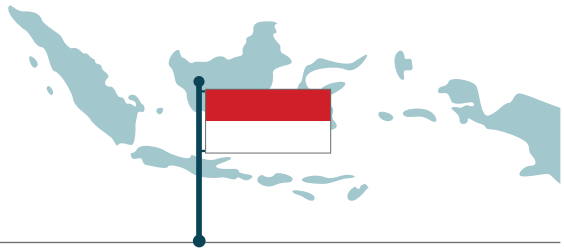
Climate Transparency

BROWN TO GREEN: 2019
THE G20 TRANSITION TOWARDS A NET-ZERO EMISSIONS ECONOMY

INDONESIA



Indonesia's greenhouse gas (GHG) emissions are – per capita – below the G20 average.

But the level of per capita emissions has risen by 17% (2011-2016).

Greenhouse gas (GHG) emissions (incl. land use) per capita[1]
(tCO_2e/capita)

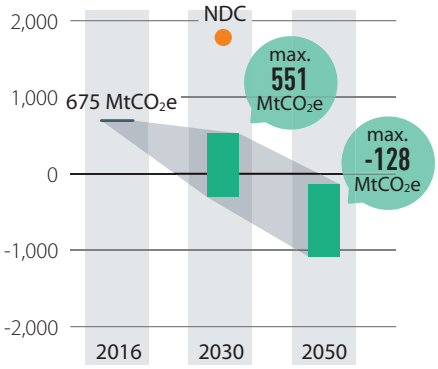
Data for 2016
Source: CAT 2019; PRIMAP 2018; World Bank 2019

Trend (2011-2016) +17% -1%

Indonesia is not on track for a 1.5°C world.

Indonesia needs to reduce its emissions to below 551 $MtCO_2e$ by 2030 and to below -128 $MtCO_2e$ by 2050 to be within its fair-share range compatible with global 1.5°C IPCC scenarios. Indonesia's 2030 NDC would only limit its emissions to 1,817 $MtCO_2e$. All figures are drawn from the Climate Action Tracker and exclude land use emissions.

1.5°C compatible pathway[2]
($MtCO_2e$/year)



Source: CAT 2019

Recent developments[3]

The 2019-2028 electricity plan of state-owned electricity company PLN raised the 2025 target for the share of coal in the power mix by 0.2 percentage points compared to the previous plan.

A new decree on electric vehicles (EVs) (August 2019) creates the legal basis for battery production, local content requirements, charging stations and tax incentives.

In October 2019, the Government established an agency to manage revenues from carbon trading and other funds related to climate change mitigation.

Key opportunities for enhancing climate ambition[3]

Indonesia produces 61% of its electricity from coal power.

→ **Reduce the number of coal power plants and triple renewable energy share in the power sector by 2030.**

#1

Indonesia only has two appliance groups with mandatory standards or labels.

→ **Improve the efficiency of household appliances and lighting in order to avoid a peak demand of more than 25 GW in 2030.**

#2

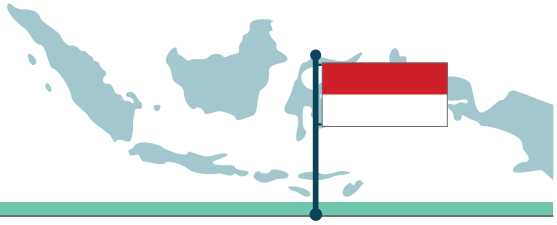
Indonesia has lost 16% of the tree cover it had back in 2000.

→ **Enact a permanent forest clearing moratorium incl. primary and secondary forests, and peat restoration to save at least 66Mha of forest.**

#3

This country profile is part of the **Brown to Green 2019** report. The full report and other G20 country profiles can be downloaded at: *http://www.climate-transparency.org/g20-climate-performance/g20report2019*

INDONESIA – SOCIO-ECONOMIC CONTEXT



Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. Indonesia ranks medium.

Data for 2017 | Source: UNDP 2018

Gross Domestic Product (GDP) per capita

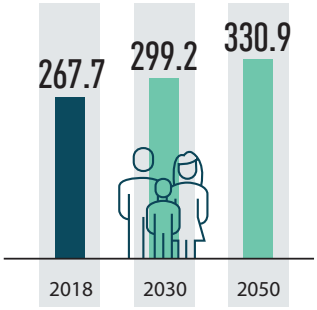
(PPP US$ const. 2018, international)

Data for 2018 | Source: World Bank 2019

Population projections

(millions)

The World Bank expects Indonesia's population to increase by around 24% by 2050.



Source: World Bank 2019

Death through ambient air pollution

(total ambient air pollution attributable deaths)

More than 95,000 people die in Indonesia every year as a result of outdoor air pollution, due to stroke, heart disease, lung cancer and chronic respiratory diseases. Compared to the total population, this is in the mid range of the G20 countries.

95,156
attributable deaths

Data for 2016
Source: World Health Organization 2018

Ambient air pollution attributable death rate per 1,000 population per year, age standardised

JUST TRANSITION[3]

Since the 1980s, the government has promoted the use of coal. The proportion of coal in the primary energy mix has risen from 15.5% in 2007 to 19.9% in 2018, whereas the oil and gas shares were relatively stable and tended to decrease.

The 2017 General National Energy Plan (RUEN) defines the strategy on how to meet the 2014 National Energy Policy (KEN) target: increasing the share of renewables in the primary energy mix in 2025. But the existing policy also promotes both higher total coal consumption at domestic level for electricity generation, and also the use of coal for producing liquid fuel or gas.

As for electricity, the state-owned power company, PLN, predicts that 54% of the electricity mix will come from coal in 2028, down from 61% in 2018. But independent research by IESR estimates that domestic coal consumption in the future will be lower than RUEN forecasts, and there will be uncertainty in coal export due to lower demand from major destination countries. This would reduce state revenues and the labour force in the coal sector. Unfortunately, the coal industry seems to have strong ties and alignment with the political system. A comprehensive inclusive regulation of coal transition would help Indonesia to mitigate its risks in the future, but such a strategy is currently lacking.

Legend for all country profiles

Trends

The trends show developments over the past five years for which data are available.

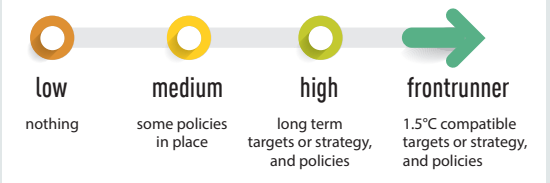
The thumbs indicate assessment from a climate protection perspective.

Decarbonisation Ratings[4]

These ratings assess a country's performance compared to other G20 countries. A high scoring reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

Policy Ratings[5]

The policy ratings evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



For more information see the Annex and Technical Note

MITIGATION BIG PICTURE

INDONESIA

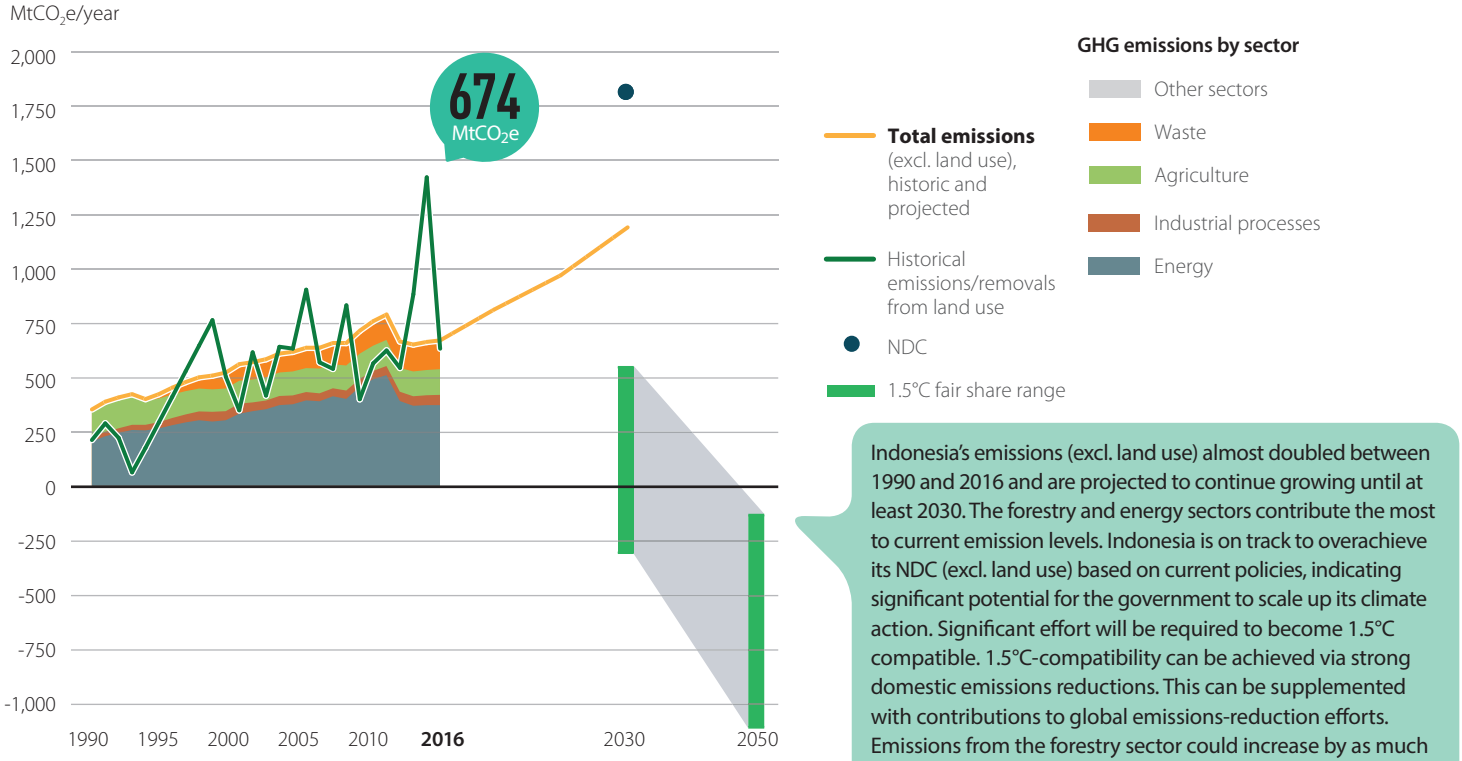
Indonesia's GHG emissions have increased by 90% (1990-2016) and the government's climate targets for 2030 (-29% from business as usual) are not in line with a 1.5°C pathway.

In 2030, global GHG emissions need to be 45% below 2010 levels and reach net zero by 2070.

1.5°C[6]

Source: IPCC SR1.5 2018

Total GHG emissions across sectors[2]



Source: PRIMAP 2018; CAT 2019

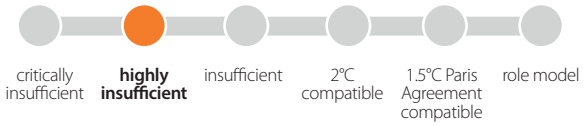
Indonesia's emissions (excl. land use) almost doubled between 1990 and 2016 and are projected to continue growing until at least 2030. The forestry and energy sectors contribute the most to current emission levels. Indonesia is on track to overachieve its NDC (excl. land use) based on current policies, indicating significant potential for the government to scale up its climate action. Significant effort will be required to become 1.5°C compatible. 1.5°C-compatibility can be achieved via strong domestic emissions reductions. This can be supplemented with contributions to global emissions-reduction efforts. Emissions from the forestry sector could increase by as much as 300 $MtCO_2e$ by 2030.

Nationally-determined contribution (NDC): Mitigation

Targets	To reduce unconditionally 26% of its greenhouse gas emissions against the business-as-usual scenario by the year 2020 and 29% by the year of 2030
Actions	Actions specified (sectors: land use and forestry, agriculture, energy, waste)

Source: UNFCCC, NDC of respective country

Climate action tracker (CAT) evaluation of NDC[2]



Source: CAT 2019

Long-term strategy (LTS) to be submitted to the UNFCCC by 2020

Status	No strategy yet
2050 target	n.a.
Interim steps	n.a.
Sectoral targets	n.a.

Source: UNFCCC, LTS of respective country

MITIGATION ENERGY

INDONESIA

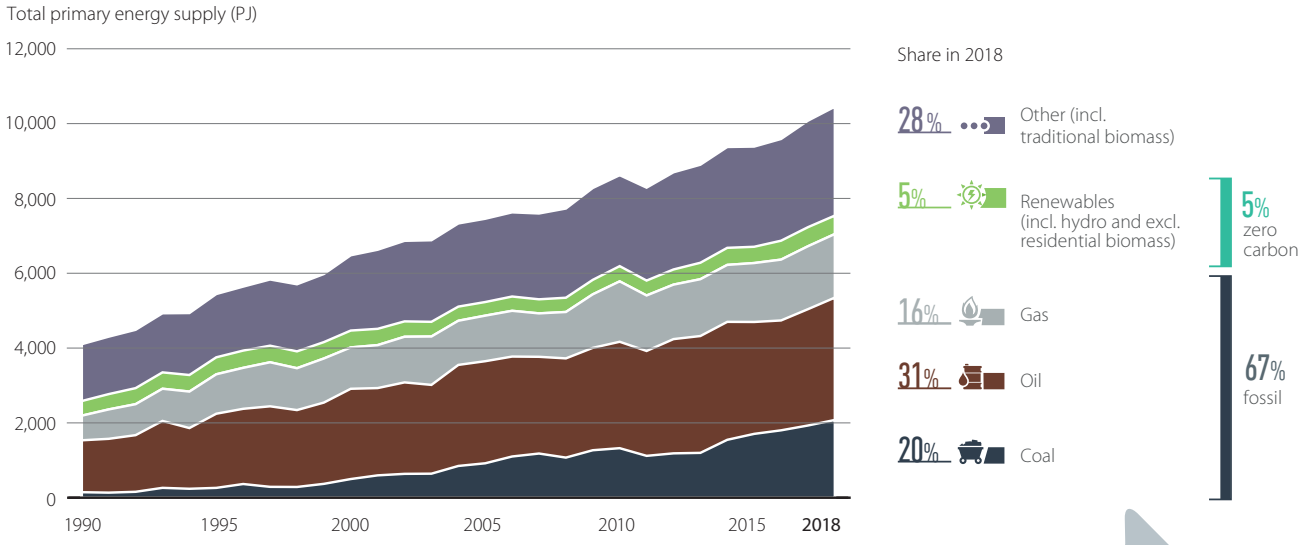
Fossil fuels still make up around 67% of Indonesia's energy mix (including power, heat, transport fuels, etc) and their share is increasing further. The use of renewables has remained stable over the years at a fairly low level.

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.

1.5°C[6]

Source: IPCC SR1.5 2018

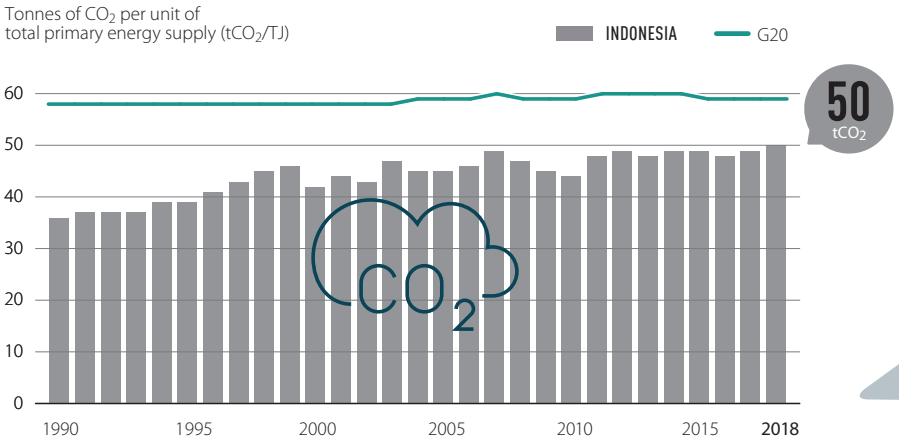
Energy mix[7]



Source: Enerdata 2019

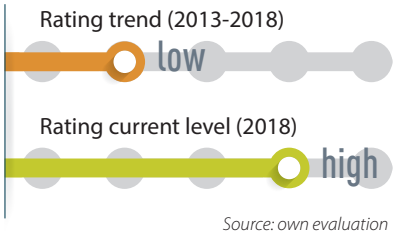
This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, cooking, and transport fuels. Fossil fuels (oil, coal and gas) make up 67% of the Indonesian energy mix, which is below the G20 average (82%) but still high. Traditional use of biomass accounts for almost a third of the energy mix.

Carbon intensity of the energy sector



Source: Enerdata 2019

Rating of carbon intensity compared to other G20 countries[4]



Source: own evaluation

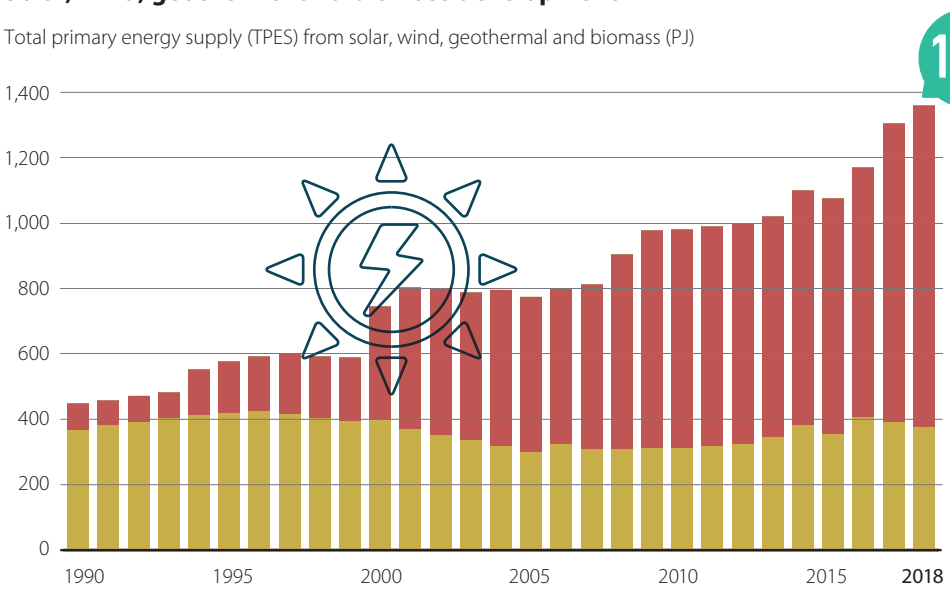
Carbon intensity shows how much CO_2 is emitted per unit of energy supply. At 50tCO_2e/TJ, carbon intensity in Indonesia is below the G20 average (59tCO_2e/TJ), but that level has been rising (+9%, 2013-2018). This reflects the growing share of coal and oil.

MITIGATION ENERGY

INDONESIA

Solar, wind, geothermal and biomass development[8]

Total primary energy supply (TPES) from solar, wind, geothermal and biomass (PJ)



Source: Enerdata 2019

Share of TPES in 2018

0.00% Solar

0.01% Wind

9.40% Geothermal

3.61% Biomass, excl. traditional biomass

Geothermal and biomass account for 13% of Indonesia's energy supply – the G20 average is only 6%. In the last five years, the share of these sources in total energy supply has increased by around 16%, less than the G20 average (+29% 2013-2018). Geothermal makes up the largest share.

Rating of share in TPES compared to other G20 countries[4]

Source: own evaluation

Energy supply per capita

Total primary energy supply per capita (GJ/capita)

The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy.

At 39 GJ/capita, energy supply per capita in Indonesia is less than half the G20 average, but has increased more (+9%, 2013-2018) than the G20 average (+1%).

Trend (2013-2018) +9% +1%

Data for 2018 | Source: Enerdata 2019; World Bank 2019

Rating of energy supply per capita compared to other G20 countries[4]

Source: own evaluation

MITIGATION ENERGY

INDONESIA

Energy supply per capita in Indonesia is less than half the G20 average, and the energy intensity of the economy remains below average as well. However, energy-related CO_2 emissions have risen significantly in the past few years.

Global energy and process-related CO_2 emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

1.5°C[6]

Source: IPCC SR1.5 2018

Energy intensity of the economy

(TJ/PPP US$2015 million)

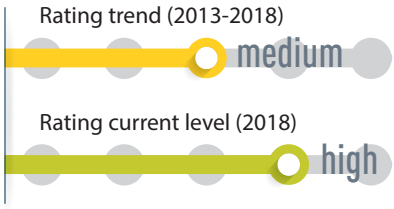
Indonesia	G20 average
3.39	4.86

Trend (2013-2018): -9% | -12%

Data for 2018 | Source: Enerdata 2019; World Bank 2019

This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of industrialisation, efficiency achievements, climatic conditions or geography. Indonesia's energy intensity is below the G20 average, but has decreased to a lesser extent (-9%, 2013-2018) than the G20 rate.

Rating of energy intensity compared to other G20 countries[4]

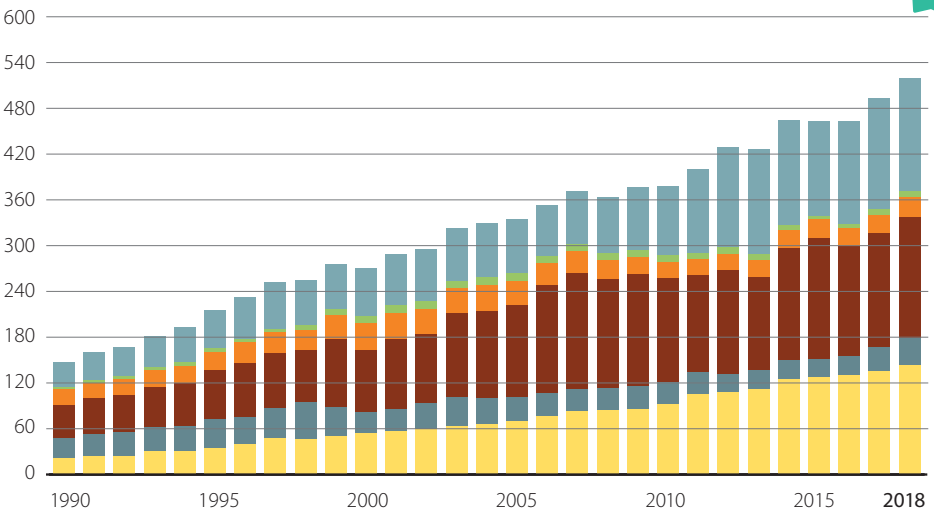


Source: own evaluation

Energy-related CO_2 emissions[9]

CO_2 emissions from fuel combustion ($MtCO_2$/year)

522 $MtCO_2$



Share of total energy-related CO_2 emissions in 2018

28%	Transport
1%	Agriculture
5%	Buildings
31%	Industries (incl. autoproducers)
7%	Other energy sector
28%	Electricity and heat

Source: Enerdata 2019

The largest driver of overall GHG emissions are CO_2 emissions from fuel combustion. In Indonesia, these emissions have significantly increased since 1990. The industry sector is, with 31%, the largest contributor, followed by electricity and heat, and transport.

MITIGATION POWER SECTOR

INDONESIA

Indonesia produces 61% of electricity from coal and intends to double its coal capacity by 2028. To stay within a 1.5°C limit, Indonesia would need to phase out coal by 2040.

Share in energy-related CO_2 emissions

Data for 2018 | Source: Enerdata 2019

Coal must be phased out in the EU/OECD no later than 2030, in the rest of the world no later than 2040. Electricity generation needs to be decarbonised before 2050, with renewable energy the most promising option.[5]

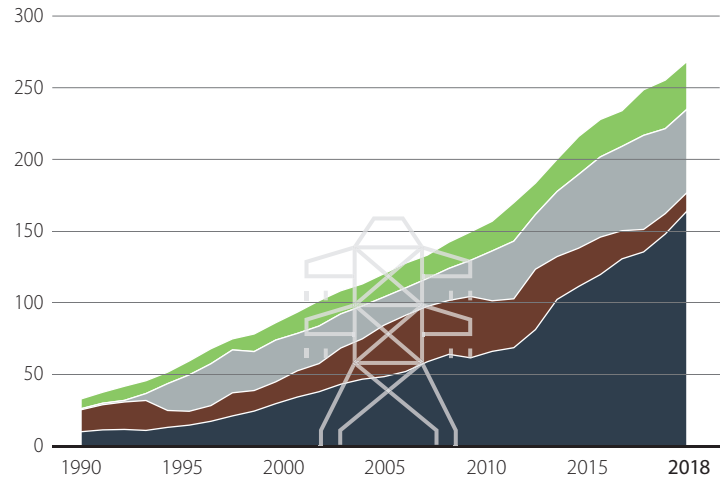
1.5°C[6]

Source: IPCC SR1.5 2018; Climate Analytics 2016; Climate Analytics 2019

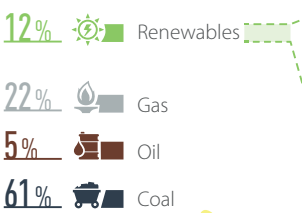
STATUS OF DECARBONISATION

Power mix

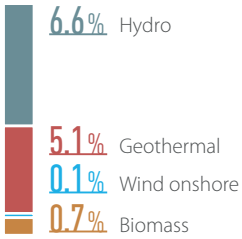
Gross power generation (TWh)



Shares in 2018



Renewables shares

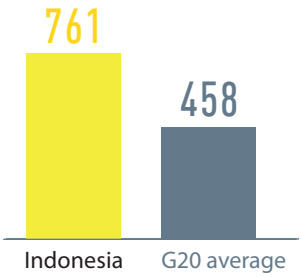


Source: Enerdata 2019

Indonesia's power mix is dominated by fossil fuels – coal use has risen sharply in the past decade and now accounts for 61%. Renewables are developing only slowly, and at 12% their share is below the G20 average (25%). The main renewable power sources are hydropower and geothermal.

Emissions intensity of the power sector

(gCO_2/kWh)



Data for 2018 | Source: Enerdata 2019

Trend (2013-2018)

+10% Indonesia

-11% G20 average

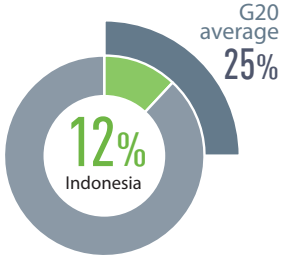
Rating of emissions intensity compared to other G20 countries[4]

Source: own evaluation

For each kilowatt hour of electricity, 761 gCO_2 are emitted in Indonesia. This is almost double the G20 average. Emission intensity has increased by 10% (2013-2018) because of the growing use of fossil fuels.

Share of renewables in power generation

(incl. large hydro)



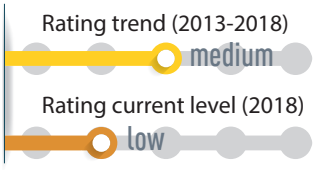
Data for 2018 | Source: Enerdata 2019

Trend (2013-2018)

+10% Indonesia

+20% G20 average

Rating of share of renewables compared to other G20 countries[4]



Source: own evaluation

MITIGATION POWER SECTOR

INDONESIA

POLICIES[5]

Renewable energy in the power sector

Indonesia is planning to install 16.7 GW of renewable power capacity by 2028. Indonesia had feed-in-tariffs in the past; the current regulation abandoned this scheme and introduced the BOOT (Build-Own-Operate-Transfer) scheme under which power plant assets cannot be used as collateral.

Recent regulations make investments in renewable energy unattractive.

Source: own evaluation

Coal phase-out in the power sector

Indonesia is not considering a coal phase-out but intends to install 6 GW of coal-fired power generation by 2020 and 27.1 GW by 2028, doubling coal capacity by 2028. The coal industry is heavily subsidised both directly (loan guarantees, tax exemptions, royalties and tax rates) and indirectly (price cap on coal sold to domestic power utilities, introduced in 2018).

Source: own evaluation

MITIGATION TRANSPORT SECTOR

Emissions from transport make up almost 30% of Indonesia's total CO_2 emissions, as the transport sector is still heavily dominated by fossil fuels. In order to stay within a 1.5°C limit, passenger and freight transport need to be decarbonised.

Share in energy-related CO_2 emissions

Data for 2018 | Source: Enerdata 2019

The proportion of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050.

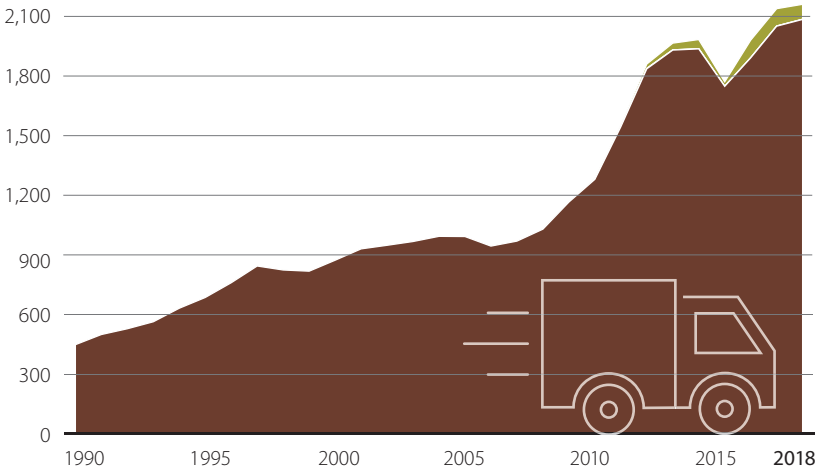
1.5°C[6]

Source: IPCC SR1.5 2018

STATUS OF DECARBONISATION

Transport energy mix

Final energy consumption of transport by source (PJ/year)



Share in 2018

3.5%	Biofuels
0.0%	Electricity
0.0%	Gas
96.5%	Oil
0.0%	Coal

Electricity and biofuels together make up only 3.5% of the energy mix in transport (the G20 average is 6%).

Source: Enerdata 2019

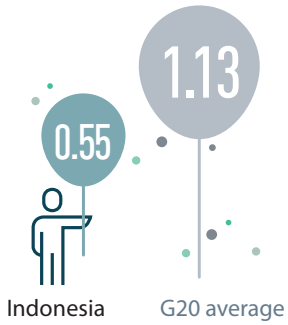
MITIGATION TRANSPORT SECTOR

INDONESIA

STATUS OF DECARBONISATION (continued)

Transport emissions per capita[10]

(tCO_2/capita, excl. aviation emissions)



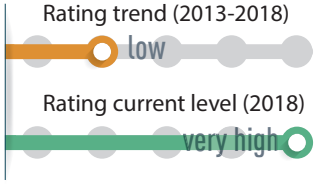
Data for 2018
Source: Enerdata 2019; World Bank 2019

Trend (2013-2018)

+3% Indonesia

+5% G20 average

Rating of transport emissions compared to other G20 countries[4]



Source: own evaluation

Aviation emissions per capita[11]

(tCO_2/capita)

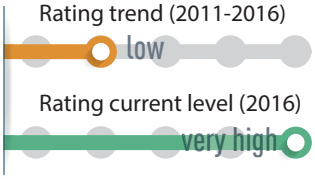
Data for 2016
Source: Enerdata 2019; IEA 2018

Trend (2011-2016)

+11% Indonesia

+10% G20 average

Rating of aviation emissions compared to other G20 countries[4]



Source: own evaluation

Motorisation rate

(vehicles per 1,000 inhabitants)

50

Data for 2014 | Source: Agora 2018

Market share of electric vehicles in new car sales

(%)

no data

Source: IEA 2019

Passenger transport

(modal split in % of passenger km)

no data

Source: Agora 2018

Freight transport

(modal split in % of tonne-km)

no data

Source: Agora 2018

POLICIES[5]

Phase out fossil fuel cars

There is no target to phase out fossil fuel cars nor are there fuel economy or carbon emission standards in place. However, cars with low fuel consumption or emissions benefit from a reduced sales tax. A 2019 decree offers tax incentives for the electric vehicle (EV) industry and buyers of EVs.

Source: own evaluation

Phase out fossil fuel heavy-duty vehicles

There is no target to reduce total emissions from freight transport, nor are there energy or carbon emission standards in place for heavy-duty vehicles. There are no measures to support low-carbon freight logistics, and the energy intensity of freight transport remains high.

Source: own evaluation

Modal shift in (ground) transport

Indonesia supports the development of an Intelligent Transport System, the introduction of Bus Rapid Transit Systems in 12 cities, and the enhancement of rail infrastructure including electrification. There is no long-term strategy for supporting a modal shift or measures to support low-carbon freight logistics.

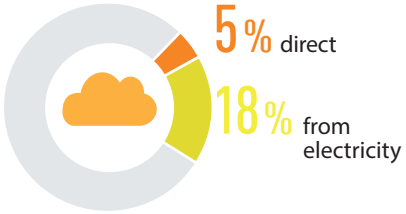
Source: own evaluation

MITIGATION BUILDINGS SECTOR

INDONESIA

Indonesia's building emissions – including heating, cooking and electricity use – make up 23% of total CO_2 emissions. Per capita, building-related emissions are well below the G20 average but increasing widely. Indonesia is lack effective policies to reduce emissions from buildings.

Share in energy-related CO_2 emissions



Data for 2018 | Source: Enerdata 2019

Global emissions from buildings need to be halved by 2030, and be about 80% below 2010 levels by 2050, achieved mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

1.5°C[6]

Source: IEA ETP B2DS scenario assessed in IPCC SR1.5 2018

STATUS OF DECARBONISATION

Building emissions per capita
(incl. indirect emissions)
(tCO_2/capita)

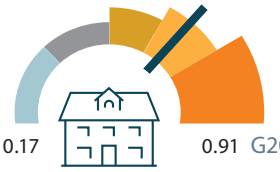
+17.8% +1%

Trend (2013-2018)

Data for 2018 | Source: Enerdata 2019; World Bank 2019

Residential buildings: energy use per m²
(GJ)

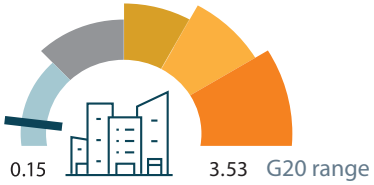
0.71 GJ



Data: year different per country | Source: ACEEE 2018

Commercial and public buildings: energy use per m²
(GJ)

0.27 GJ



Data: year different per country | Source: ACEEE 2018

Rating of building emissions compared to other G20 countries[4]

Source: own evaluation

Building-related emissions per capita are only a third of the G20 average. But in contrast to the G20 average, Indonesia's emissions rose by 18% (2013-2018), reflecting growing power consumption and a higher share of coal in the power mix.

Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc. In Indonesia, energy use per m² is in the upper range for residential buildings and in the lower range for commercial and public ones.

POLICIES[5]

Near-zero energy new buildings

Indonesia has no national strategy for making new buildings near zero energy. Indonesia's National Energy Efficiency Standard for Buildings (2011) is voluntary and applies to non-residential buildings only.

Source: own evaluation

Renovation of existing buildings

There are no national policies for energy performance of existing buildings and retrofits in Indonesia.

Source: own evaluation

MITIGATION INDUSTRY SECTOR

INDONESIA

Industry-related emissions make up more than a third of CO_2 emissions in Indonesia. More stringent policies are required to reduce these emissions in line with a 1.5°C pathway.

Share in energy-related CO_2 emissions (not including process emissions)

31% direct

9% from electricity

Data for 2018 | Source: Enerdata 2019

Global industrial CO_2 emissions need to be reduced by 65–90% from 2010 levels by 2050.

1.5°C[6]

Source: IPCC SR1.5 2018

STATUS OF DECARBONISATION

Industry emissions intensity[12]
(tCO_2e/US$2015 GVA)

Data for 2016 | Source: Enerdata 2019; PRIMAP 2018; World Bank 2019

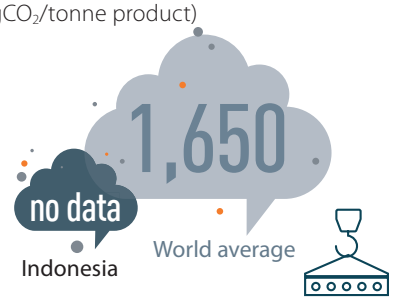
-1.5% -10.2%

Trend (2011-2016)

Carbon intensity of cement production[13]
($kgCO_2$/tonne product)

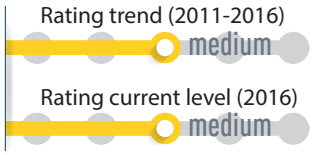
Data for 2015 | Source: CAT 2019

Carbon intensity of steel production[13]
($kgCO_2$/tonne product)



Data for 2015 | Source: CAT 2019

Rating of emissions intensity compared to other G20 countries[4]



Source: own evaluation

When comparing industrial emissions with the gross value added (GVA) from the industry sector, Indonesia is below the G20 average, but is reducing emission intensity at slower pace (-1.5% compared to the G20 average of -10%, 2011-2016).

Steel production and steelmaking are significant GHG emission sources, and are challenging to decarbonise. There is no data on the emissions of Indonesia's steel or cement industries.

POLICIES[5]

Energy efficiency

Source: own evaluation

Mandatory energy efficiency policies cover 26-50 % of industrial energy use. Indonesia has energy management policies in place, mandates for energy managers, and energy audit requirements. However, there are no performance standards for motors or policies to encourage deployment of combined heat and power technologies.

A 2009 regulation promised financial incentives for energy efficiency measures but these incentives have not been introduced.

MITIGATION LAND USE

INDONESIA

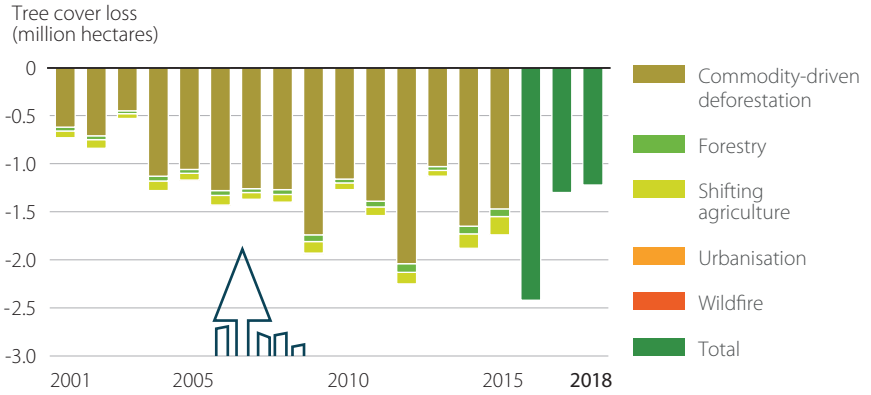
In order to stay within the 1.5°C limit, Indonesia needs to make the land use and forest sector a net sink of emissions, eg by halting the expansion of palm oil plantations, and by creating new forests.

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.[6]

1.5°C

Source: IPCC SR1.5 2018

Gross tree cover loss by dominant driver[14]



Source: Global Forest Watch 2019

Note: 2000 tree cover extent | >30% tree canopy | these estimates do not take tree cover gain into account

POLICIES[5]

(Net) zero deforestation

In August 2019, the president instructed a permanent moratorium on clearing of primary forest and peatland. However, the instruction neither creates a firm legal basis nor does it include secondary forests. Indonesia has not set a target to halt deforestation and still faces alarmingly high rates of commodity-driven deforestation.

Source: own evaluation

From 2001 to 2018, Indonesia lost 25.6Mha of tree cover, equivalent to a **16% reduction since 2000**, and 10.5Gt of CO_2 emissions. This does not take tree-cover gain into account. The main drivers are forest clearing for palm oil and timber harvesting, which contribute around two-fifths of deforestation.

MITIGATION AGRICULTURE

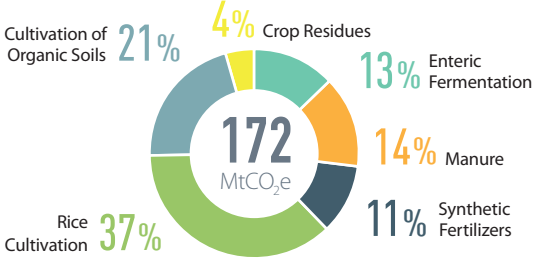
Indonesia's agricultural emissions come mainly from rice cultivation, cultivation of organic soils, and livestock manure. A 1.5°C pathway requires dietary shifts and climate-smart farming practices.

Global 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 fertilzers and manure) need to be reduced by 10% by 2030 and by 20% by 2050.[6]

1.5°C

Source: IPCC SR1.5 2018

GHG emissions from agriculture (not including energy)



Data for 2016 | Source: FAOSTAT 2019

In Indonesia, the largest sources of GHG emissions in the agricultural sector are rice cultivation, cultivation of crops on peat soils, and livestock manure. Climate-smart agriculture practices could help reduce emissions.

ADAPTATION

INDONESIA

- → **Indonesia is vulnerable to climate change and adaptation actions are needed.**
- → **On average, 252 fatalities and losses amounting to US$1.8 billion occur yearly due to extreme weather events.**
- → **With global warming, society and its supporting sectors are increasingly exposed to severe climate events such as increasing frequency of heatwaves.**
- → **With a 3°C warming, Indonesia would experience around 30 days per year when temperatures reach higher than 35°C.**

ADAPTATION POLICIES

Nationally-determined contribution: Adaptation

Targets	Not mentioned
Actions	Actions specified (sectors: agriculture, water, forestry, health, infrastructure, biodiversity/ecosystems)

Source: UNFCCC, NDC of respective country

National adaptation strategies

Document name	**Publication year**	**Fields of action (sectors)**													**M&E process (reporting frequency)**
		Agriculture	Biodiversity	Coastal areas & fishing	Education & research	Energy & industry	Finance & insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
National Action Plan on Climate Change Adaptation (RAN-API)	2014	x	x	x	x	x	x	x	x	x		x	x	x	Monitoring done by related line Ministries and periodically reported to the Minister of National Development Planning

Source: own research

INDONESIA

ADAPTATION NEEDS

Climate Risk Index for 1998-2017

Impacts of extreme weather events in terms of fatalities and economic losses that occured

Global Climate Risk Index 2019 | All numbers are averages (1998-2017)

Weather-related fatalities	Per 100,000 inhabitants		Annual average losses (PPP US$ mn)	Per unit GDP (%)	
252	0.1	97 rank out of 181 countries	1799	0.1	109 rank out of 181 countries

Source: Germanwatch 2018

Indonesia has already been struck by extreme weather events such as floods, tropical cyclones, fires, landslides and heavy rains. As highlighted by the numbers from the Climate Risk Index, such extreme weather events result in fatalities and economic losses. Climate change is expected to worsen the intensity, frequency and impacts of such events.

Exposure to future impacts at 1.5°C, 2°C and 3°C

		1.5°C	2°C	3°C
Water	% of area with increase in water scarcity			
	% of time in drought conditions			
Heat & Health	Heatwave frequency			
	Days above 35°C			

Source: own research

			1.5°C	2°C	3°C
Agriculture	Maize	Reduction in crop duration			
		Hot spell frequency			
		Reduction in rainfall			
	Rice	Reduction in crop duration			
		Hot spell frequency			
		Reduction in rainfall			

Source: Based on Arnell et al 2019

Overall, with rising temperatures, all sectors are adversely affected. In the water sector, water scarcity and time spent in drought conditions increase significantly.

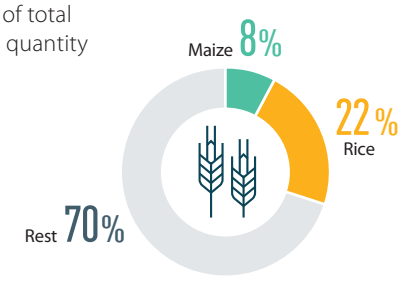
Impact ranking scale

- Very low
- Low
- Medium
- High
- Very high

Blank cells signify that there is no data available

National crop production

(share in % of total production quantity in tonnes)



Data for 2017 | Source: FAOSTAT 2019

Rice and maize represent the largest proportions of crop production out of the four crops analysed (maize, rice, soybeans, wheat). Reduced rainfall and crop duration affects both crops. Generally, maize and rice production are affected by temperature rises and rainfall decreases, particularly in lowland areas.

FINANCE

INDONESIA

Indonesia's fossil fuel subsidies totalled US$7.7 billion in 2017, mostly for petroleum and electricity. The country has no explicit carbon price.

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

1.5°C[6]

Source: IPCC SR1.5 2018

Nationally-determined contribution: Finance

Conditionality	NDC partly conditional on international financial support (Indonesia could increase its contribution to 41% emission reduction against BAU by 2030), subject to availability of international support for finance, technology transfer, and development and capacity building)
Investment needs	Not specified
Actions	National actions to align financial flows specified (public spending)
International market mechanisms	Not mentioned

Source: UNFCCC, NDC of respective country

Financial policy and regulation supporting a brown to green transition

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.

Category	Instruments	Objective	Under discussion/ implementation	Not identified
Green Financial Principles	N/A	This indicates political will and awareness of climate change impacts, showing where there is a general discussion about the need for aligning prudential and climate change objectives in the national financial architecture.	X	

			Mandatory	Voluntary	Under discussion	Not identified
Enhanced supervisory review, risk disclosure and market discipline	Climate risk disclosure requirements	Disclose the climate-related risks to which financial institutions are exposed				X
	Climate-related risk assessment and climate stress-test	Evaluate the resilience of the financial sector to climate shocks	X			
Enhanced capital and liquidity requirements	Liquidity instruments	Mitigate and prevent market illiquidity and maturity mismatch				X
	Lending limits	Limit the concentration of carbon-intensive exposures			X	
		Incentivise low carbon-intensive exposures	X			
	Differentiated Reserve Requirements	Limit misaligned incentives and canalise credit to green sectors				X

Source: own research

In 2014 Otoritas Jasa Keuangan (OJK) launched a Sustainable Finance Roadmap including measures to increase green finance through regulatory support and incentives, targeted loans and guarantee schemes, green lending models and green bonds. OKJ has also released a Sustainable Finance Umbrella Policy providing guidance to the Indonesian financial system. It defines sustainable finance principles and requires financial institutions to submit annual plans on the implementation of sustainable finance, demonstrating how they are developing green finance products and how they are incorporating green finance principles into organisational restructuring, risk management and corporate governance.

FINANCE

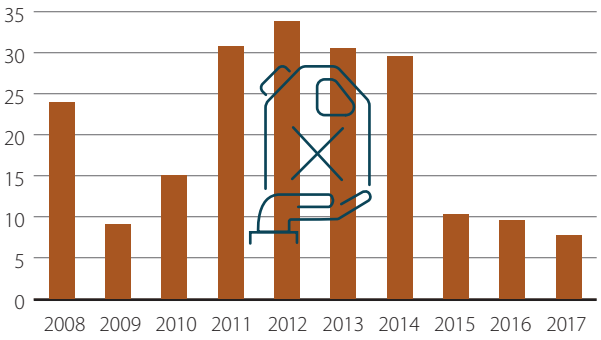
INDONESIA

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 prices.

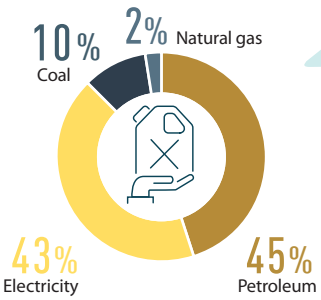
Fossil fuel subsidies

US$ billions



Source: OECD-IEA 2019

Subsidies by fuel type

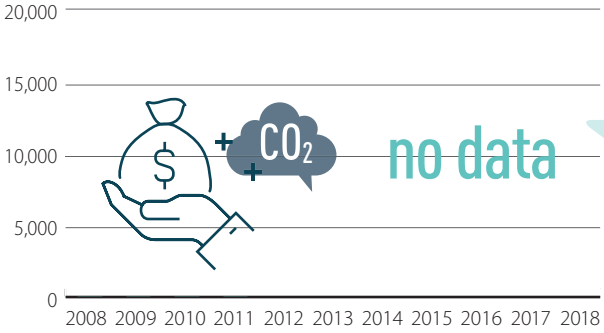


Data for 2017 | Source: OECD-IEA 2019

In 2017, Indonesia's fossil fuel subsidies totalled US$7.7bn (compared to US$24bn in 2008, and the last decade's peak of US$33.8bn in 2012). Of the subsidies quantified, 96% were for consumption of fossil fuels, with the remainder for production. The highest subsidies were for petroleum, at US$3.5bn, and for fossil fuel-based electricity, at US$3.3bn. The largest subsidy is annual compensation to state-owned Perusahaan Listrik Negara for selling (fossil fuel-dominated) electricity at below market prices (US$3.3bn).

Carbon revenues

Carbon revenues (US$ millions)
from explicit carbon pricing schemes

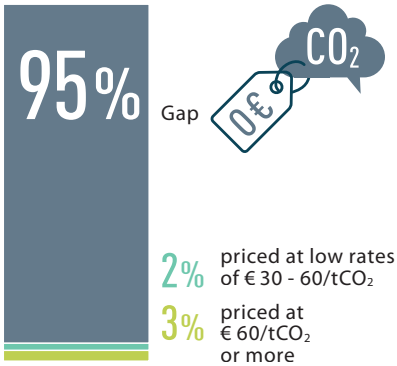


Source: I4CE 2019

Indonesia does not have a national carbon tax or emissions trading scheme, nor are any such schemes planned. Despite this, 16% of domestic emissions from energy use are subject to other taxes. Introducing a carbon pricing scheme has been identified as one way to raise the environmental funds listed in Presidential Regulation No. 77/2018, which could help Indonesia to achieve its NDC target.

Carbon pricing gap[15]

% of energy-related CO_2 emissions



Data for 2015 | Source: OECD 2018

Only 5% of Indonesia's CO_2 emissions are priced at EUR30 or higher (the low-end benchmark), creating a carbon pricing gap of 95%. This gap is much higher than the G20 average of 71%. The price covers not only explicit carbon taxes but also specific taxes on energy use and the price of tradable emission permits.

FINANCE

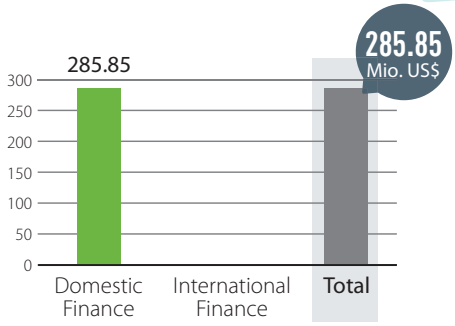
INDONESIA

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 countries 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 coal[16]

(million US$)



Between 2016-2017, Indonesia's public finance institutions provided US$286 million per year for coal-fired power production domestically.

Domestic Finance

International Finance

Data year: 2016-2017 average
Source: Oil Change International 2019

Commitments to restrict public finance to coal and coal-fired power[17]

MDB level	National development agencies and banks	Domestic export credit agencies	Export credit restriction in OECD	Comment
–	–	–		No commitments identified

X yes – no not applicable

Source: own research

Provision of international public support[18]

Indonesia is not listed in Annex II of the UNFCCC and it is therefore not formally obliged to provide climate finance. It has nevertheless contributed international public finance via the Green Climate Fund. While Indonesia may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Obligation to provide climate finance under UNFCCC

YES NO

United Nations Framework Convention on Climate Change

Bilateral climate finance contributions

Annual average contribution (mn US$, 2015-2016)	Theme of support			
	Mitigation	Adaptation	Cross-cutting	Other
0	0%	0%	0%	0%

Source: Country reporting to UNFCCC

Multilateral climate finance contributions

See Technical Note for multilateral climate funds included and method to attribute amounts to countries

Annual average contribution (mn US$, 2015-2016)	Theme of support		
	Adaptation	Mitigation	Cross-cutting
0	0%	0%	0%

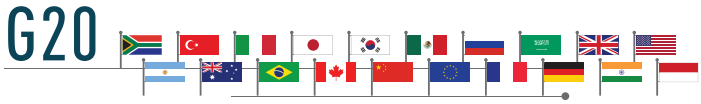
Source: Country reporting to UNFCCC

Core/General Contributions

Annual average contribution (mn US$, 2015-2016)
0

Source: Country reporting to UNFCCC

ENDNOTES



1) '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) reporting tables data converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from Land use, land-use change and forestry (LULUCF), which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

2) The 1.5°C fair share ranges for 2030 and 2050 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with 1.5°C fair-share ranges reaching below zero, particularly between 2030 and 2050, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions-reduction efforts via, for example, international finance. On a global scale, negative emission technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions.

   The CAT's evaluation of NDCs shows the resulting temperature outcomes if all other governments were to put forward emissions reduction commitments with the same relative ambition level.

   The 2030 projections of GHG emissions are from the CAT's June 2019 update and are based on implemented policies, expected economic growth or trends in activity and energy consumption.

   The CAT methodology does not consider GHG emissions from LULUCF due to the large degree of uncertainty inherent in this type of data, and alsoto ensure consistency and comparability across countries.

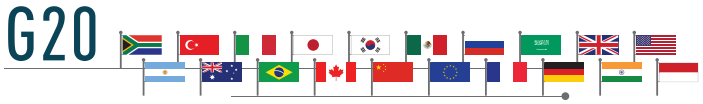
3) See the Brown to Green 2019 Technical Note for the sources used for this assessment.

4) The Decarbonisation Ratings assess the relative performance across the G20. A high scoring reflects a relatively good efforts from a climate protection perspective but is not necessarily 1.5°C compatible. The ratings assess both the 'current level' and 'recent developments' to take account of the different starting points of different G20 countries. The 'recent developments' ratings compare developments over the last five available years (often 2013 to 2018).

5) The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement, the Special Report on 1.5°C of the International Panel on Climate Change (2018), and the Climate Action Tracker (2016): 'The ten most important short-term steps to limit warming to 1.5°C'. The table below displays the criteria used to assess a country's policy performance. See the Brown to Green Report 2019 Technical Note for the sources used for this assessment.

On endnote 5)	low	medium	high	frontrunner
Renewable energy in power sector	No policy 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 target or policy 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 policy 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-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policy	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)
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
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
(Net) zero deforestation	No policy or incentive 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

ENDNOTES (continued)



6) The 1.5°C benchmarks are based on the Special Report on 1.5°C of the International Panel on Climate Change (2018). See the Brown to Green 2019 Technical Note for the specific sources used for this assessment.
7) Total primary energy supply data displayed in this Country Profile does not include non-energy use values. Solid fuel biomass in residential use has negative environmental and social impacts and is shown in the category 'other'.
8) Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.
9) The category 'electricity and heat' covers CO_2 emissions from power generation and from waste heat generated in the power sector. The category 'other energy use' covers energy-related CO_2 emissions from extracting and processing fossil fuels (e.g. drying lignite).
10) This indicator shows transport emissions per capita, not including aviation emissions.
11) This indicator adds up emissions from domestic aviation and emissions from international aviation bunkers in the respective country. Emissions by aircrafts in the higher atmosphere lead to a contribution to climate change greater than emissions from burning fossil fuels. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.
12) This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.
13) This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).
14) This indicator covers only gross tree-cover loss and does not take tree-cover gain into account. It is thus not possible to deduce from this indicator the climate impact of the forest sector. The definition of 'forest' used for this indicator is also not identical with the definition used for the indicator on page 3.
15) 'Effective carbon rates' are the total price that applies to CO_2 emissions, and are made up of carbon taxes, specific taxes on energy use and the price of tradable emission permits. The carbon pricing gap is based on 2015 energy taxes and is therefore likely to be an underestimate, as taxation has tended to increase in countries over time.
16) The database used to estimate public finance for coal is a bottom-up database, based on information that is accessible through various online sources, and is therefore incomplete. For more information, see to the Brown to Green 2019 Technical Note.
17) See the Brown to Green 2019 Technical Note for the sources used for this assessment.
18) Climate finance contributions are sourced from Biennial Party reporting to the UNFCCC. Refer to the Brown to Green Report 2019 Technical Note for more detail.

For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: http://www.climate-transparency.org/g20-climate-performance/g20report2019

CLIMATE TRANSPARENCY

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based on a decision of the German Bundestag

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Contact point in Indonesia:

Fabby Tumiwa
Institute for Essential Services Reform (IESR)
fabby@iesr.or.id

Erina Mursanti
Institute for Essential Services Reform (IESR)
erina@iesr.or.id