BENEFITS THAT CAN BE EXPECTED OR DESIGNED INTO CLIMATE POLICIES AND RECOVERY RESPONSES

BIODIVERSITY & THE ENVIRONMENT

FINANCIAL SECURITY & FISCAL BENEFITS

ENERGY ACCESS & SECURITY

JOBS & LOCAL ECONOMIC VALUE CREATION

IMPROVE PUBLIC HEALTH & WELL-BEING

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PART 2:
STOCKTAKE OF G20 CLIMATE ACTION

STOCKTAKE OF G20 CLIMATE ACTION

ANNUAL ASSESSMENT OF G20 MEMBERS' PROGRESS ON PARIS AGREEMENT GOALS

PARIS AGREEMENT GOALS

Adaptation: Addressing and reducing vulnerability to climate change

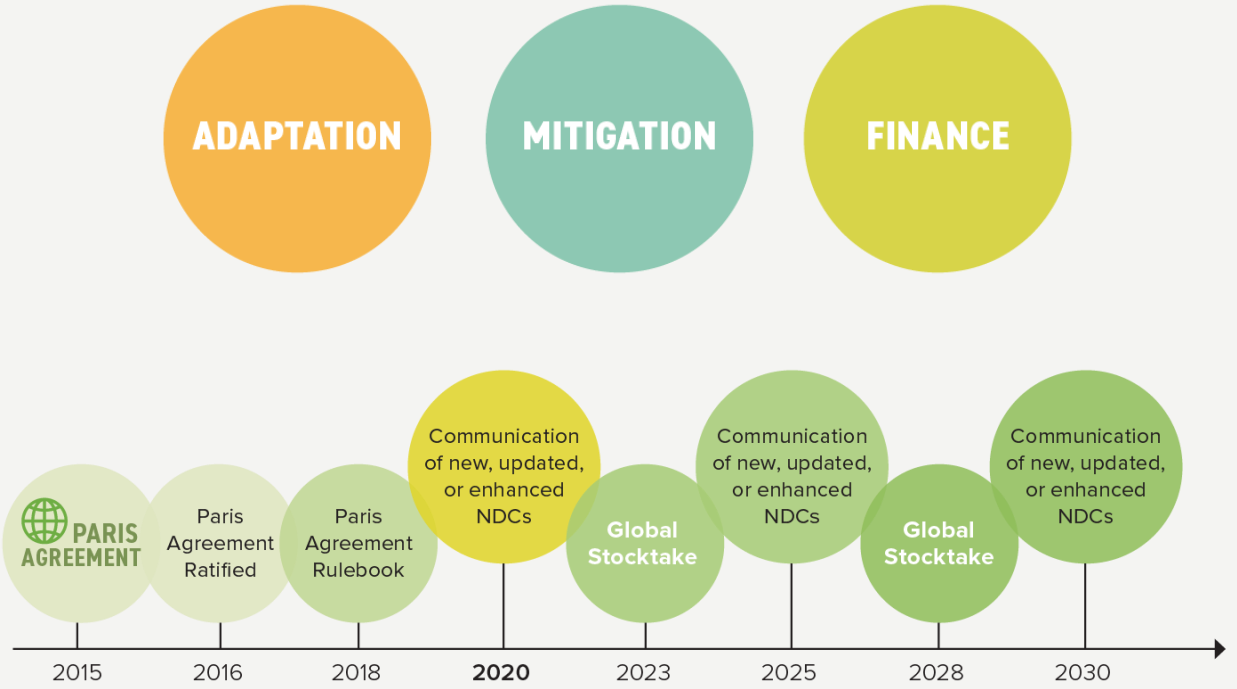
Goal 1: Increase the ability to adapt to the adverse impacts of climate change and foster climate resilience and low-GHG development, in a manner that does not threaten food production.

Mitigation: Reducing emissions to limit global temperature increase

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

Finance: Making finance flows consistent with climate goals

Goal 3: Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.



G20 NDC UPDATES

PARTIES TO THE PARIS AGREEMENT ARE EXPECTED TO UPDATE NDCS IN 2020

RECOMMENDATIONS FROM CLIMATE TRANSPARENCY'S NDC TRANSPARENCY CHECK

1. Provide a precise description of the target
2. Address fairness and ambition
3. Make a clear link to Paris Agreement goals
4. Detail planning processes
5. Describe the implementation plans

All parties to the Paris Agreement need to communicate their NDCs every five years.

Successive NDCs should represent a progression beyond the previous and reflect each party's highest possible ambition.

NDCs define each party's mitigation contribution, goals for adaptation, and how to make finance flows consistent with mitigation and adaptation goals.

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COMPARING G20 CLIMATE ACTION: ADAPTATION

CHRISTIANA FIGUERES

"The consequences of climate change can already be felt. We need to prepare and take decisive action now. The Climate Transparency Report names adaptation measures that are needed and what countries should include in their plans."

Founding Partner, Global Optimism and former Executive Secretary, UNFCCC

G20 MEMBERS ARE VULNERABLE TO CLIMATE CHANGE AND NEED TO ADAPT

1.5°C BENCHMARKS FOR ADAPTING TO GLOBAL WARMING

1.5°C compatible mitigation and adaptation actions will require strengthened global-to-local financial architecture that enables **greater access to finance and technology.**

While **adaptation finance has increased** quantitatively, significant further expansion would be needed to adapt to 1.5°C.

Sustainable development strategies can enable transformational adaptation for a 1.5°C warmer world.

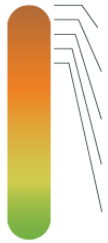
Source: Own evaluation based on IPCC SR15

- Global warming leads to changes in the frequency, intensity, duration, and timing of extreme weather events.
- Extreme climatic and weather-related events have brought about high economic and human costs to the G20.
- Global temperatures are already 1.1°C above preindustrial levels and are increasing.

G20 COUNTRIES EXPERIENCE THE IMPACTS OF CLIMATE CHANGE

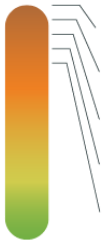
BETWEEN 1999 & 2018, G20 COUNTRIES LOST ABOUT 220,000 LIVES & USD 2.6TN TO EXTREME WEATHER EVENTS

FATALITIES



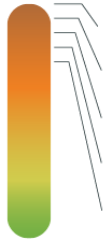
Fatalities: 1999–2018

RANKING IN THE G20		Annual average	Annual average per million
1	Russia	2,939	20.3
2	France	1,122	18.1
3	Italy	997	16.9
4	Germany	537	6.6
5	India	2,925	2.5



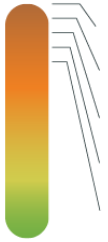
RANKING IN THE G20		Fatalities in 2018
1	India	2,081
2	Japan	1,282
3	Germany	1,246
4	China	378
5	United States	343

ECONOMIC LOSSES



Economic losses: 1999–2018

RANKING IN THE G20		Annual average USD million (PPP)	Annual average per unit GDP (%)
1	United States	51,580	0.35
2	India	14,009	0.26
3	China	35,272	0.25
4	Australia	2,431	0.25
5	Mexico	3,002	0.17



RANKING IN THE G20		Losses in 2018 USD million (PPP)
1	United States	80,081
2	India	37,807
3	Japan	35,839
4	China	28,887
5	Argentina	6,069

Source: Germanwatch – Global Climate Risk Index 2020

G20 COUNTRIES NEED TO INVEST IN ADAPTATION

GLOBAL IMPACTS OF CLIMATE CHANGE ARE SIGNIFICANTLY HIGHER AT TEMPERATURES OVER 1.5°C

	Baseline: 1981–2010	0.6°C	1.5°C	2°C	3°C
WATER SHORTAGES	% area with increased water scarcity	0	9	15	25
	% time in drought conditions	7	10	13	17
HEAT AND HEALTH	Heatwave frequency % likelihood	33	74	87	97
	Major heatwave frequency % likelihood	5	28	49	79
	Heatwave duration average annual days	2	6	12	37
MAIZE	Reduction in crop duration	0	-7	-10	-15
	Damaging hot spell frequency % likelihood	6	12	18	35
	Reduction in rainfall % likelihood	15	16	18	20
RICE	Reduction in crop duration	0	-5	-7	-12
	Damaging hot spell frequency % likelihood	27	32	35	40
	Reduction in rainfall % likelihood	14	14	15	16
SOYBEAN	Reduction in crop duration	0	-7	-11	-17
	Damaging hot spell frequency % likelihood	1	2	3	5
	Reduction in rainfall % likelihood	14	13	12	12
WHEAT	Reduction in crop duration	0	-7	-11	-18
	Damaging hot spell frequency % likelihood	21	28	34	46
	Reduction in rainfall % likelihood	14	14	15	17

Source: Arnell, 2019

Some G20 countries may be exposed to greater than average weather- and climate-related impacts at 1.5°C:

- Australia, Brazil, France, Italy, Mexico, and Turkey will likely be exposed to severe water scarcity or droughts.
- Brazil and Indonesia may have considerably more frequent heatwaves.
- Australia, India, Mexico, Saudi Arabia, and South Africa will have many more days with extreme temperatures.
- Most G20 countries could experience a reduction in crop duration, reduced rainfall, and an increase in damaging hot spells for key crops, with impacts for local and global food security.

RESOURCES FOR ADAPTATION MUST BE SCALED UP

19 G20 COUNTRIES HAVE ADAPTATION PLANS (SAUDI ARABIA IS THE EXCEPTION)

KEY OPPORTUNITIES FOR ENHANCING CLIMATE ADAPTATION

AGRICULTURE R&D & FOOD SECURITY

Global food demand is set to increase by 50% by 2050. Without ambitious adaptation and mitigation, yields may decrease by 30%.

PROTECT THE NATURAL ENVIRONMENT

Natural systems play an important regulatory and buffer function against the impacts of climate change as well as contributing to mitigation efforts.

INCREASE URBAN RESILIENCE

Cities are already home to half the worlds population – and urbanisation rates are growing.

FUTURE PROOF INFRASTRUCTURE

Physical infrastructure will need to withstand the extremes of climate change.

INCREASE DISASTER PREPAREDNESS

Risk management can reduce the impacts of extreme events and make recovery quicker and cheaper.

Based on Global Commission on Adaptation, 2019

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COMPARING G20 CLIMATE ACTION: MITIGATION

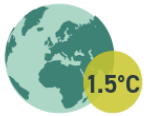
TAZNEEM ESSOP

“The G20 represents some of the highest emitting countries in the world. They therefore have a responsibility to lead with ambitious climate action. The Climate Transparency Report not only helps these countries understand how much more they need to do, but also helps citizens in holding these governments accountable for implementing the Paris Agreement.”

Executive Director, Climate Action Network (CAN) International

G20 COUNTRIES NEED TO MITIGATE EMISSIONS TO LIMIT GLOBAL WARMING

THE G20 ARE NOT ON TRACK FOR A 1.5°C WORLD

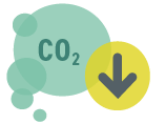


The 2015 **NDCs would lead to 2.7°C** or higher global temperature increases

GHG emissions need to be 45% below 2010 levels by 2030 and reach net-zero by 2050

G20 members **need to update NDC targets** to reflect highest possible ambition in 2020/21

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING



NET-ZERO EMISSIONS BY 2050

To meet the 1.5° C goal, global net CO_2 emissions need to be **45% below 2010 levels by 2030** and will have to reach net-zero by 2050.

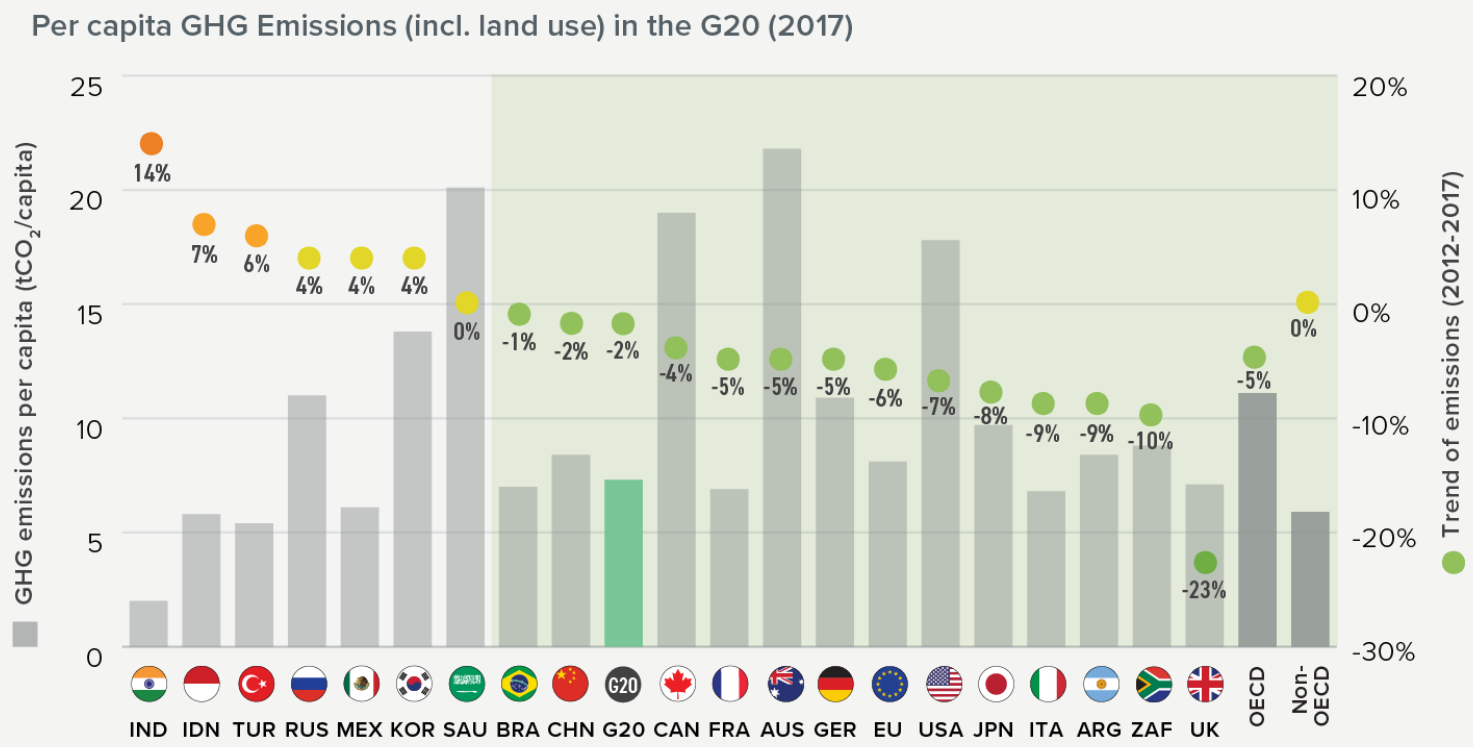
LESS FOSSIL FUELS IN THE ENERGY MIX

The share of fossil fuels in the global primary energy mix needs to fall to **67% by 2030 and to 33% by 2050** (and to substantially lower levels without Carbon Capture and Storage).

Sources: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

PER CAPITA GHG EMISSIONS DECREASING IN 13 G20 MEMBERS

G20 COUNTRIES ACCOUNT FOR 90+% OF CUMULATIVE HISTORICAL CO_2 EMISSIONS & 75% OF CURRENT EMISSIONS



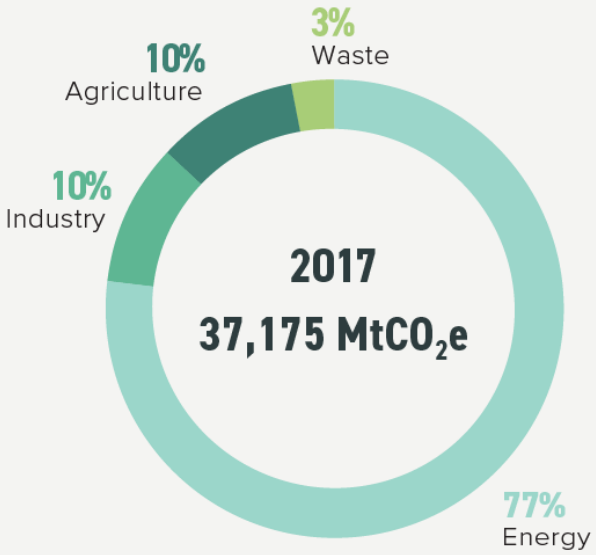
Data for Argentina is for 2016 and trend for 2011- 2016.

Sources: Climate Action Tracker, 2019, Gütschow et al., 2019; World Bank, 2019

77% G20 GHG EMISSIONS (PRIMARILY CO_2) FROM ENERGY

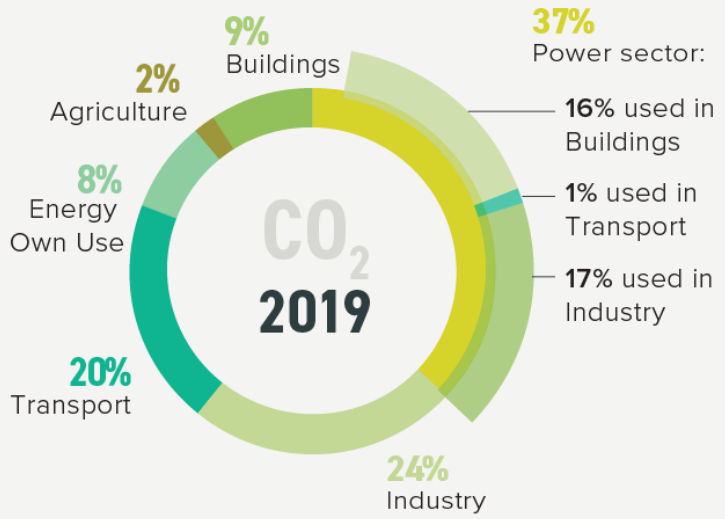
MITIGATION REQUIRES STRUCTURAL TRANSFORMATION IN ENERGY INTENSIVE SECTORS

G20 GHG Emissions by Sector (2017)



Sources: Gütschow et al., 2019; Climate Action Tracker, 2020

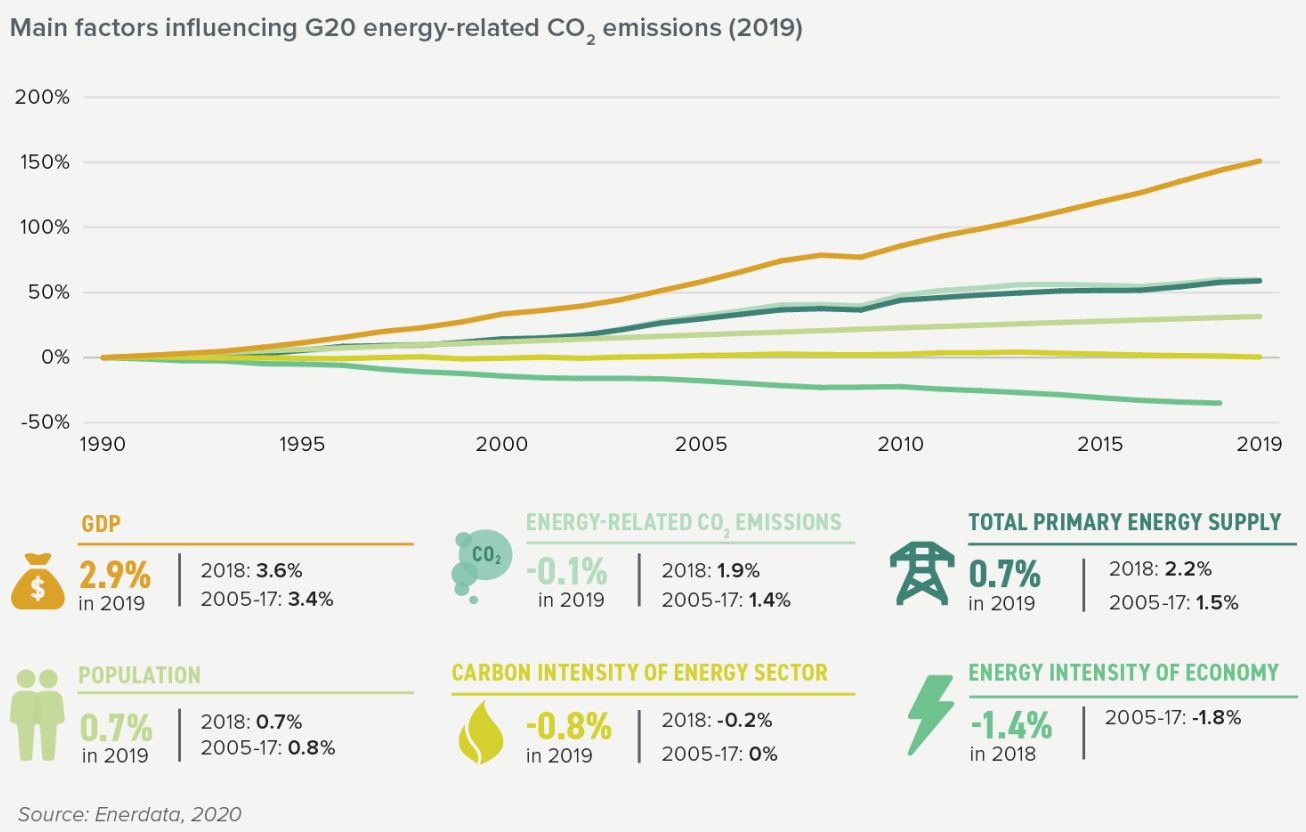
G20 energy-related CO_2 emissions by sector (2019)



Source: Enerdata, 2020

ENERGY-RELATED CO_2 DECREASED IN 2019 BY 0.1%

MORE RENEWABLE ENERGY, GREATER EFFICIENCY, AND SLOWER GDP GROWTH

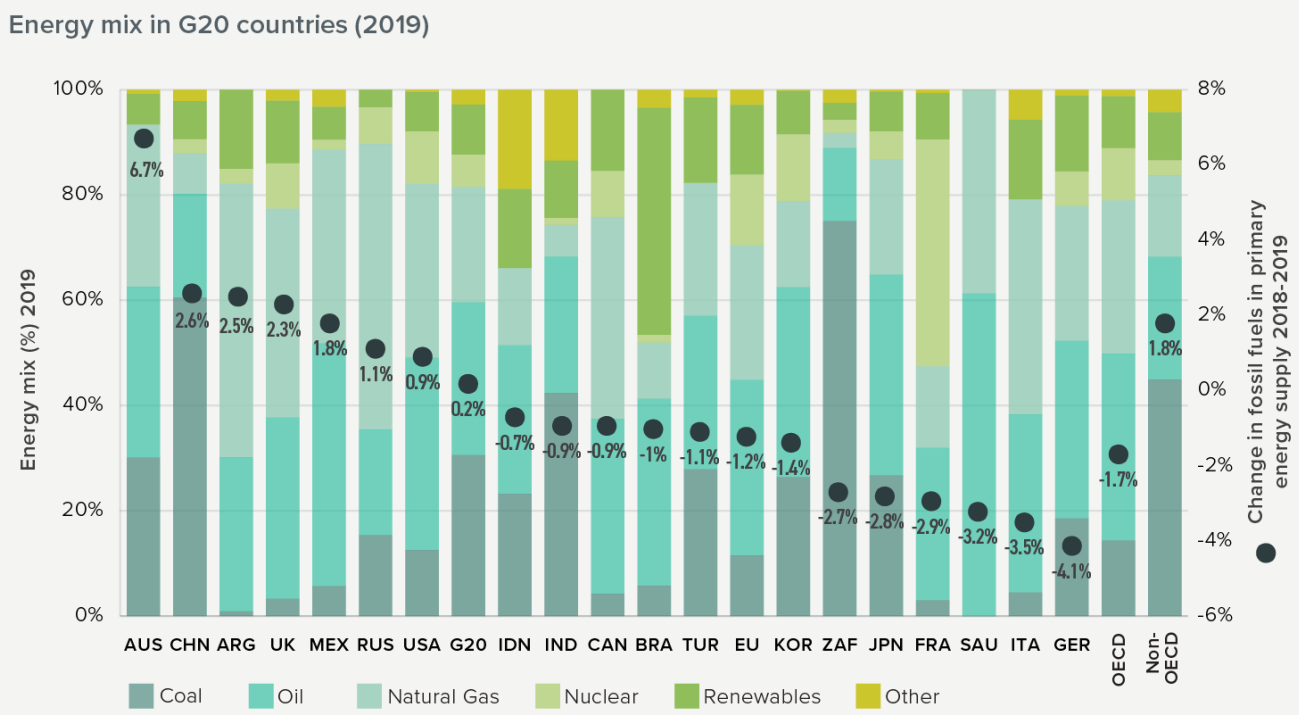


Main factors influencing G20 CO_2 Emissions in 2019

- Slower Economic Growth 2.9%
- Carbon intensity of energy sector decreased by 0.8%
- Energy intensity of the economy decreased by 1.4%

FOSSIL FUELS STILL 81.5% OF G20 PRIMARY ENERGY

COAL DECREASED BY 2% IN G20 BUT MANY COUNTRIES SWITCHING TO OIL & GAS INSTEAD OF RENEWABLES



Source: Enerdata, 2020

Energy mix in G20 countries in 2019

- Fossil fuels decreased by 1.7% in OECD G20 (coal -11%)
- Fossil fuels increased by 1.8% in non-OECD G20 (coal 0%)

G20 MEMBERS ARE MAKING PROGRESS IN SOME SECTORS

ALL SECTORS NEED TO BE DECARBONISED TO MEET THE PARIS AGREEMENT MITIGATION GOAL

2019 TURNING POINTS

CO_2 energy-related emissions down 0.1% in 2019

- Carbon-intensity of primary energy supply **-0.8%**
- Coal consumption **-2%**
- CO_2 emissions from the power sector **-2.4%**
- **27%** of power generated from RE, compared to 25% in 2018
- Energy-related CO_2 emissions from the agriculture sector **-0.5%**

2019 STICKING POINTS

Fossil fuels still 81.5% of primary energy | transport, industry, and forestry require more urgent action

- Consumption grew in Gas **+3%** and Oil **+1%**
- CO_2 emissions from the transport sector **+1.5%**
- CO_2 emissions from the building sector **+0.9%** in 2019
- CO_2 emissions from the industry sector **+1.2%**

POWER SECTOR

G20 MEMBERS ARE MAKING PROGRESS ON POWER SECTOR DECARBONISATION

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING

DECARBONISE POWER GENERATION

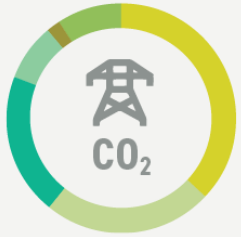
Global power (electricity) generation must be decarbonised and the share supplied by renewable energy and other CO_2-free technologies needs to increase to 98-100% by 2050.

PHASE OUT COAL

Coal use in the power sector needs to peak by 2020 and phase out rapidly. Coal must be completely phased out by 2030 in the EU/ OECD, by 2037 in non-OECD Asia, and by 2040 in the rest of the world.

Sources: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

G20 ENERGY-RELATED CO_2 EMISSIONS 2019 – POWER SECTOR



37.5%

Annual growth rate

-2.4% in 2019

+2.5% in 2018

+1.6% 2005-2017

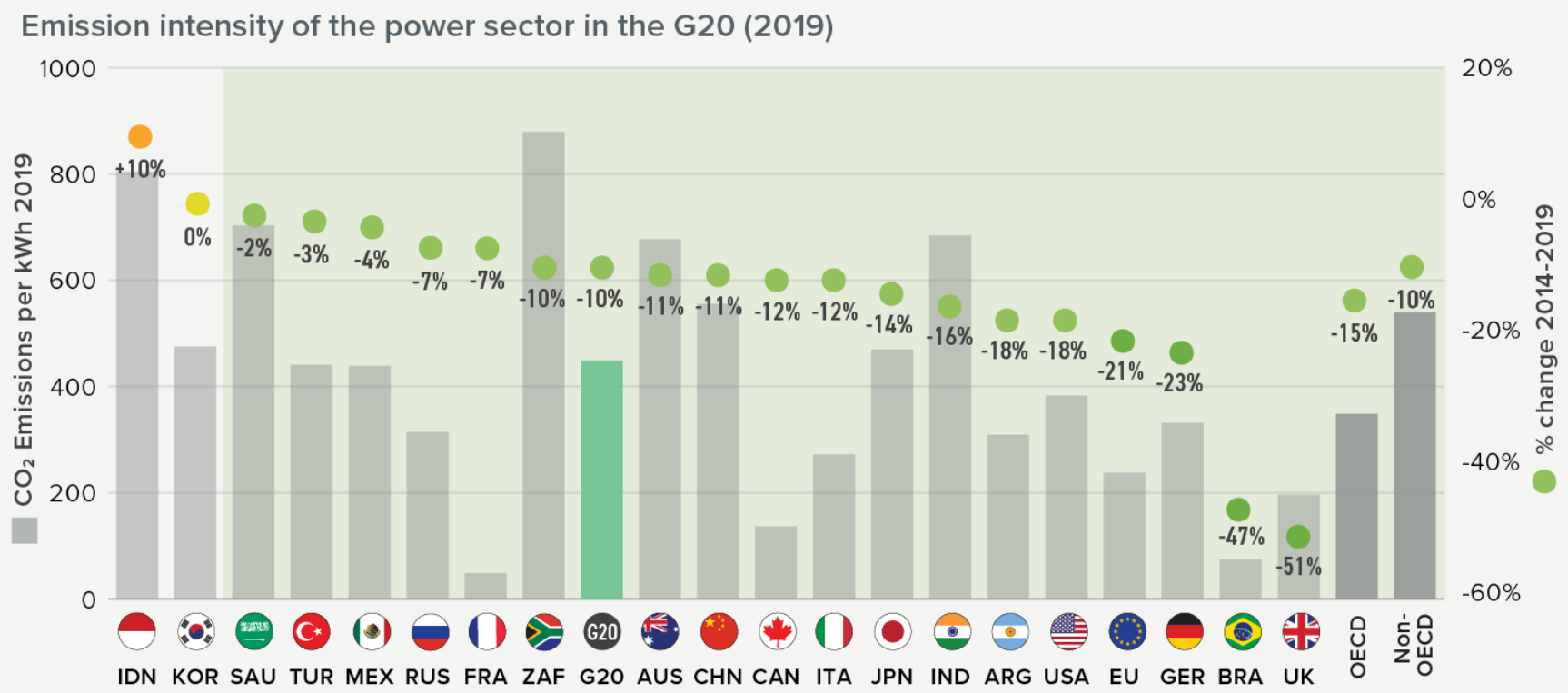
Source: Enerdata, 2020

Between 2014 and 2019:

- emissions intensity of the power sector in the G20 decreased by 10%
- share of renewables in power generation grew by 20% in the G20

G20 EMISSION INTENSITY OF THE POWER SECTOR 2019

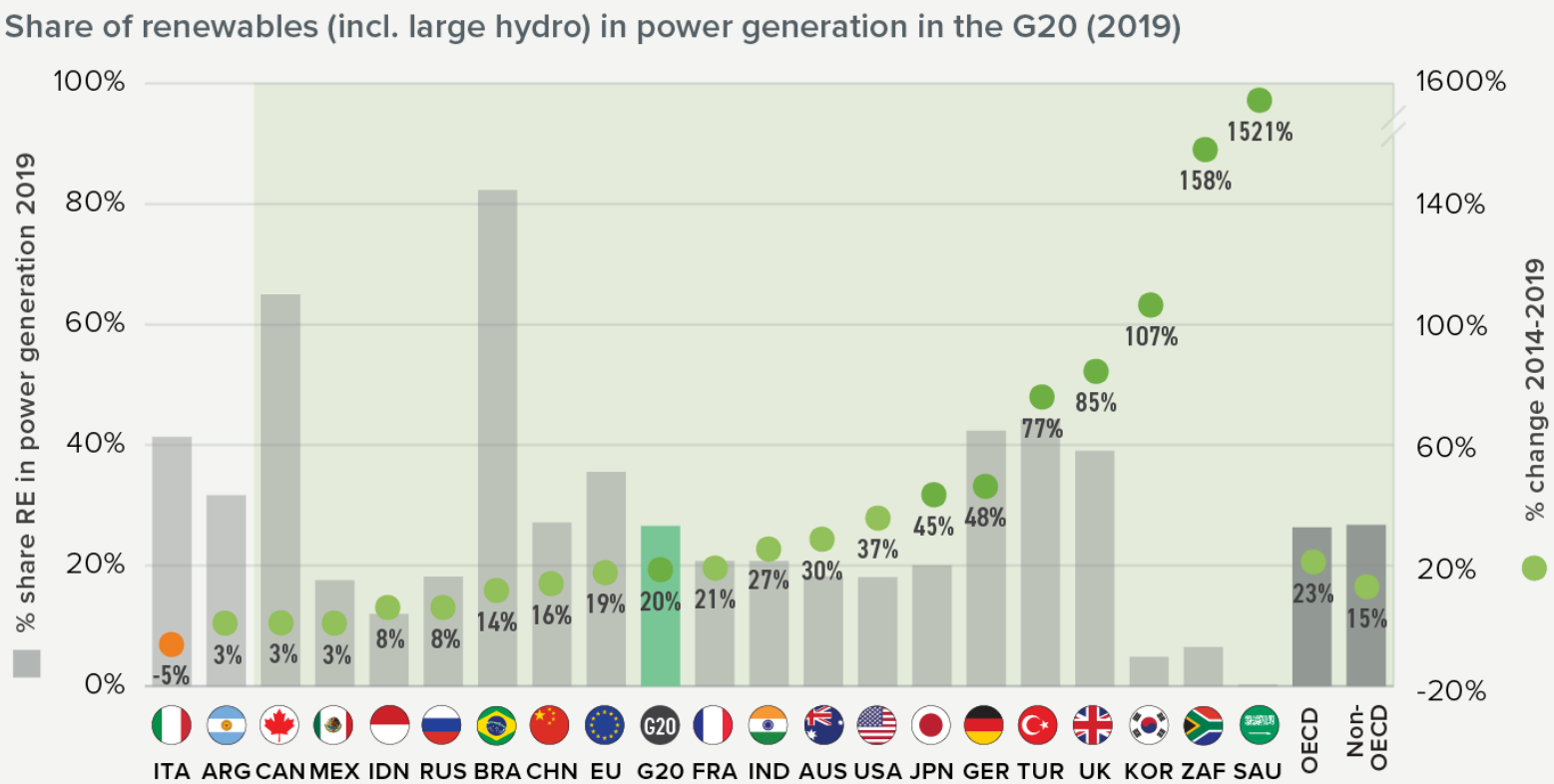
18 G20 MEMBERS DECREASED THE EMISSIONS INTENSITY OF THEIR POWER SECTORS BETWEEN 2014 AND 2019



Source: Enerdata, 2020

SHARE OF RENEWABLES IN POWER GENERATION 2019

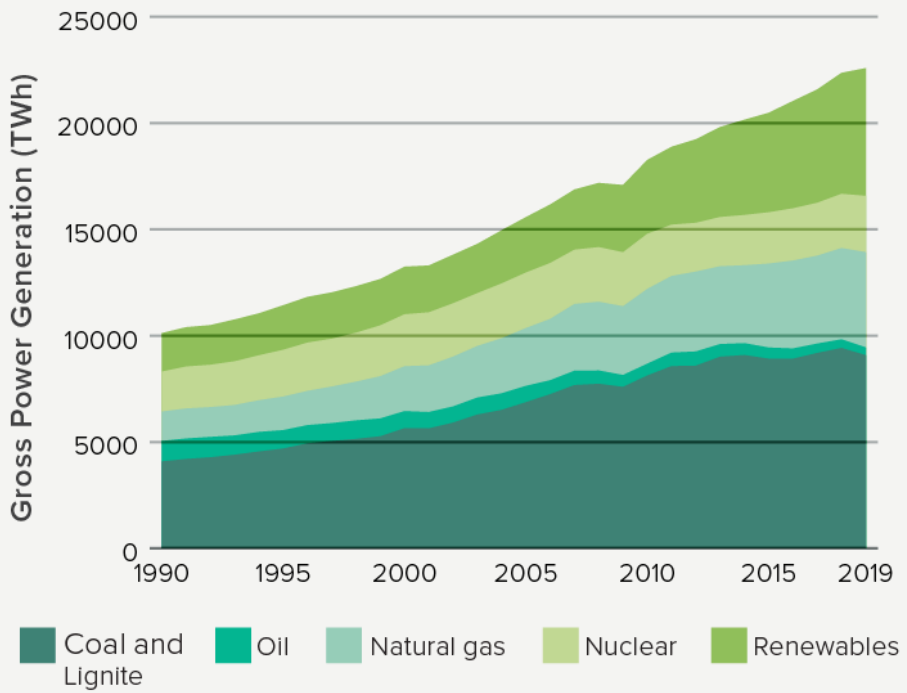
18 G20 MEMBERS INCREASED SHARE OF RENEWABLES IN POWER GENERATION BETWEEN 2014 AND 2019

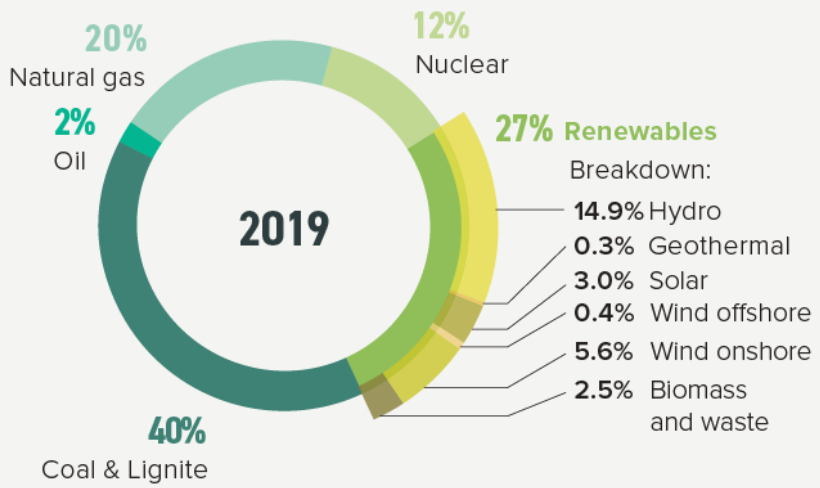


Source: Enerdata, 2020

SHARE OF RENEWABLES GREW TO 27% IN G20 IN 2019

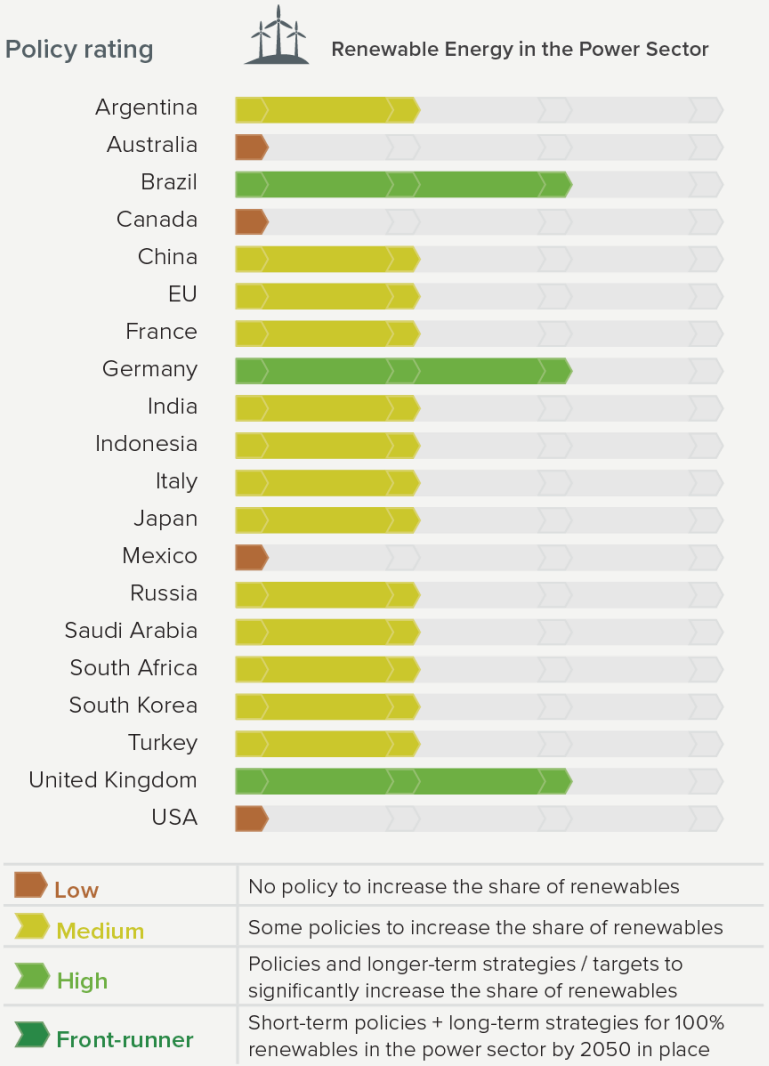
RENEWABLES 27% OF GROSS POWER GENERATION IN THE G20, COMPARED TO 22% IN 2014 AND 19% IN 2010.





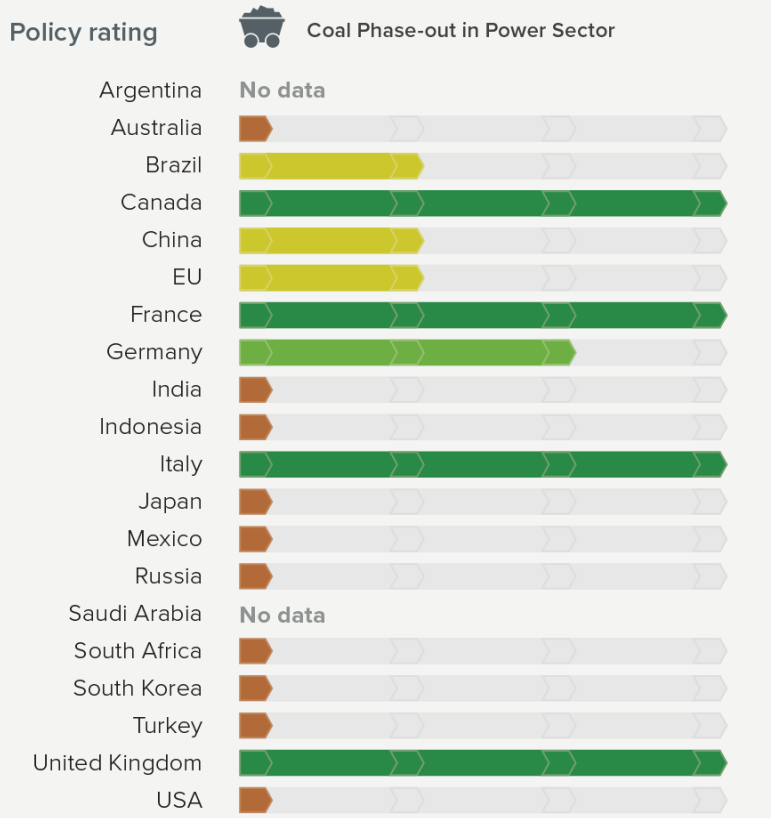
Source: Enerdata, 2020

RENEWABLE ENERGY POLICIES



- No G20 countries have 1.5°C compatible targets for renewable energy
- Brazil, Germany, and the UK have ambitious renewable energy targets
- Australia, Mexico, USA, and Canada do not have policies in place to increase renewables.

COAL PHASE -OUT POLICIES



- Canada, France, Italy, and the UK have 1.5°C compatible coal phase out targets(by 2030 or earlier)
- Germany follows with a phase-out date of 2038
- G20 members with the highest coal dependence, including South Africa, Indonesia, and China, do not have coal phase-out targets.

TRANSPORT SECTOR

G20 TRANSPORT EMISSIONS CONTINUE TO GROW IN LINE WITH LONG-TERM TRENDS

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING

LOW-CARBON FUELS TO INCREASE TO 60% BY 2050

To meet the 1.5°C goal, the share of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050 globally.

SELL THE LAST FOSSIL FUEL VEHICLE BY 2035

The last fossil fuel passenger vehicle should be sold by 2035 and the entire passenger fleet should move to 100% zero-carbon by 2050. Heavy-duty vehicles also need to switch to low-carbon fuels by 2050.

LOW-CARBON FUELS FOR AVIATION & SHIPPING

A 1.5°C compatible pathway for aviation and shipping is needed and should include plans to increase aircraft efficiency, switch to low-carbon fuels, and encourage modal shifts in demand.

Source: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

G20 ENERGY-RELATED CO_2 EMISSIONS 2019 – TRANSPORT SECTOR

20% Direct emissions

0.8% Electricity-related emissions

Annual growth rate

+1.5% in 2019

+1.5% in 2018

+1.5% 2005-2017

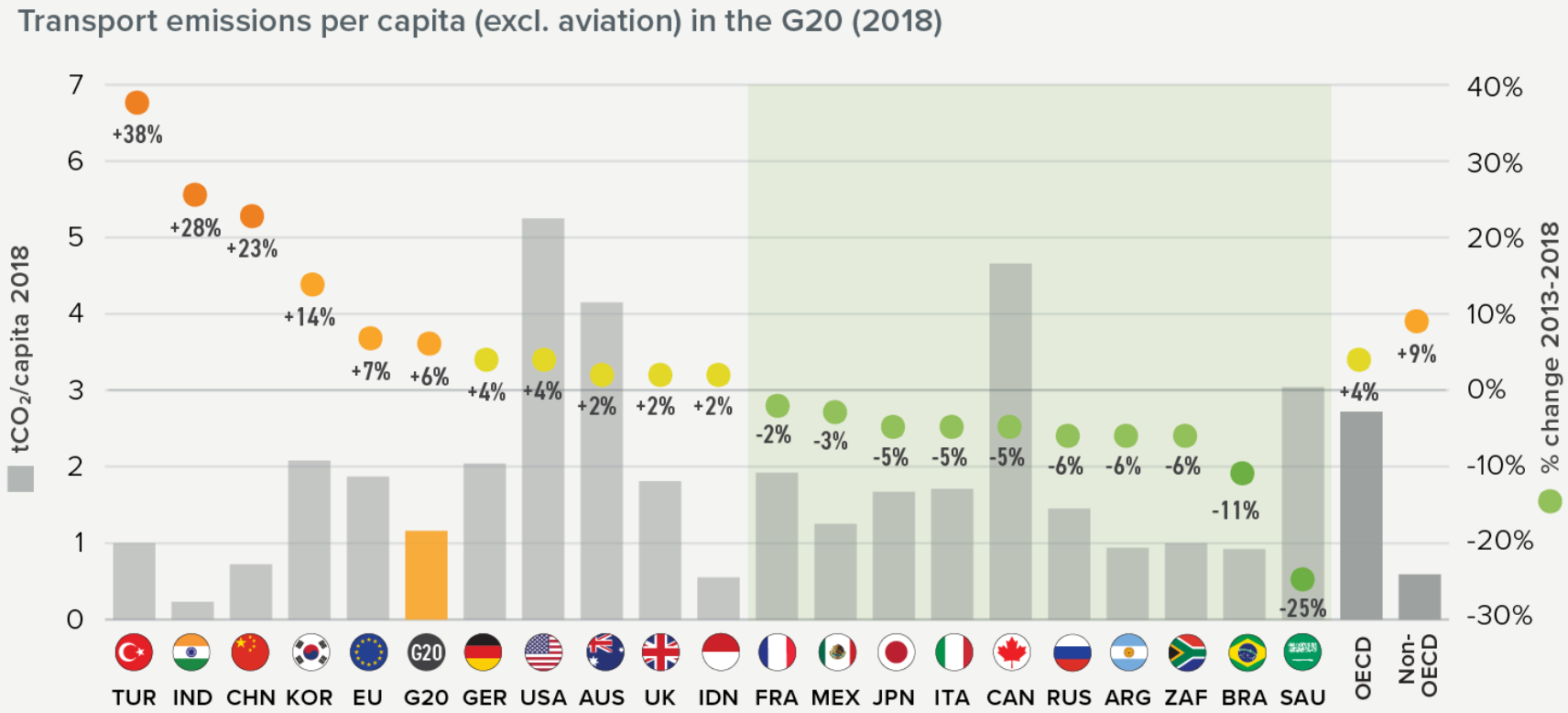
Source: Enerdata, 2020

Between 2013 and 2018: G20 transport emissions per capita (excl. aviation) increased by 6%

Between 2012 and 2017: G20 aviation emissions per capita grew by 19%

G20 PER CAPITA TRANSPORT EMISSIONS (EX. AVIATION) 2018

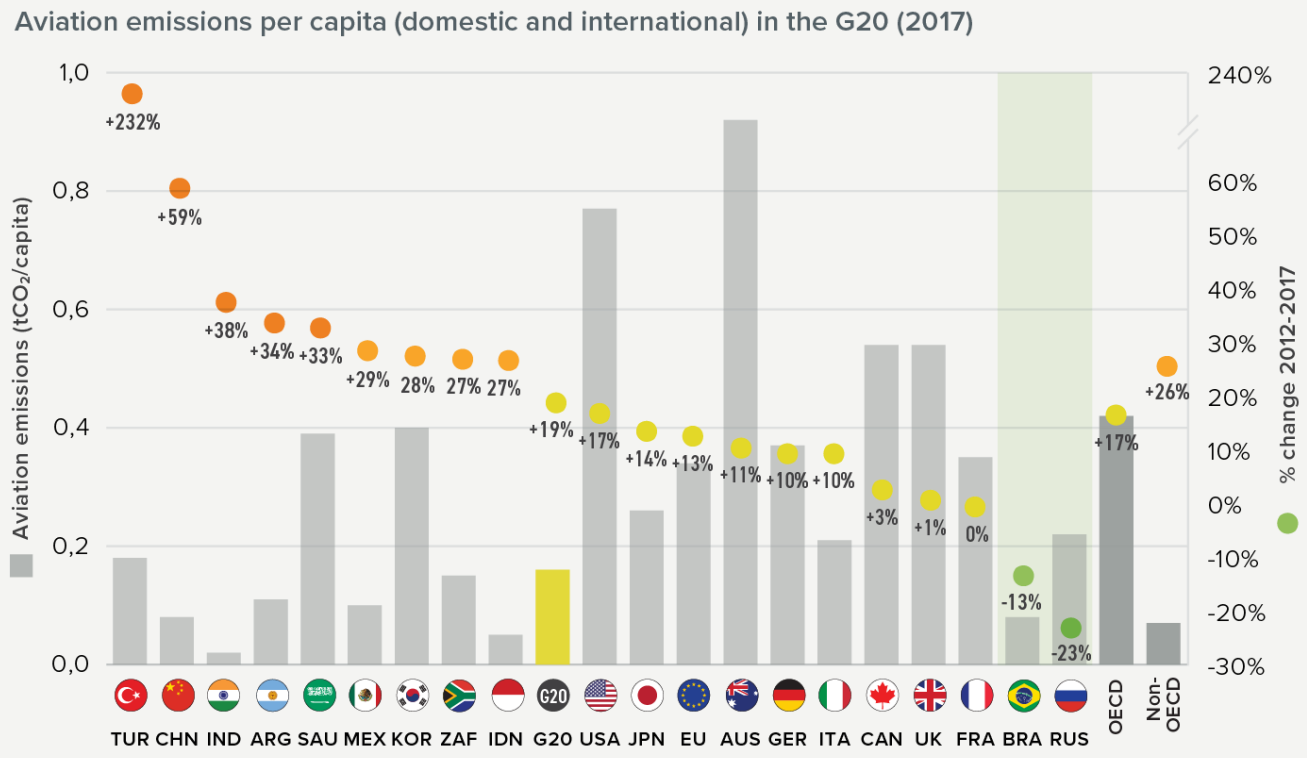
PER CAPITA TRANSPORT EMISSIONS GREW IN 10 G20 MEMBERS BETWEEN 2013 AND 2018



Sources: Enerdata, 2020; The World Bank, 2019

G20 PER CAPITA AVIATION EMISSIONS 2017

PER CAPITA AVIATION EMISSIONS INCREASED IN ALL BUT 2 G20 MEMBERS BETWEEN 2011 AND 2017



Source: Enerdata, 2020

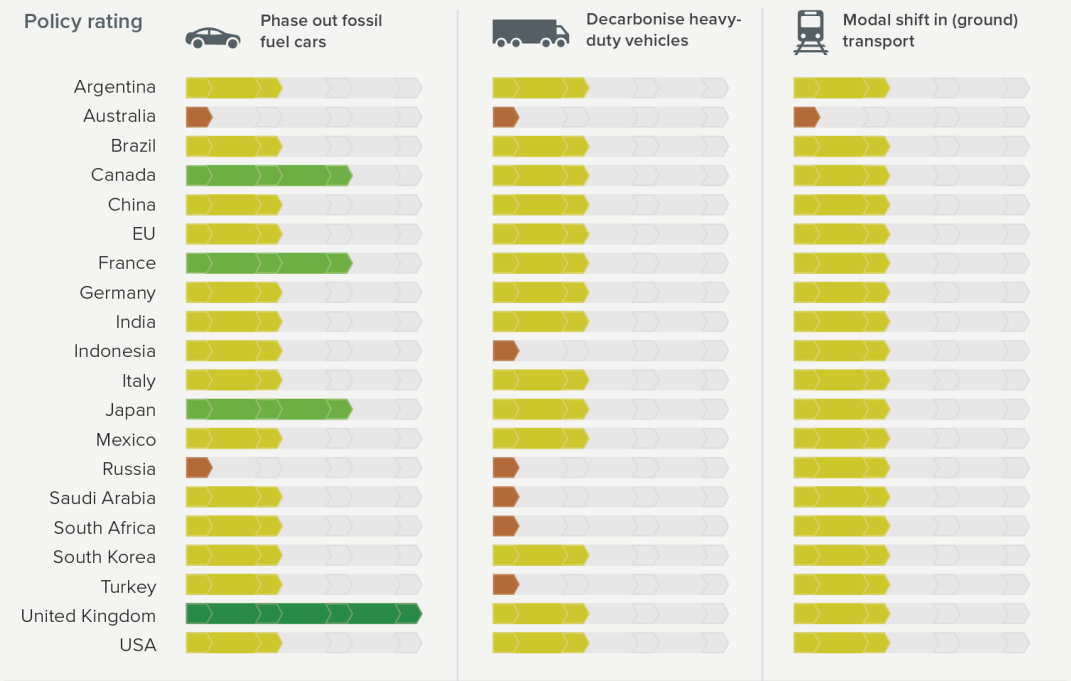
G20 countries with the highest global share of passenger aviation emissions in 2018:

- USA (23%)
- China (13%)
- the UK (4.1%)
- Japan (3.1%)
- Germany (2.9%)

Source: International Council on Clean Transportation

POLICIES FOR TRANSPORT DECARBONISATION

G20 MEMBERS ARE LAGGING WHEN IT COMES TO AMBITIOUS TRANSPORT POLICIES



Low	No policy for reducing emissions	No policy	No policy
Medium	Some policies such as energy / emissions performance standards	Some policies such as energy / emissions performance standards or support	Some policies such as support programmes to shift to rail or non-motorised transport
High	Policies + national target to phase out	Policies + strategy to reduce absolute emissions	Policies + longer-term strategy
Front-runner	Policies +ban on new fossil-fuel-based light-duty vehicles by 2035	Policies + innovation strategy to phase out emissions from freight transport by 2050	Policies + longer-term strategy consistent with 1.5°C pathway

FOSSIL FUEL CAR PHASE OUT

The UK is in the process of setting a 2030 target for the last sale of a fossil fuel car, followed by Canada and France with a 2040 target, and Japan 2050. Australia and Russia have no policies in place.

HEAVY DUTY VEHICLE DECARBONISATION

No countries have ambitious policies for decarbonising heavy duty vehicles.

MODAL SHIFTING (GROUND) TRANSPORT

No countries have ambitious policies with long-term strategies for modal shifting in ground transport. Australia has no policies in place.

BUILDING SECTOR

G20 BUILDING SECTOR EMISSIONS CONTINUED TO GROW IN 2019, MORE NEEDED TO DECREASE SECTOR EMISSIONS

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING

LOWER GLOBAL EMISSIONS FROM BUILDINGS

Global emissions from buildings need to be halved by 2030, and be 80-85% below 2010 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification.

NEW BUILDINGS: ZERO-ENERGY COMPLIANT

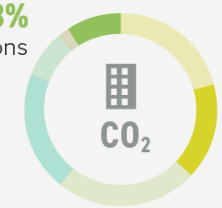
All new buildings must be zero-energy compliant by 2020 in the OECD and 2025 in non-OECD countries.

OLD BUILDINGS: ANNUAL DEEP RENOVATION

The existing building stock needs annual deep renovation rates of 5% in the OECD and 3% in non-OECD countries by 2020.

Source: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

G20 ENERGY-RELATED CO_2 EMISSIONS 2019 – BUILDING SECTOR



Annual growth rate

+0.9% in 2019

+3.2% in 2018

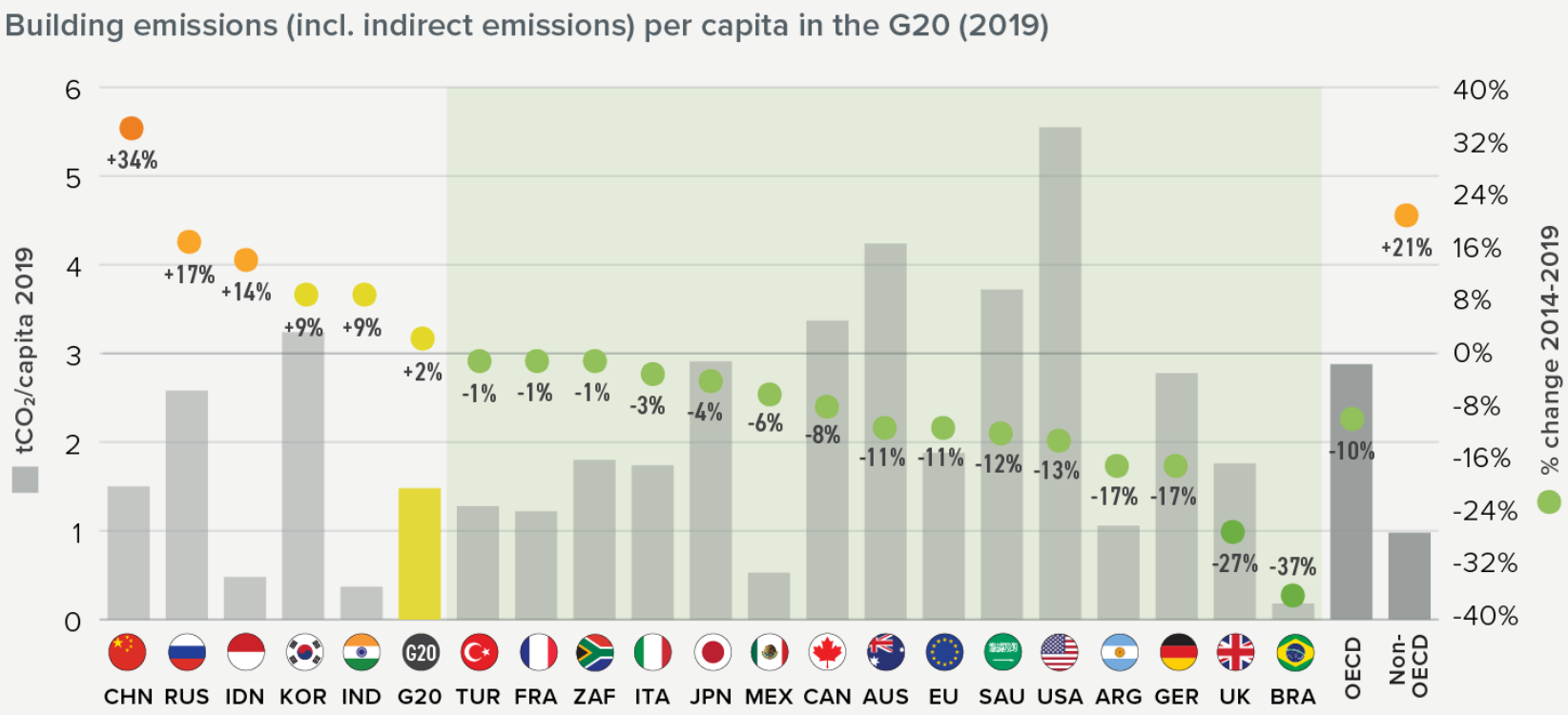
+0.01% 2005-2017

Source: Enerdata, 2020

G20 building sector emissions increased by 0.9% in 2019, recovering somewhat from an unexpected divergence from the long-term trend (+0.1%) in 2018 when emissions grew by 3.2%

G20 PER CAPITA BUILDING SECTOR EMISSIONS 2019

G20 BUILDING SECTOR EMISSIONS DECREASED IN 15 G20 MEMBERS BETWEEN 2014 AND 2019



Source: Enerdata, 2020

POLICES TO DECARBONISE BUILDING SECTOR

MANY G20 MEMBERS HAVE AMBITIOUS POLICIES FOR NEW BUILDINGS, MORE NEEDED FOR EXISTING BUILDINGS

Low	No policies	No policies
Medium	Some policies such as building codes, standards or fiscal / financial incentives for low emissions options	Some policies such as building codes, standards or fiscal / financial incentives for low emissions options
High	Policies + national strategy for near-zero energy buildings	Policies + retrofitting strategy
Front-runner	Policies + national strategy for all new buildings to be near-zero energy by 2020 (OECD) or 2025 (non-OECD)	Policies + strategy to achieve annual deep renovation rates of 5% (OECD) or 3% (non-OECD by 2020)

NEAR-ZERO NEW BUILDINGS

France, Italy, and Germany are frontrunners (1.5°C compatible policies) and 7 G20 countries have high ambition policies in place.

Only Russia and Argentina have no policies.

RETROFIT EXISTING BUILDINGS

No G20 countries have 1.5°C compatible policies for retrofitting existing buildings.

EU, Germany, and France are leading with high ambition policies.

INDUSTRY SECTOR

G20 INDUSTRY EMISSIONS ARE STILL GROWING – A HARD TO ABATE SECTOR, MORE INNOVATION NEEDED

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING

LOWER GLOBAL EMISSIONS FROM BUILDINGS

Global emissions from buildings need to be halved by 2030, and be 80-85% below 2010 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification.

NEW BUILDINGS: ZERO-ENERGY COMPLIANT

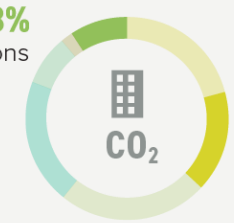
All new buildings must be zero-energy compliant by 2020 in the OECD and 2025 in non-OECD countries.

OLD BUILDINGS: ANNUAL DEEP RENOVATION

The existing building stock needs annual deep renovation rates of 5% in the OECD and 3% in non-OECD countries by 2020.

Source: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

G20 ENERGY-RELATED CO_2 EMISSIONS 2019 – BUILDING SECTOR



Annual growth rate

+0.9% in 2019

+3.2% in 2018

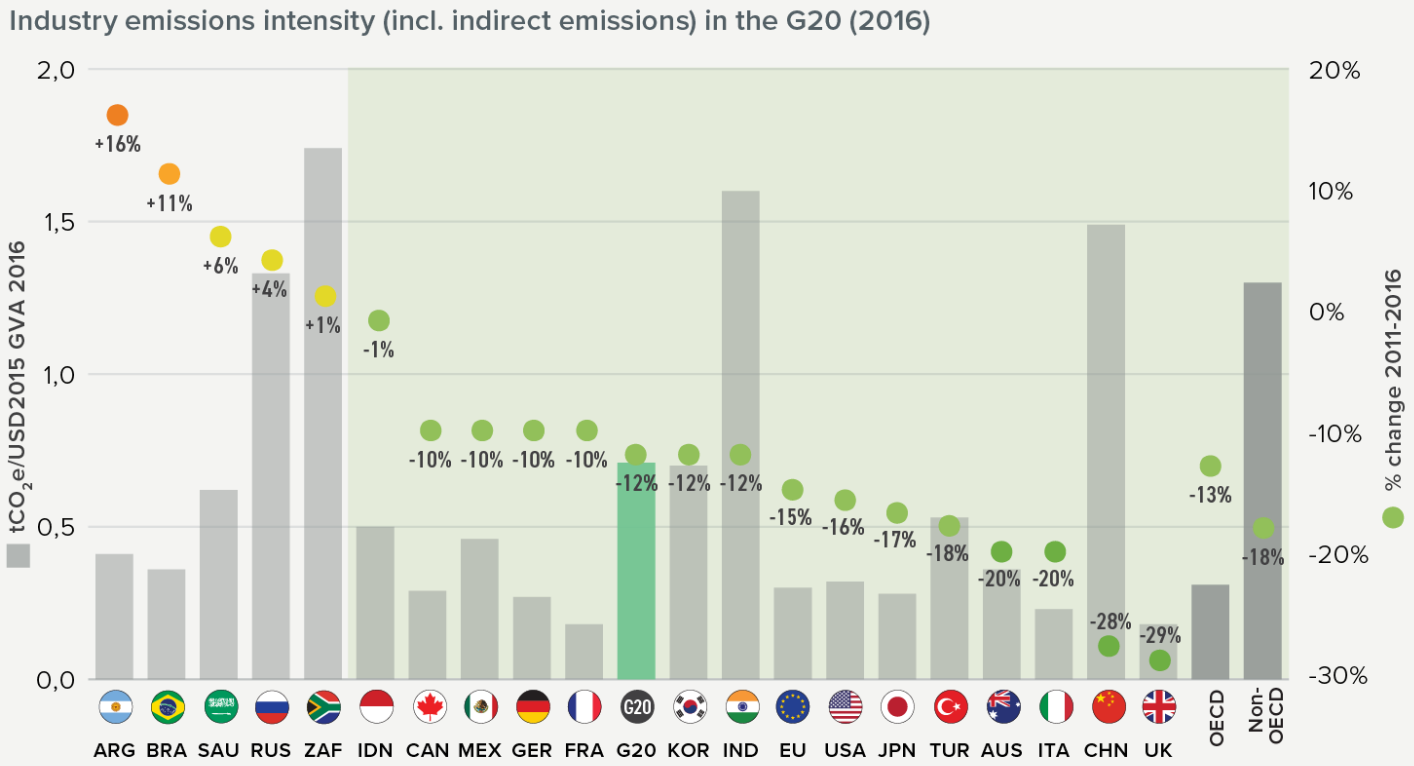
+0.01% 2005-2017

Source: Enerdata, 2020

- The industry sector has the highest share of energy-related CO_2 emissions in the G20, and emissions are growing.
- Decreasing industry emissions will require electrification and efficiency + zero-carbon technology developments, such as green-hydrogen.

G20 EMISSIONS INTENSITY OF INDUSTRY 2016

EMISSIONS INTENSITY OF INDUSTRY DECREASED IN 15 G20 MEMBERS BETWEEN 2011 AND 2016



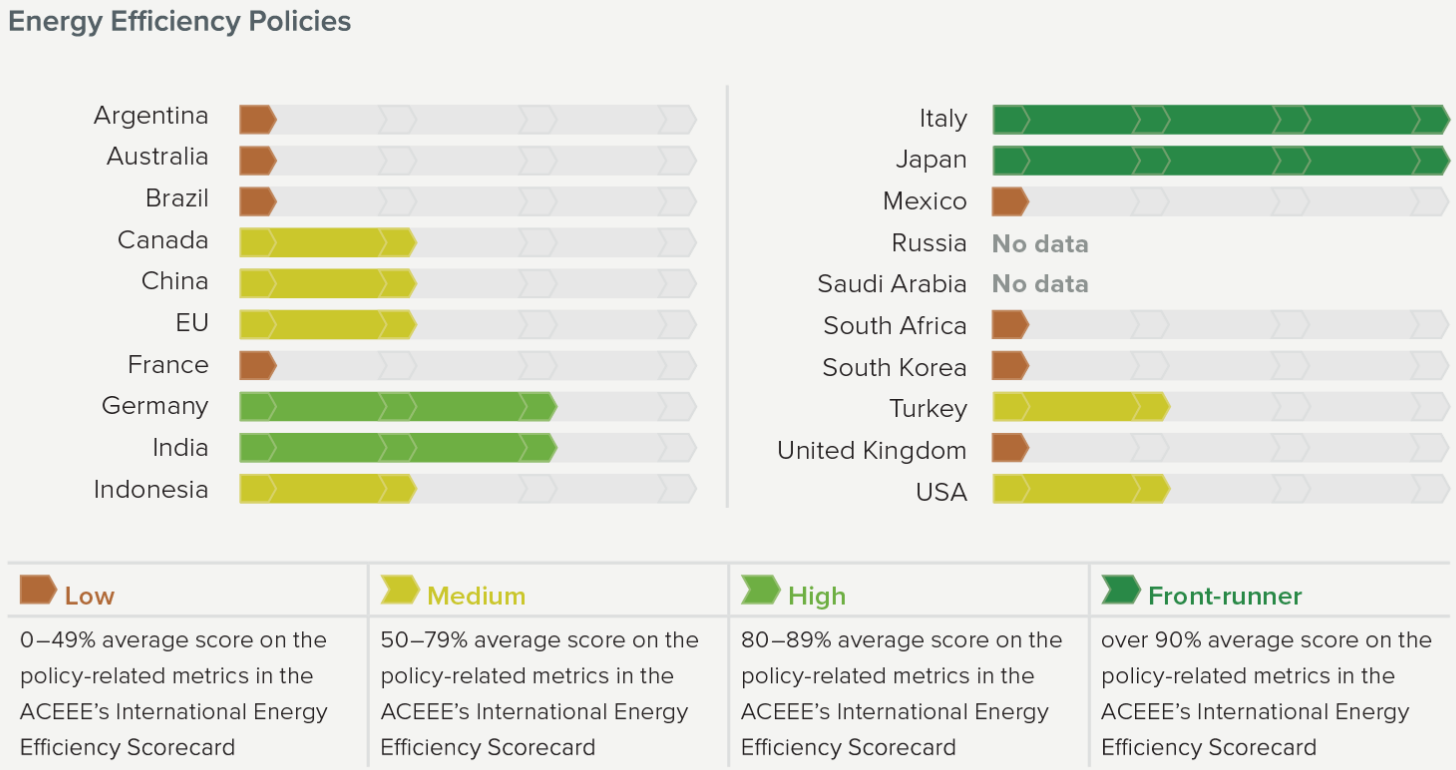
Sources: Gütschow et al., 2019; Enerdata, 2020

Emissions intensity in industry is higher in non-OECD countries than in OECD countries due to:

- shift in heavy industry to emerging and developing countries
- differences in technological standards and regulations
- higher share of GDP coming from energy-intensive industry

INDUSTRY EFFICIENCY POLICIES

G20 MEMBERS ARE USING EFFICIENCY POLICIES TO DECREASE EMISSIONS FROM INDUSTRY



INDUSTRY EFFICIENCY

- Italy and Japan are frontrunners
- Germany and India follow with high ambition policies
- 8 G20 members have few efficiency policies in place for industry.

AGRICULTURE & LAND USE

AGRICULTURE, FORESTRY, AND OTHER LAND USE ACCOUNTED FOR 23% OF GLOBAL GHG EMISSIONS FROM 2007– 2016

1.5°C BENCHMARKS TO LIMIT GLOBAL WARMING

STOP NET DEFORESTATION BY 2025

Net deforestation needs be stopped by 2025, with forests providing net CO_2 removals by 2030.

REDUCE EMISSIONS FROM FORESTRY AND LAND USE

Emissions from forestry and other land use must be reduced to 95% below 2010 levels by 2030.

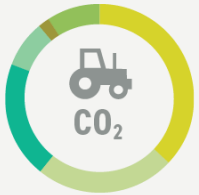
METHANE EMISSIONS MUST DECLINE

Methane emissions (mainly enteric fermentation) 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).

Sources: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

G20 ENERGY-RELATED CO_2 EMISSIONS 2019 – AGRICULTURE SECTOR

1.8%
(excl. land use)



Annual growth rate

-0.5% in 2019

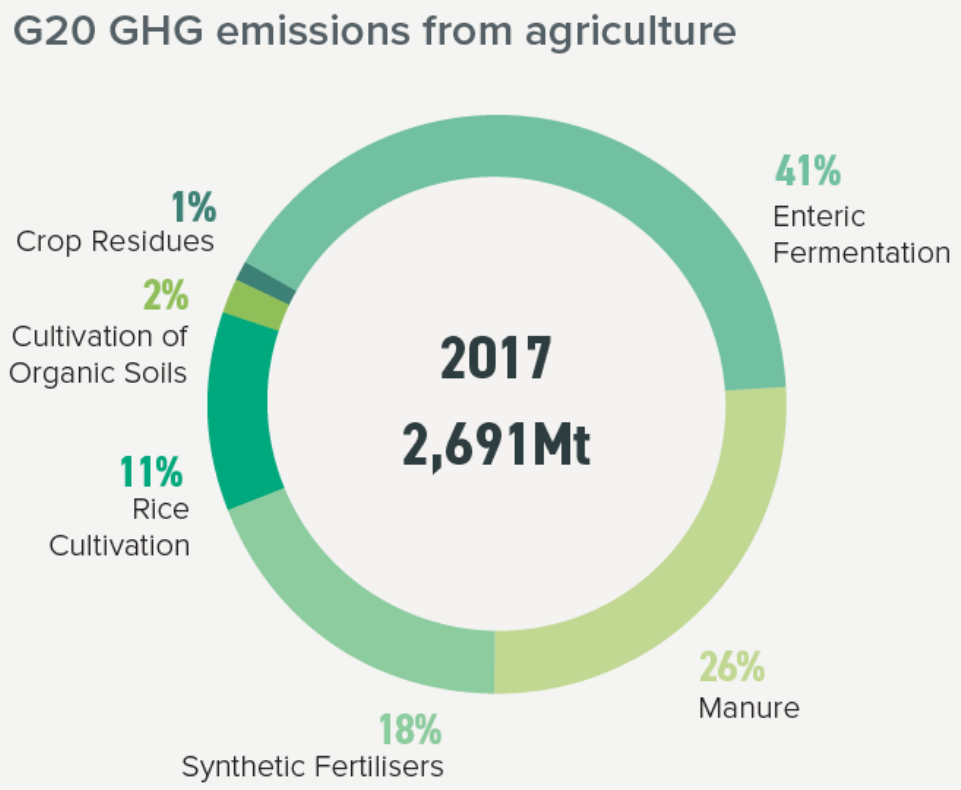
-0.1% in 2018

+0.5% 2005-2017

Source: Enerdata, 2020

Energy-related CO_2 emissions make up only a small percentage of GHG emissions, with the bulk of CO_2 arising from forestry and other land use (FOLU), and methane (CH4) and nitrous oxide (N2O) emissions from agriculture.

AGRICULTURE SECTOR

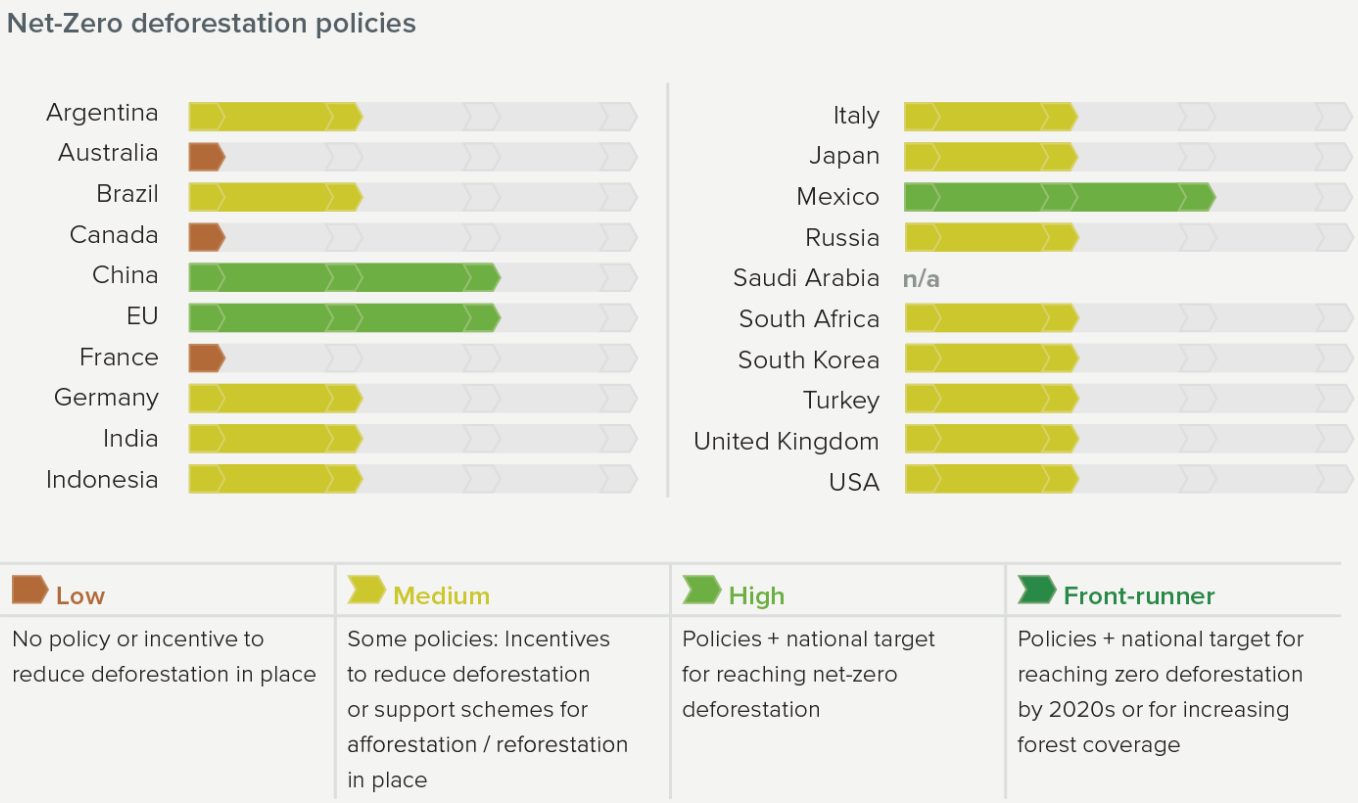


Source: FAO STAT, 2019

- Higher demand for food, feed, water, and more resource-intensive production and consumption are driving emissions upward.
- In addition to CO_2 emissions, agriculture is responsible for 45% of methane emissions and 80% of nitrous oxide emissions globally.
- Livestock breeding is the main driver, accounting for over 40% of agricultural emissions in 2017. Demand for livestock and feed also contributes to GHG emissions through the destruction of forests and other natural land for grazing, production of fodder, and pasture.

POLICIES FOR (NET)ZERO DEFORESTATION

G20 COUNTRIES NEED TO SET TARGETS FOR ZERO DEFORESTATION



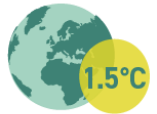
NET-ZERO DEFORESTATION: ZERO DEFORESTATION BY 2020S & INCREASING FOREST COVERAGE

- China, EU, and Mexico have the most ambitious policies but not yet 1.5°C compatible.
- Australia, Canada, and France, have no policies in place to reduce deforestation.

G20 PROGRESS ON A JUST TRANSITION

PARIS AGREEMENT

Countries agreed to **take into account the imperatives of a just transition** of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.



COMPATIBILITY

Social justice and equity are core aspects of climate-resilient development that aims to limit global warming to 1.5°C, addressing challenges and inevitable trade-offs, widening opportunities, and ensuring that options, visions, and values are deliberated between and within countries and communities.

Source: IPCC SR15

The transformation of key industries in response to the threat of climate change will affect workers and communities.

At COP24 in 2018, the Solidarity and Just Transition Silesia Declaration was adopted. Ten G20 members are signatories: Argentina, Canada, the EU, France, Germany, Indonesia, Japan, South Korea, the UK, and USA.

Significant developments have been made in incorporating just transition principles, for example, in coal phase-out plans in Canada, Germany, the EU, and South Africa.

G20 countries can and should develop national just transition policies.

Climate Transparency

COMPARING G20 CLIMATE ACTION: FINANCE

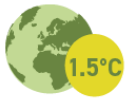
“We are at a crossroads: one road leads to climate crisis, the other to a resilient, sustainable and inclusive future. G20 leaders need to reaffirm their commitment to the correct course by accelerating climate action and aligning their financial systems with the Paris goals and the SDGs. The Climate Transparency Report provides a stocktake of and identifies clear opportunities for enhancing G20 climate action.”

Laurence Tubiana, CEO European Climate Foundation

FINANCIAL FLOWS NEED TO BE ALIGNED WITH CLIMATE GOALS

1.5°C BENCHMARKS FOR ALIGNED FINANCE FLOWS

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



1.5°C compatible mitigation and adaptation actions will require **strengthened global-to-local financial architecture** that enables greater access to finance and technology.

In addition to climate-positive allocation of public funding, **a redirection of 5-10% of annual capital revenue** could be necessary to limit warming to 1.5°C.

The mobilisation of institutional investors and mainstreaming of **climate finance within the financial and banking system regulation** and access by developing countries to low-risk and low-interest finance through development banks needs to be facilitated.

Sources: Own evaluation based on IPCC SR15; Kuramochi et al., 2017

Accounting for 85% of global GDP and two thirds of global foreign direct investment flows, the G20 has a critical role to play in achieving this third goal of the Paris Agreement.

TOOLS TO ALIGN FINANCIAL FLOWS WITH CLIMATE GOALS

G20 MEMBERS ARE MAKING PROGRESS IN TRANSFORMING THE FINANCIAL SYSTEM

FINANCIAL POLICIES & REGULATIONS

Includes: green finance principles, risk disclosure, climate stress tests, enhanced capital liquidity requirements.

FISCAL POLICIES

Includes: ending fossil fuel subsidies, subsidising low-carbon technology, carbon pricing.

PUBLIC FINANCE

Includes: domestic and international public finance and investment, climate finance.

FINANCIAL POLICIES & REGULATIONS

G20 ECONOMIES CAN LEAD IN GREENING THEIR FINANCIAL SYSTEMS

Principles to align prudential and climate change objectives

17 G20 COUNTRIES initiated discussions or are already implementing some form of green finance principles (India, Saudi Arabia, and South Korea are the exceptions).

Evaluating the resilience of the finance system to climate shocks

7 G20 COUNTRIES introduced climate-related risk assessment and climate stress-test, only in Indonesia are these mandatory.

Disclosing climate-related risks to financial institutions

13 G20 COUNTRIES have implemented or are discussing climate risk disclosure requirements. In Brazil, China and France such disclosures are already mandatory.

Limiting commercial banks' exposure to climate-related risks and incentivising low-carbon lending

5 G20 COUNTRIES use some form of enhanced capital and liquidity requirements (China, India, Indonesia, Japan, and South Korea).

GREEN FINANCIAL PRINCIPLES

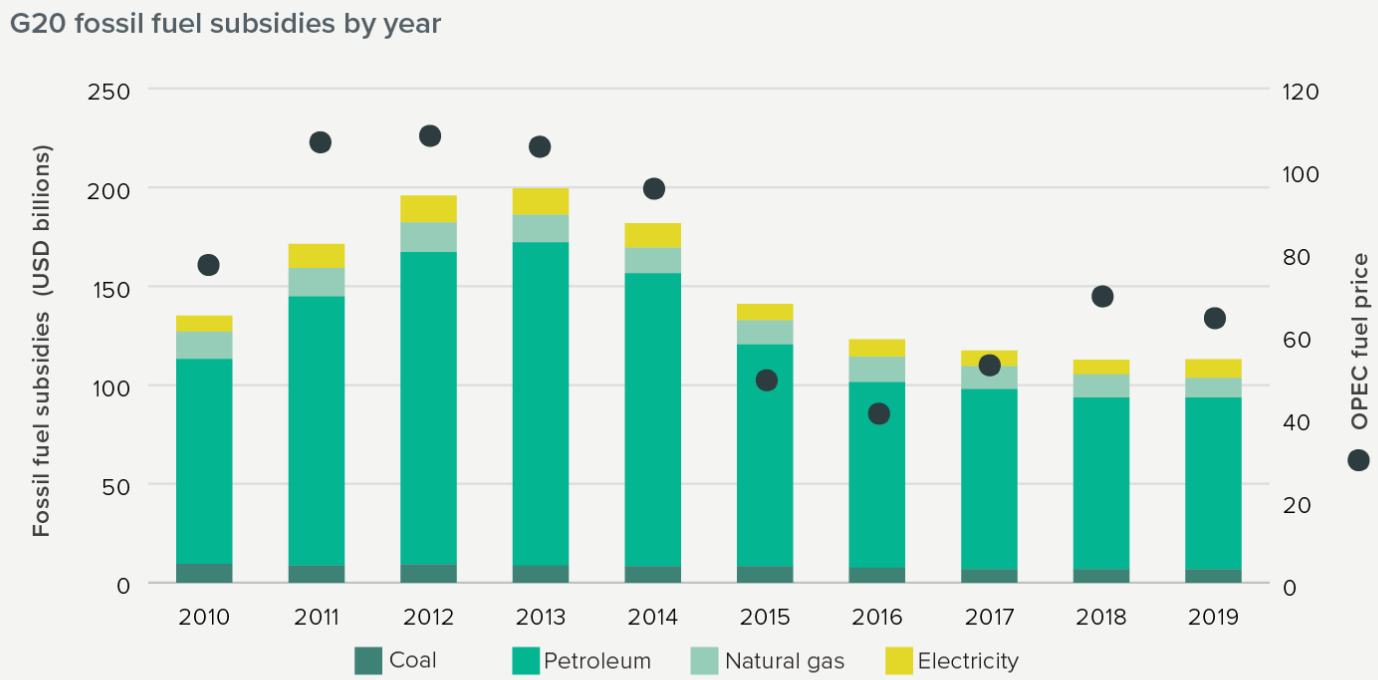
G20 countries have acknowledged the need to adjust national financial system architectures.

MACRO-PRUDENTIAL POLICIES

G20 countries are making steady progress on advancing macro-prudential policies aimed at reducing and managing the risks that climate change poses to the financial system

FISCAL POLICIES

G20 FOSSIL FUEL SUBSIDIES BY YEAR

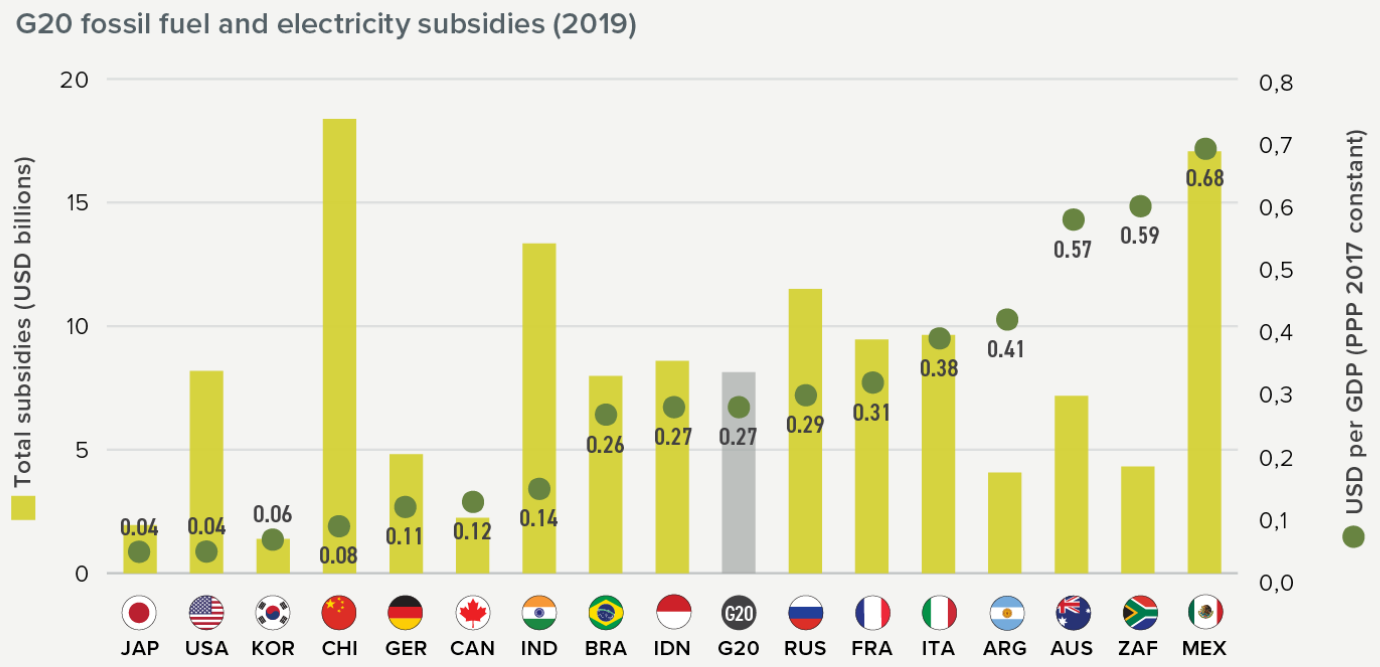


Source: OECD-IEA Fossil Fuel Support database, 2020

G20 countries (excluding Saudi Arabia, Turkey, and the UK) provided USD 130bn in subsidies to coal, oil, and gas in 2019. This represents an increase on USD 117bn in 2018.

FISCAL POLICIES

G20 FOSSIL FUEL SUBSIDIES IN 2019



Source: OECD-IEA Fossil Fuel Support database, 2020

Absolute fossil fuel subsidies:
China, Mexico, India, Russia, Italy, France, Indonesia, and the USA were all above the G20 average in 2019.

Per unit of GDP :
Mexico, South Africa, Australia, Argentina, Italy, France, and Russia are all above the G20 average.

FISCAL POLICIES

CARBON PRICING SCHEMES

18 G20 COUNTRIES are implementing explicit carbon-pricing schemes, such as carbon taxes and emission trading schemes (ETS) – India and Australia are the exceptions.

HIGHEST CARBON TAX (USD/tCO_2e)

France (48.6), South Korea (31.2), and the EU (27.9)

HIGHEST % OF EMISSIONS COVERED BY CARBON TAX

South Africa (80%), South Korea (70%), and Japan (68%)

TOP CARBON REVENUES IN 2019 (USD)

EU 17.5bn, France 10.1bn, Canada 5.6bn, Germany 3.6bn, USA 3.1bn, Japan 2.4bn, Italy 1.5bn, UK 1.2bn

PUBLIC FINANCE

G20 COUNTRIES ARE BEGINNING TO RESTRICT PUBLIC FINANCE FOR FOSSIL FUELS ABROAD AND AT HOME

- Brown indicates there are no restrictions in place at any of the country's included institutions.
- Yellow indicates a partial restriction or full restrictions at some institutions only, or no support to the fossil fuel category identified in spite of no explicit restrictions.
- Green indicates a full restriction across all institutions.

Country	Coal exclusion policies	Oil exclusion policies	Gas exclusion policies
Argentina	Yellow	Brown	Brown
Australia	Yellow	Brown	Brown
Canada	Green	Brown	Brown
Brazil	Yellow	Yellow	Yellow
China	Brown	Brown	Brown
France	Green	Yellow	Yellow
Germany	Yellow	Yellow	Yellow
India	Brown	Brown	Brown
Indonesia	Brown	Brown	Brown
Italy	Yellow	Brown	Brown
Japan	Yellow	Brown	Brown
Mexico	Yellow	Brown	Brown
Russia	Brown	Brown	Brown
Saudi Arabia	Yellow	Brown	Brown
South Africa	Brown	Brown	Brown
South Korea	Yellow	Brown	Brown
UK	Green	Brown	Brown
USA	Yellow	Brown	Brown

Source: Oil Change International & Friends of the Earth U.S., 2020

Between 2016 and 2018, **G20 public institutions provided an average of USD 65bn per year to fossil fuels** through public finance.

Highest average and per unit of G20 public finance for fossil fuels 2016-2018:

- China (USD 24.8bn)
- Canada (USD 10.6bn)
- Japan (USD 9.5bn)
- and South Korea (USD 6.4bn)

PUBLIC FINANCE

DEVELOPED G20 MEMBERS ARE OBLIGED TO PROVIDE CLIMATE FINANCE UNDER THE PARIS AGREEMENT

International Climate Finance to Developing Countries (2017-2018)

Country	Total USD millions (2017/18 average, constant PPP)
Russia	7.28
Canada	500.58
Australia	632.73
Italy	1,154.12
United States[1]	3,118.45
United Kingdom	4,090.99
EU	6,400.02
France	6,567.57
Germany	8,398.22
Japan	12,253.49
Total	**43,123.45**

Japan remains the largest contributor of climate finance among the G20 with flows delivered predominantly through the Japanese Bank for International Cooperation (JICA), typically with a mitigation focus and lower concessionality than other contributors.

Germany and France follow, making use of KfW and the French Development Agency (AFD), respectively.

While not obliged under the UNFCCC, Russia has provided data on climate finance provision in its reporting to the UNFCCC.

ALIGNING FINANCIAL FLOWS WITH CLIMATE GOALS

KEY OPPORTUNITIES FOR THE G20

GREEN THE FINANCIAL SYSTEM

PHASE OUT FOSSIL FUEL SUBSIDIES BY 2025

HIGH-COVERAGE CARBON PRICING:

USD 40-80 by 2020 & USD 50-100 by 2030

END PUBLIC FINANCE FOR FOSSIL FUELS

SUFFICIENT & PREDICATBALE CLIMATE FINANCE

Climate Transparency

THANK YOU

https://www.climate-transparency.org/