INDONESIA

Climate Transparency

2020

CLIMATE TRANSPARENCY REPORT COMPARING G20 CLIMATE ACTION AND RESPONSES TO THE COVID-19 CRISIS

This country profile is part of the **Climate Transparency Report 2020**. Find the full report and other G20 country profiles at: www.climate-transparency.org

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

GHG emissions (incl. land use) per capita (tCO$_2$e/capita)[1]

5.76 Indonesia

7.32 G20 average

5-year trend (2012-2017)

+7.5% Indonesia | **-2.3%** G20 average

Indonesia's greenhouse gas emissions per capita are below the G20 average.

Data for 2017; Sources: Gütschow et al., 2019; UN Department of Economic and Social Affairs; Population Division, 2019; Enerdata, 2020

NOT ON TRACK FOR A 1.5°C WORLD

1.5°C

Indonesia needs to reduce its emissions to below 662 MtCO$_2$e by 2030 and to below 51 MtCO$_2$e 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$_2$e but it does not intend to increase its emissions reduction target in its updated NDC. All figures exclude land use emissions.

Indonesia 1.5°C 'fair-share' pathway (MtCO$_2$e/year)[1,2]

- NDC target
- Ambition gap
- **889 MtCO$_2$e**
- **max 622 MtCO$_2$e**
- **max -51 MtCO$_2$e**
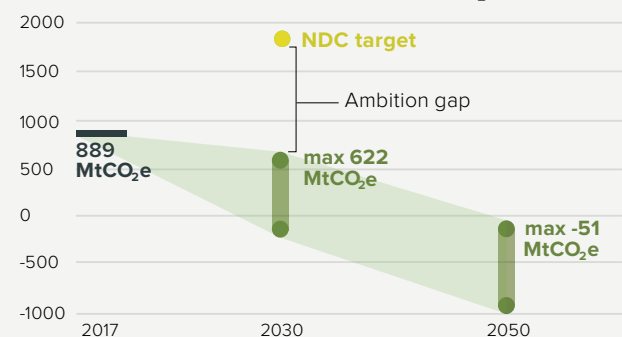
Source: Climate Action Tracker, 2020

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

INCREASE RENEWABLE ENERGY TARGETS

Indonesia's energy generation mix was 88% fossil fuels in 2019. Indonesia should phase out coal by 2037 and increase its renewable energy targets to at least 50% by 2030, be 1.5°C-compatible and yield substantial employment and other sustainable development benefits.

DECARBONISE TRANSPORT

Transport emissions are projected to increase by 53% in 2030 above 2015 levels, and then almost double from 2030 levels to 2050. Electric vehicles, sustainable biofuels and more stringent fuel economy standards will drastically reduce greenhouse gas emissions from transport.

REGULATE CARBON TRADING

The current drafting of a Presidential Regulation on carbon trading offers an opportunity to support progress towards meeting an enhanced NDC target. The regulation has plans for carbon trading, carbon offset, and a commodity market.

RECENT DEVELOPMENTS

Energy and Mineral Resources **Regulation No. 04/2020 simplifies renewable power generation regulation** and the bankability of renewable projects to enhance the competitiveness of renewable electricity with fossil fuel power sources.

The Ministry of Energy and Mineral Resources is drafting a Presidential Regulation to **regulate renewable energy prices and incentives**, including a feed-in tariff for RE plants under 5 MW. This regulation is expected to be enacted in October 2020.

Government bailouts of coal-heavy electric utilities without conditions adds to the mounting support for coal, such as large subsidies. **Indonesia is one of very few countries with coal power plant construction in 2020.** The huge coal pipeline has over 30 GW of coal-fired power in development.

✿ CORONAVIRUS RECOVERY

Contrary to a green recovery, the government has bailed out coal-heavy electric utilities. In addition, the passage of the Omnibus Bill of Job Creation and a Mining Bill remove the already weak environmental safeguards. Research shows the government can implement a green economic recovery by switching electricity subsidies to rooftop solar installation, a strategy that would not only provide employment and increase competitiveness of domestic products, but also reduce emissions.

References: Cabinet Secretariat of the Republic of Indonesia, 2020; IESR, 2020; Greenpeace 2020; Simamora, 2020; Tumiwa and Mursanti, 2020

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

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Reducing emissions from
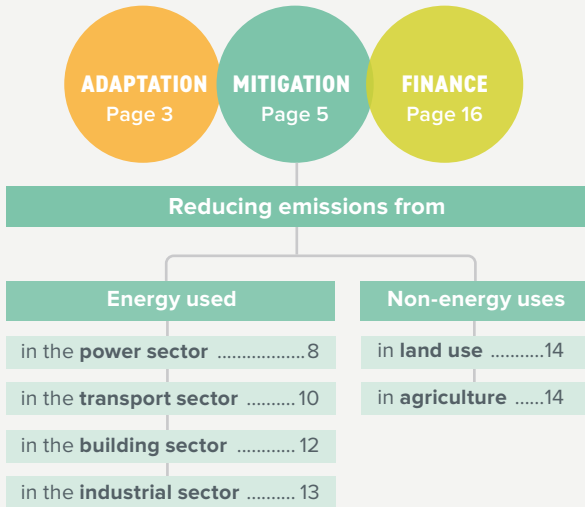
LEGEND

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

Very low   Low   Medium   High   Very high

Policy Ratings[5] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.

Low   Medium   High   Frontrunner

SOCIO-ECONOMIC CONTEXT

Human Development Index

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

Very high
High
Medium
Low

HIGH
0.707

Data for 2019. Source: UNDP, 2019

Population and urbanisation projections

(in millions)

Indonesia's population is expected to increase by about 20% by 2050 and become more urbanised.

267.7 — 55.3% urban — 2018

295.6 — 62.8% urban — 2030

321.6 — 72.8% urban — 2050
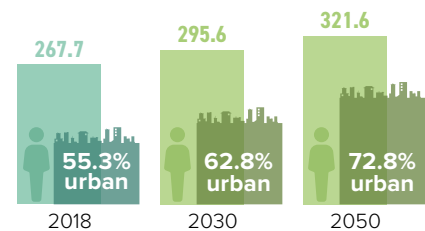
Data for 2018. Sources: United Nations, 2018; The World Bank, 2019

Gross Domestic Product (GDP) per capita

(PPP constant 2015 international $)

12,142 INDONESIA

21,648 G20 AVERAGE

Data for 2019. Source: The World Bank, 2020

Death rate attributable to air pollution

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

0.5 INDONESIA

0.1–1.1 G20 RANGE

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.

95,156 deaths per year
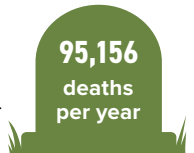
Data for 2016. Source: WHO, 2018

JUST TRANSITION

JUST TRANSITION AWAY FROM COAL

The 2019 Low Carbon Development Initiative (LCDI) aims to integrate the climate agenda into the national development plan. However, the mid-term development plan (RPJMN 2020-2024) has not fully adopted the LCDI recommendations.

Independent analysis from Climate Analytics suggests that if Indonesia were to increase renewables, it could create over 290,000 additional direct jobs in the next 10 years.

Some provinces will be particularly affected by the transition, as their revenue is heavily dependent on coal revenues, such as East and South Kalimantan.

Indonesia requires an inclusive strategy for a just transition away from coal that can assist the economic recovery from the impacts of COVID-19 and which could, for example, create sustainable job opportunities.

References: Climate Action Tracker, 2019b; Fuentes et al., 2019; Arinaldo and Adiatma, 2019

1. ADAPTATION
ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

PARIS AGREEMENT **Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.**

VULNERABLE TO CLIMATE CHANGE Indonesia is vulnerable to climate change and adaptation actions are needed.

SEVERE CLIMATE EVENTS With global warming, society and its supporting sectors are increasingly exposed to severe climate events such as increasing frequency of heatwaves.

SEVERE IMPACTS ON COASTAL AREAS Particularly vulnerable sectors are coastal areas (marine and fishery), agriculture, water resources, forest, urban and rural areas, and health.

ADAPTATION NEEDS
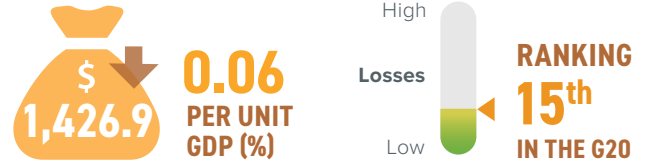
Climate Risk Index

Impacts of extreme weather events in terms of fatalities and economic losses that occured. All numbers are averages (1999-2018).

Annual weather-related fatalities

257.5 DEATHS

0.11 PER 100,000 INHABITANTS

High
Death rate
Low

RANKING 9th IN THE G20

Source: Based on Germanwatch, 2019

Annual average losses (USD mn PPP)

$ 1,426.9

0.06 PER UNIT GDP (%)

High
Losses
Low

RANKING 15th IN THE G20

Source: Based on Germanwatch, 2019

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

Impact ranking scale:
⚪ Very low 🟢 Low 🟠 Medium 🔴 High 🟤 Very high

			1.5°C	2°C	3°C
WATER		% of area with increase in water scarcity	🟢	🟠	🟤
		% of time in drought conditions	🟢	🟢	🟠
HEAT AND HEALTH		Heatwave frequency	🔴	🟤	🟤
		Days above 35°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: Water, Heat and Health: own research. Agriculture: Arnell et al., 2019

Note: These indicators are national scale results, weighted by area and based on global data sets. They are designed to allow comparison between regions and countries and, therefore, entail simplifications. They do not reflect local impacts within the country. Please see technical note for further information.
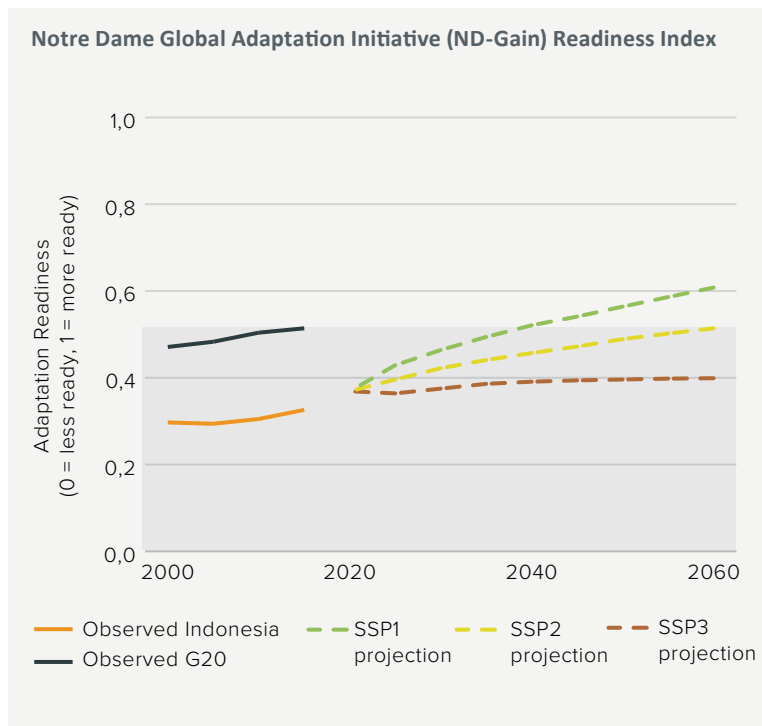
☼ CORONAVIRUS RECOVERY

COVID-19 recovery efforts have not been geared towards making Indonesia more resilient to climate change, missing opportunities such as directing funds towards building resilient infrastructure while creating jobs. The pandemic has compounded issues related to food security, as supply chain disruptions are added to climate-related food shortages.
Reference: Rahman, 2020

Adaptation readiness

The figure shows 2000-2015 observed data from the ND-GAIN Index overlaid with projected Shared Socioeconomic Pathways (SSPs) from 2015-2060.

Notre Dame Global Adaptation Initiative (ND-Gain) Readiness Index

Adaptation Readiness
(0 = less ready, 1 = more ready)

Observed Indonesia — SSP1 projection — SSP2 projection — SSP3 projection
Observed G20

Indonesia's observed adaptation readiness is well below the G20 average. Socio-economic developments in line with SSP1 would produce improvements in readiness to nudge it above the 2015 G20 average by 2045; and with SSP2, only by 2060. Adopting measures consistent with SSP3 would keep Indonesia's readiness to adapt well below the 2015 G20 average within the projected timeframe.

The readiness component of the Index created by the Notre Dame Global Adaptation Initiative (ND-GAIN) encompasses social economic and governance indicators to assess a country's readiness to deploy private and public investments in aid of adaptation. The index ranges from 0 (low readiness) to 1 (high readiness).

The overlaid SSPs are qualitative and quantitative representations of a range of possible futures. The three scenarios shown here in dotted lines are qualitatively described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2) and a 'Regional Rivalry' (SSP3) scenario. The shaded area delineates the G20 average in 2015 for easy reference.

Source: Andrijevic et al., 2020

ADAPTATION POLICIES

National Adaptation Strategies

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

## Nationally Determined Contribution (NDC): Adaptation

Targets	Actions
Not mentioned	Actions specified in the following sectors: agriculture, water, forestry, health, infrastructure, biodiversity/ecosystems

2. MITIGATION
REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE

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

EMISSIONS OVERVIEW
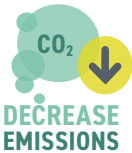
CO₂ DECREASE EMISSIONS Indonesia's GHG emissions (excl. land use) have increased 140% between 1990 and 2017. The government's climate target of **29% below business-as-usual in 2030 is not in line with a 1.5°C pathway.**
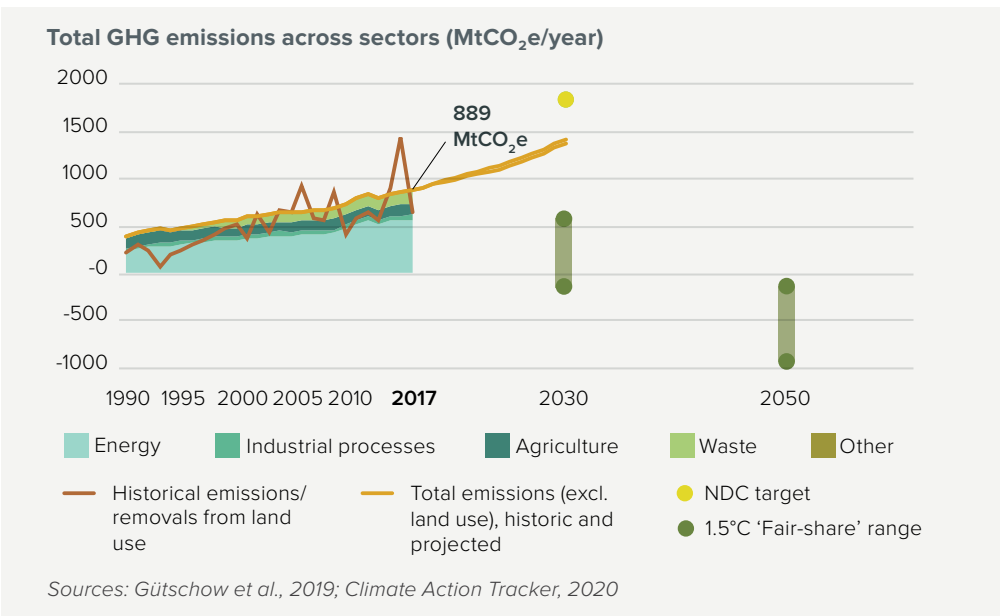*Source: Climate Action Tracker, 2020*
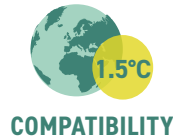
1.5°C COMPATIBILITY In 2030, global CO_2 emissions need to be 45% below 2010 levels and reach net-zero by 2050. **Global energy-related CO_2 emissions must be cut by 40%** below 2010 levels by 2030 and reach net-zero by 2060.
Source: Rogelj et al., 2018

GHG emissions across sectors and CAT 1.5°C 'fair-share' range (MtCO₂e/year)

Total GHG emissions across sectors (MtCO₂e/year)

889 MtCO₂e

Energy | Industrial processes | Agriculture | Waste | Other

Historical emissions/removals from land use | Total emissions (excl. land use), historic and projected | NDC target | 1.5°C 'Fair-share' range

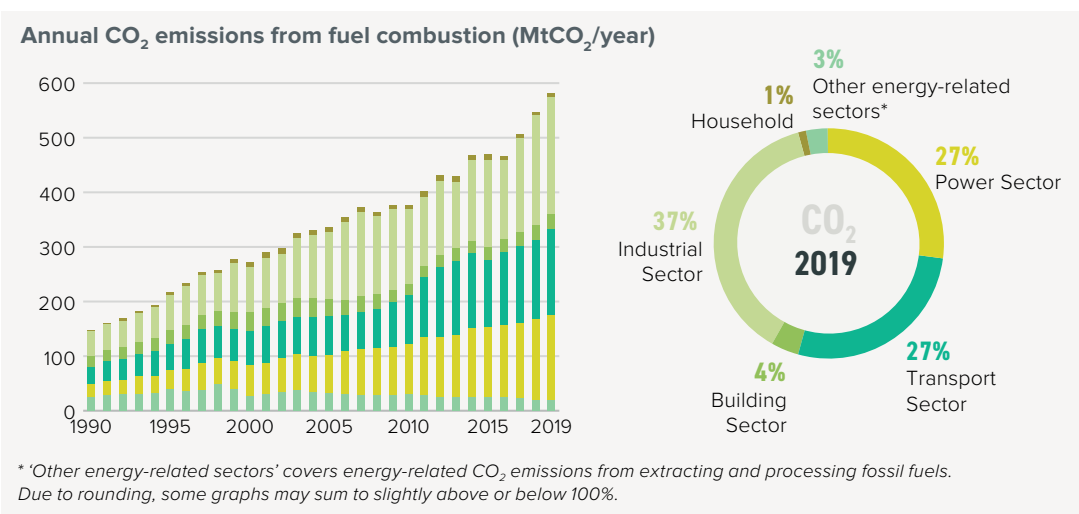*Sources: Gütschow et al., 2019; Climate Action Tracker, 2020*

Indonesia's emissions (excl. land use) have **increased by 140% between 1990 and 2017,** with the highest increase being the energy sector.

Under current policies, emissions are projected to continue increasing to 2030.

With current policies (excl. land use) Indonesia could meet its unambitious national mitigation target, which is not compatible with the Paris Agreement. Indonesia will need to scale up climate action to become 1.5°C 'fair-share' compatible.

Energy-related CO₂ emissions by sector

Annual CO₂ emissions from fuel combustion (MtCO₂/year)

3% Other energy-related sectors*
1% Household
27% Power Sector
37% Industrial Sector
CO₂ 2019
4% Building Sector
27% Transport Sector

The largest driver of overall GHG emissions are CO_2 emissions from fuel combustion. In Indonesia, emissions have increased significantly since 1990, reaching a high of 581 MtCO₂ in 2019. The industry sector contributes the most, at 37%, followed by transport (27%) and electricity and heat generation (27%).

* 'Other energy-related sectors' covers energy-related CO_2 emissions from extracting and processing fossil fuels. Due to rounding, some graphs may sum to slightly above or below 100%.

⚙ CORONAVIRUS RECOVERY Indonesia has an opportunity to align its COVID-19 economic response with a long-term strategy for decarbonisation, but it has so far failed to do so (September 2020), instead supporting fossil fuel industries. The economic stimulus packages, if appropriately directed, can provide unprecedented funds to kick-start an energy transition and decarbonise the economy.

ENERGY OVERVIEW

66% **OF INDONESIA'S ENERGY MIX IS FOSSIL FUELS**

Fossil fuels make up 66% of Indonesia's energy mix (incl. power, heat, transport fuels). The share of renewable energy (excluding traditional biomass) has slightly increased over recent years to 15%. The carbon intensity of the energy sector has risen, due to the increase in the share of coal. Indonesia's energy intensity is decreasing at a slower rate than the G20 five-year trend.
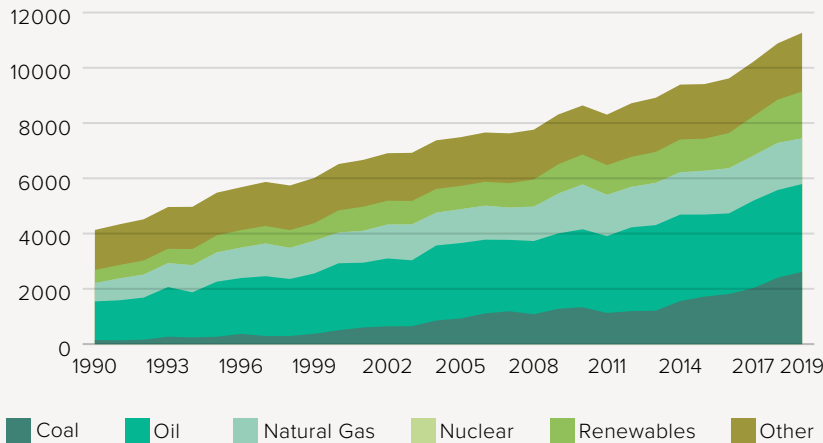
1.5°C COMPATIBILITY
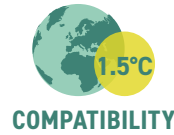
The share of **fossil fuels globally needs to fall to 67% of global total primary by 2030 and to 33% by 2050** (and to substantially lower levels without Carbon Capture and Storage).
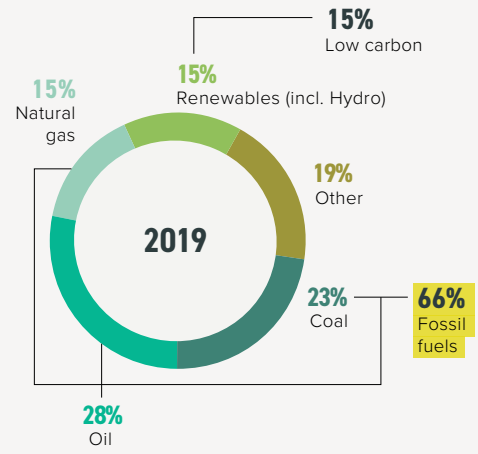*Source: Rogelj et al., 2018*

Energy Mix

Total primary energy supply (PJ)

Coal   Oil   Natural Gas   Nuclear   Renewables   Other

2019

15% Natural gas
15% Low carbon
15% Renewables (incl. Hydro)
19% Other
23% Coal
66% Fossil fuels
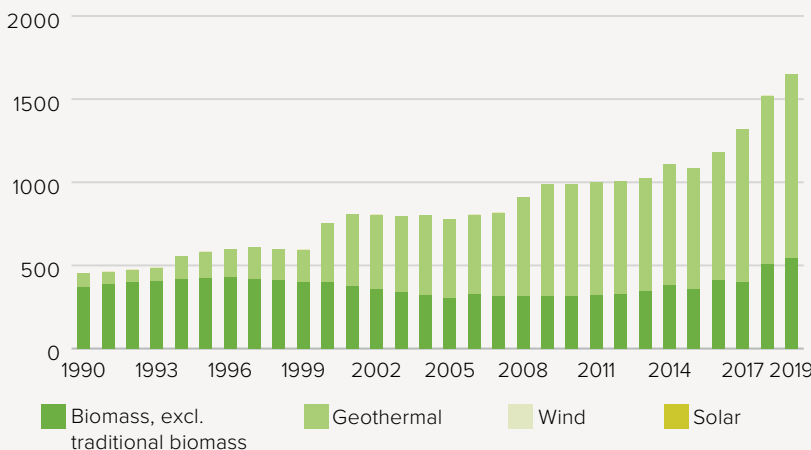28% Oil

Source: Enerdata, 2020

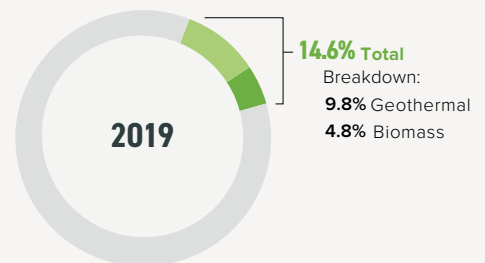*Due to rounding, some graphs may sum to slightly above or below 100%.*

This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, cooking, and transport fuels. Fossil fuels make up 66% of Indonesia's energy mix, lower than the G20 average. Renewables (excl. traditional residential use of biomass) account for 15% of the energy supply. The share of total fossil fuels in the energy mix has remained relatively constant, but the share of coal has increased, as has the share of renewable energy (with the use of traditional biomass decreasing).

Solar, Wind, Geothermal, and Biomass Development

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

Biomass, excl. traditional biomass   Geothermal   Wind   Solar

Geothermal and biomass account for 14.6% of Indonesia's energy supply

2019

14.6% Total
Breakdown:
9.8% Geothermal
4.8% Biomass

Source: Enerdata, 2020

Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.
Due to rounding, some graphs may sum to slightly above or below 100%.

Decarbonisation rating: RE share of TPES compared to other G20 countries

5-year trend (2014-2019): **Medium**

Current year (2019): **Very high**

Source: own evaluation

Geothermal and biomass account for 14.6% of Indonesia's energy supply, and its share in total energy supply rose by around 27.1% between 2014 and 2019. Geothermal represents the largest share of new renewables. Indonesia's wind and solar make up a tiny 0.01% of the energy mix, contrary to global trends and despite the decreasing prices of the technology. Solar energy more than doubled in 2019 compared to 2018.
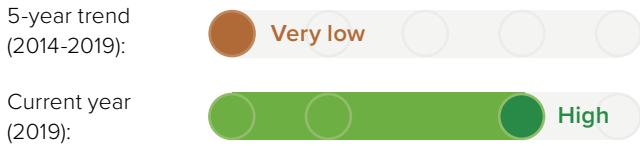
Carbon Intensity of the Energy Sector

Tonnes of CO_2 per unit of total primary energy supply (tCO_2/TJ)

51.57
tCO_2/TJ

Indonesia — G20 Average

Source: Enerdata, 2020

Decarbonisation rating: carbon intensity of the energy sector compared to other G20 countries

5-year trend (2014-2019):   **Very low**

Current year (2019):   **High**

Carbon intensity shows how much CO_2 is emitted per unit of energy supply.

In Indonesia, carbon intensity has risen slightly over the past three years, in contrast to the decreasing trend in the G20. It has reached over 50 tCO_2 in 2019, which is still lower than the G20 average. This level reflects the large share (66%) of fossil fuels in the energy mix.

Energy supply per capita

(GJ/capita)

97

42

Indonesia   G20 average
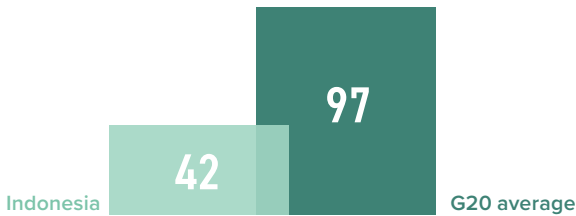
Sources: The World Bank, 2019; Enerdata, 2020

TPES per capita (GJ/capita): 5-year trend (2014-2019)

+15%
Indonesia

+1.9%
G20 average

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

At 42 GJ/capita, energy supply per capita in Indonesia is less than half the G20 average (97 GJ/capita). Energy use per capita in Indonesia is increasing (15%, 2014-2019) at a much higher rate to the G20 average of 1.9%
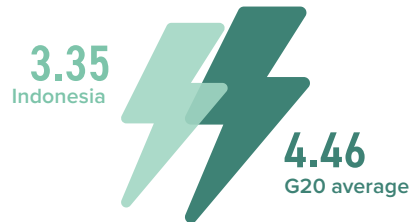
Decarbonisation rating: energy supply per capita compared to other G20 countries

5-year trend (2014-2019):   **Very low**

Current year (2019):   **Very high**

Source: own evaluation

Energy intensity of the economy

(TJ/PPP USD2015 millions)

3.35
Indonesia

4.46
G20 average

Data for 2018. Source: Enerdata, 2020

Energy intensity of the economy: 5-year trend (2013-2018)

-6.2%
Indonesia

-11.6%
G20 average

This indicator quantifies how much energy is used for each unit of GDP, which is closely related to the level of industrialisation, efficiency, climatic conditions and geography.

Indonesia's energy intensity is **below the G20 average but is decreasing to a lesser extent** compared to the G20 5-year trend.

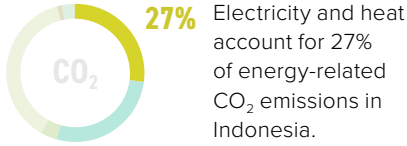**Decarbonisation rating: energy intensity compared to other G20 countries**

5-year trend (2013-2018):   **Low**

Current year (2018):   **High**
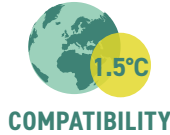
Source: own evaluation

POWER SECTOR

Emissions from energy used to make electricity and heat

==Indonesia's power sector is dominated by fossil fuels, with coal accounting for the lion's share (63%) of electricity generation.== Indonesia is subsidising the coal industry and leaving renewables struggling to compete, despite the vast co-benefits of a coal phase-out. It would need to peak coal electricity generation in 2020 and phase out coal by 2037 to get onto a 1.5°C pathway.

27% Electricity and heat account for 27% of energy-related CO_2 emissions in Indonesia.

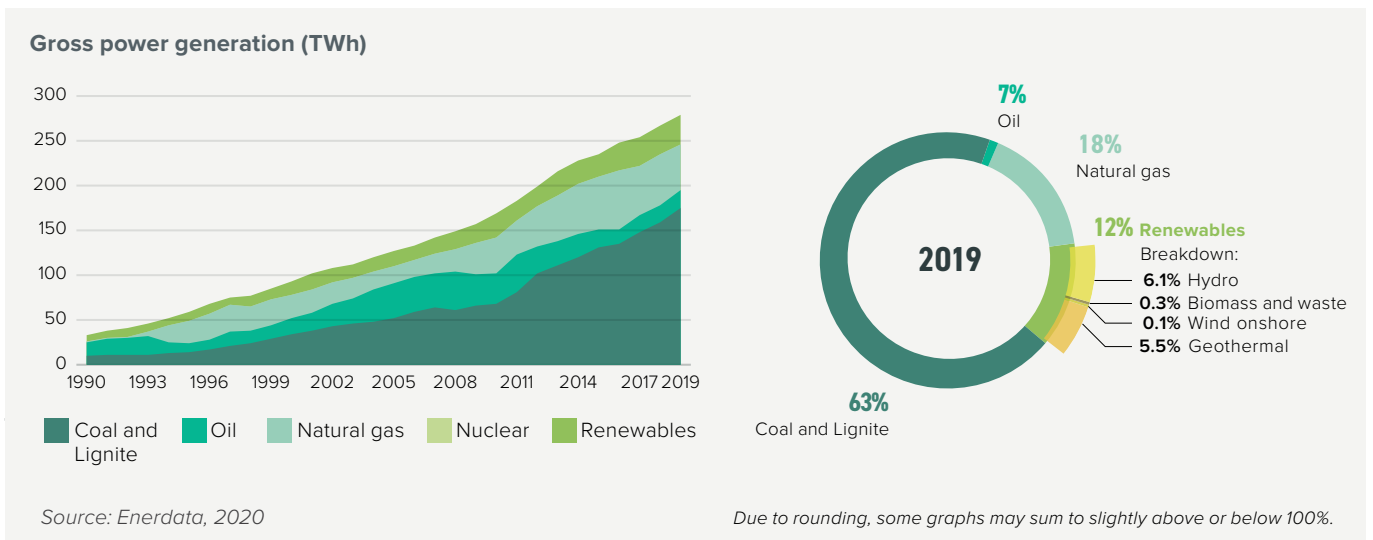*Source: Enerdata, 2020*

1.5°C COMPATIBILITY

Coal and decarbonisation
Worldwide, **coal use for power generation needs to peak by 2020,** and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. **Electricity generation has to be decarbonised before 2050,** with renewable energy the most promising alternative.

Sources: Rogelj et al., 2018; Climate Analytics, 2016; Climate Analytics, 2019
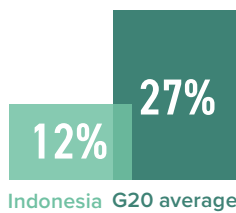
STATUS OF DECARBONISATION

Electricity mix

Gross power generation (TWh)

Coal and Lignite · Oil · Natural gas · Nuclear · Renewables

2019
- 7% Oil
- 18% Natural gas
- 12% Renewables
  Breakdown:
  - **6.1%** Hydro
  - **0.3%** Biomass and waste
  - **0.1%** Wind onshore
  - **5.5%** Geothermal
- 63% Coal and Lignite

Source: Enerdata, 2020

Due to rounding, some graphs may sum to slightly above or below 100%.

Indonesia's power mix is dominated by coal (63%), which has seen high growth over the past 10 years. Natural gas (18%) is the second largest contributor. Renewables have grown, with a 12% share, but are below the G20 average of 27%. Most renewable energy is Hydro (6%) and Geothermal (5.5%). Solar and wind still have very small shares although solar has more than doubled in 2018-2019.
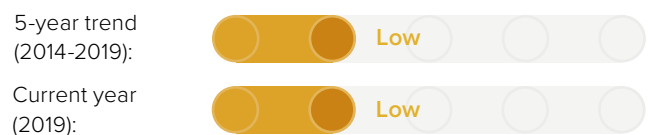
Share of renewables in power generation

(incl. large hydro)

12% Indonesia
27% G20 average

Source: Enerdata, 2020

Decarbonisation rating: share of renewables compared to other G20 countries

5-year trend (2014-2019): **Low**

Current year (2019): **Low**

Source: own evaluation

Share of renewables in power generation: 5-year trend (2014-2019)

👍 **+12%** Indonesia | 👍 **+27%** G20 average

Emissions intensity of the power sector

Country vs G20 average (gCO$_2$/kWh)

804
Indonesia

449
G20 average

Source: Enerdata 2020

For each kilowatt hour of electricity, 804gCO$_2$ are emitted in Indonesia. This is nearly double the G20 average of 449gCO$_2$ due to the large share of coal. The emissions intensity has increased over 10.1% in the last five years due to the increase of coal-fired power.
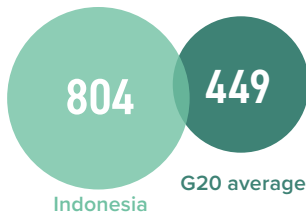
Emissions intensity: 5-year trend (2014-2019)

+10.1%
Indonesia

-10.3%
G20 average

Decarbonisation rating: emissions intensity compared to other G20 countries

5-year trend (2014-2019): **Very low**

Current year (2019): **Very low**
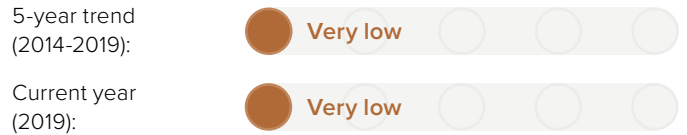
*Source: own evaluation*

POLICY ASSESSMENT

Renewable energy in the power sector

Medium

Indonesia has a policy to reach 23% of its primary energy mix from renewable energy by 2025. Based on the Medium-Term Development Plan 2020-2024, the renewable energy generation target is set to reach 19.3 GW by 2025: the current shortfall is 9 GW. As of 2019, the renewable energy mix had reached 9%. By 2019, total renewable energy power both on-grid and off-grid reached 14.7% of the country's total 70.4 GW generation capacity. In the last five years, renewable energy generation increased less than 2 GW (or 400 MW annually), below what is required to reach the 23% renewable target. The government laid out a strategy to accelerate renewable energy deployment by developing solar, biomass power and biofuel from palm oil.

Reference: IESR, 2019

Coal phase-out in the power sector

Low
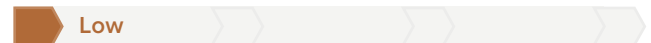
Indonesia, rather than phasing out coal, plans to increase coal-fired power from 26.8 GW in 2018 to 27.1 GW in 2019. Renewables have to compete with subsidised coal generation (e.g loan guarantees, tax exemptions, royalties, and price caps). However, in 2020 the government announced it will explore **the option of replacing old fossil fuel power plants with renewables, including 23 coal-fired power plants** that are over 20 years old (total capacity 5.7 GW).

Reference: own evaluation

TRANSPORT SECTOR

Emissions from energy used to transport people and goods

Emissions from transport account for 27% of Indonesia's energy-related CO_2 emissions as the sector is dominated by fossil fuels. Electrifying transport, coupled with a high renewable energy share in the electricity sector, would decarbonise this sector. Passenger and freight transport need to be decarbonised by 2050 to stay within a 1.5°C limit.

Share in energy-related CO_2 emissions from transport sector

Source: Enerdata, 2020

CO_2

27%
Direct emissions
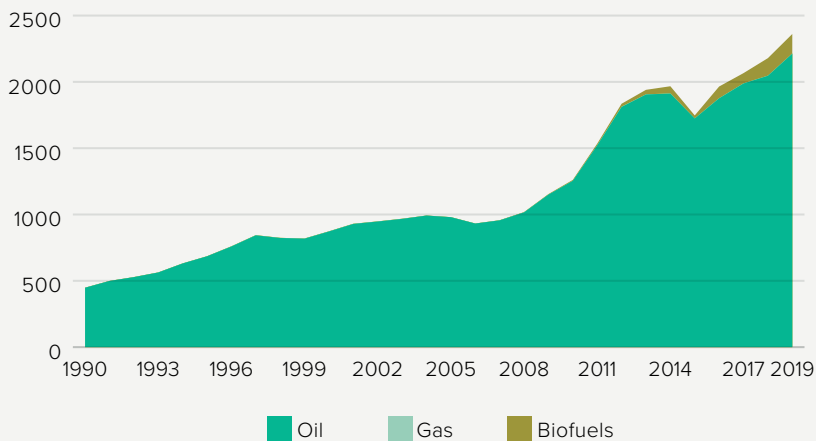
1.5°C

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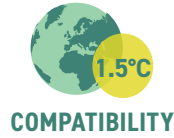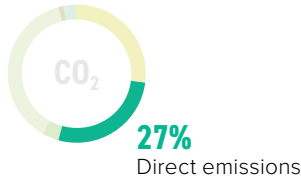
The share of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050.

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION
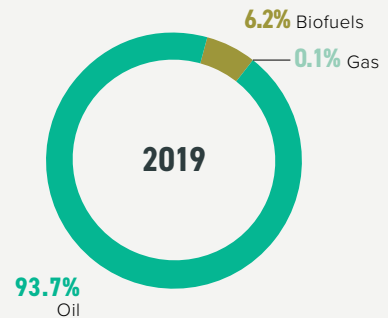
Transport energy mix

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

6.2% Biofuels
0.1% Gas

2019

93.7% Oil

Legend: Oil | Gas | Biofuels

Source: Enerdata, 2020

Due to rounding, some graphs may sum to slightly above or below 100%.

Oil represents the majority share of the transport energy mix at 94%. Biofuels represents a small but increasing share at 6%.

Transport emissions per capita

excl. aviation (tCO₂/capita)

0.55 Indonesia
1.16 G20 average

Data for 2018. Source: Enerdata, 2020

Decarbonisation rating: transport emissions compared to other G20 countries

5-year trend (2013-2018): **Medium**

Current year (2018): **Very high**

Source: own evaluation

Transport emissions: 5-year trend (2013-2018)

👎 **+1.6%** Indonesia | 👎 **+5.5%** G20 average

Aviation emissions per capita[6]

(tCO$_2$/capita)

0.05 Indonesia

0.16 G20 average

Data for 2017. Source: Vieweg et al., 2018

Decarbonisation rating: aviation emissions compared to other G20 countries

5-year trend (2012-2017): **Low**

Current year (2017): **Very high**
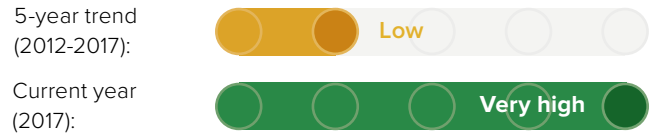
Source: own evaluation

Aviation emissions: 5-year trend (2012-2017)

👎 **+26.9%** Indonesia | 👎 **+18.7%** G20 average

Motorisation rate

50 VEHICLES PER 1,000 INHABITANTS (2014)

Source: Vieweg et al., 2018

Around 5% of the population have a vehicle in Indonesia (excluding two-wheelers). Two-wheelers are the most popular form of transport, and the current slow rate of electrification of two-wheelers is not 1.5°C consistent.

Source: Climate Action Tracker, 2019b

Freight transport

(modal split in % of tonne-km)

No data available

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

No data available

Passenger transport

(modal split in % of passenger-km)

No data available

POLICY ASSESSMENT

Phase out fossil fuel cars

Medium

There is no target to phase out fossil fuel cars nor are there fuel economy or emission standards in place. Indonesia has a biofuels blending mandate (30%), resulting in the increase of the share of biofuels in the final energy consumption of transport (from below 4% before 2016 to 6.2% in 2019), some of which will be used in road transport. However, increasing the use of biofuels does raise concerns about unsustainable palm oil production that can lead to deforestation, and palm oil for biofuels is exempt from sustainability regulations.

The General Plan of National Energy envisions the scale of the uptake of EVs to 2050 and has plans for 2,000 EVs, 700,000 hybrids, and 2 million electric two-wheelers by 2025. The government aims for 20% of domestically manufactured vehicles to be low-carbon in 2025. Regulations indicate there will be support for the growth of an EV market through incentives and there is a plan to develop charging infrastructure.

References: own evaluation, based on Enerdata 2020; Climate Action Tracker, 2019b; Shao, Miller and Jin, 2020

Phase out fossil fuel heavy-duty vehicles

Low

There is no target to reduce total emissions from freight transport. There are no measures to support low-carbon freight logistics, and the energy intensity of freight transport remains high.

Indonesia is in the process of implementing Euro 4/IV-equivalent emission standards for heavy-duty vehicles. However, the fuel standards that comply with Euro 4/IV requirements, such as regulating sulphur content to 50 parts per million (ppm), are not in place.

References: own evaluation, based on Climate Action Tracker, 2019b; Shao, Miller and Jin, 2020

Modal shift in (ground) transport

Medium

Indonesia's transportation plans include transit-oriented development that emphasises connectivity with integrated public transportation such as Bus Rapid Transit, MRT, LRT, traffic management technologies, and urban railway systems. **There is no long-term strategy for supporting a modal shift or measures to support low-carbon freight logistics**.

References: own evaluation, based on Climate Action Tracker, 2019b; IESR evaluation

BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

Direct emissions from Indonesia's building sector constitute 4% of energy-related CO_2 emissions. Per capita, building-related emissions are far below the G20 average, but on the rise. There is a need for decarbonisation policies in this sector, such as mandatory green building standards (appliance/architecture) and support for net zero energy buildings.

Building emissions occur directly (burning fuels for heating, cooling, etc), and indirectly (grid-electricity for air conditioning, appliances, etc). Buildings represent a 4% share of direct CO_2 emissions and 16% share of electricity-related CO_2 emissions.

Source: Enerdata, 2020

16%
Electricity-related emissions

4%
Direct emissions

1.5°C
COMPATIBILITY
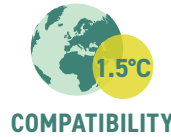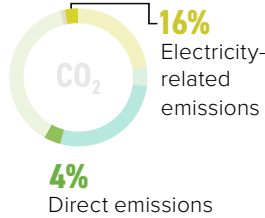
Global emissions from buildings need to be halved by 2030, and be 80-85% below 2010 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

Building emissions per capita

(incl. indirect emissions) (tCO$_2$/capita)

0.48
Indonesia

1.48
G20 average

Building-related emissions per capita are far from the G20 average. However, the five-year trend (2014-2019) shows the scale of emissions per capita is increasing (14.01%), representing the growth of electricity consumption and coal in the power mix.

Source: Enerdata, 2020

Building emissions: 5-year trend (2014-2019)

+14.01%
Indonesia

+1.82%
G20 average

Decarbonisation rating: building emissions compared to other G20 countries

5-year trend (2014-2019): **Low**

Current year (2019): **Very high**

Source: own evaluation

Residential buildings

Energy use per m²

0.71
GJ PER M²

0.91
G20 range
0.17

Commercial and public buildings

Energy use per m²

0.27
GJ PER M²

3.53
G20 range
0.15

Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc. Compared with G20 countries, **energy use per m^2 is in the upper range for residential buildings and lower range for commercial and public buildings.**

Data for 2018. Source: Castro-Alvarez et al., 2018

POLICY ASSESSMENT

Near zero energy new buildings

Medium

Indonesia has green building standards (commercial and residential) for its major cities. **There is also a target to decrease energy intensity of buildings by 1% per year to 2025,** and an energy efficiency labelling programme for electric appliances. There are no ambitious standards for residential energy use, and no national target for new buildings to be near zero energy.

Source: Climate Action Tracker, 2019b
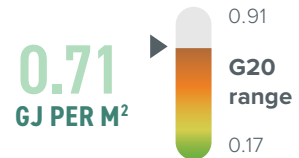
Renovation of existing buildings

Low

There are minor developments related to renovations in Indonesia, such as the draft National Green Building Guidelines, but this will only be applied where feasible. As welfare levels and new build rates increase, renovations are not a priority. **Indonesia is far from a renovation rate of 5% in 2020 which would be 1.5°C compatible.**
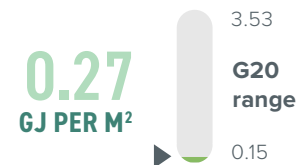
*Source: Climate Action Tracker, 2019b*

INDUSTRY SECTOR
Emissions from energy in the industrial sector

Industry-related emissions makeup 37% of direct CO$_2$ emissions, and 9% of industry in electricity-related CO$_2$ emissions. Indonesia has implemented industrial energy management policies, however, more stringent industrial energy efficiency standards are needed to achieve significant emission reduction.

Share in energy-related CO$_2$ emissions from industrial sector

Source: Enerdata, 2020

37% Direct emissions

CO$_2$

9% Electricity-related emissions
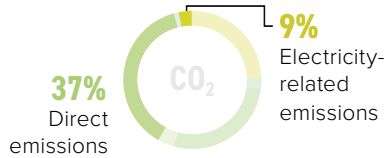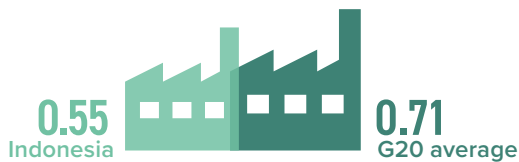
1.5°C
COMPATIBILITY

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

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION
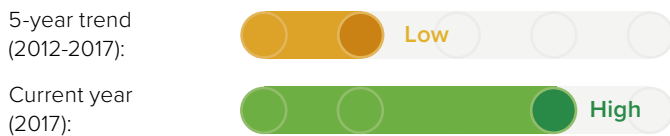
Industry emissions intensity[7]
(tCO$_2$e/USD2015 GVA)

0.55 Indonesia

0.71 G20 average

Data for 2016. Sources: Gütschow et al., 2019; Enerdata, 2020

Industry emissions: 5-year trend (2011-2016)

-1% Indonesia

-12% G20 average

Decarbonisation rating: emissions intensity of industry compared to other G20 countries

5-year trend (2012-2017): **Low**

Current year (2017): **High**

Carbon intensity of cement production[8]
(kgCO$_2$/tonne product)

657 Indonesia

614 World average

Indonesia's cement industry is more emissions intensive than the world average.

Data for 2016. Sources: CAT Decarbonisation Data Portal, 2020; Climate Action Tracker, 2020

Carbon intensity of steel production[8]
(kgCO$_2$/tonne product)

1,656 Indonesia

1,900 World average

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

Data for 2016. Sources: World Steel Association, 2018; Climate Action Tracker, 2019b

POLICY ASSESSMENT

Energy Efficiency

Medium

Indonesia has energy efficiency and energy management policies focused on industry, **with targets for 17.4% reduction in GHG emissions for the cement sector between 2006 and 2025** below 'business-as-usual' and **15.4% for iron and steel**. There are some policies to enhance material efficiency and decarbonise the industry sector, and targets to reduce the emissions intensity of cement production (2% from 2011 to 2015, 3% from 2016 to 2020 below 2009 levels).

Source: own evaluation

LAND USE SECTOR

Emissions from changes in the use of the land
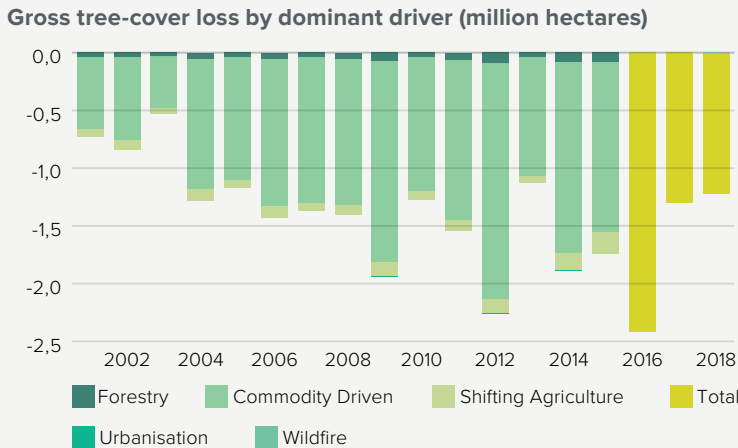
NET SINK OF EMISSIONS

Indonesia is one of the world's largest emitters of land use emissions resulting from extensive deforestation for agriculture (particularly palm oil) and from peat fires. To stay within the 1.5°C limit, it needs to make this sector a net sink of emissions, but instead land use emissions are projected to increase by at least 300 $MtCO_2e$ from 2020 to 2030

1.5°C COMPATIBILITY
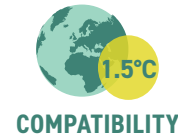
Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.
Source: Rogelj et al., 2018

Global tree-cover loss

Gross tree-cover loss by dominant driver (million hectares)

Legend: Forestry | Commodity Driven | Shifting Agriculture | Total | Urbanisation | Wildfire

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. 2000 tree cover extent – >30% tree canopy.

Sources: Global Forest Watch, 2019

From 2001 to 2018, Indonesia lost 25.5 Mha of tree cover (this does not take tree-cover gain into account). The land use sector accounts for 43% of Indonesia's total emissions in 2016 at 635 $MtCO_2e$, which is far less than the previous year of 1,430 $MtCO_2e$. Although land use emissions are highly uncertain, this sector's emissions increased nearly 200% from 1990 to 2016 levels.

POLICY ASSESSMENT

Target for net-zero deforestation

Medium

The Peatland Restoration Agency intends to restore 2.4 million hectares of peatland to reduce fires and peat decomposition emissions.

The National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK) also outlines actions for sustainable peatland management, decreasing the deforestation and land degradation rate, and carbon sequestration projects. Indonesia has not set a target to halt deforestation and still faces alarmingly high rates of commodity-driven deforestation.

Reference: own evaluation

AGRICULTURE SECTOR

Emissions from agriculture

DIETARY SHIFTS ARE NEEDED

Agriculture accounts for 14% of Indonesia's total emissions (excl. land use). **Agriculture emissions are mainly from rice cultivation.** Other sources of emissions include **cultivation of organic soils, livestock manure, and synthetic fertilisers.** A 1.5°C 'fair-share' pathway requires dietary shifts and climate-smart farming practices.

1.5°C COMPATIBILITY
Source: Rogelj et al., 2018

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).

Emissions from agriculture (excluding energy)

5% Crop Residues
12% Enteric Fermentation
20% Cultivation of Organic Soils
14% Manure
TOTAL 181 $MtCO_2e$
39% Rice Cultivation
11% Synthetic Fertilisers
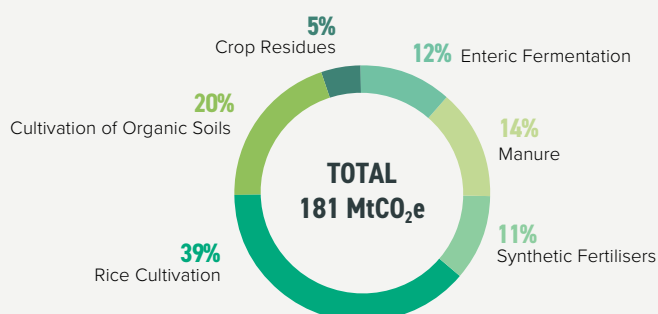
Data for 2017. Source: FAO, 2019

In Indonesia, the largest source of emissions in the agricultural sector are from the cultivation of rice (40%), the cultivation of organic soils (21%), livestock manure (14%), and synthetic fertilisers (11%). Total emissions amount to 172 $MtCO_2e$. Climate-smart agricultural practices can help reduce emissions.

Due to rounding, some graphs may sum to slightly above or below 100%.

MITIGATION: TARGETS AND AMBITION

The combined mitigation effect of nationally determined contributions (NDC) submitted by September 2020 is not sufficient and will lead to a warming of 2.7°C by the end of the century. This highlights the urgent need for all countries to submit more ambitious targets by 2020, as they agreed in 2015, and to urgently strengthen their climate action to align to the Paris Agreement's temperature goal.

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

Targets

To unconditionally reduce 26% of its greenhouse gas emissions against the business-as-usual scenario by the year 2020 and 29% by the year 2030

Actions

Actions specified in the following sectors: land use and forestry, agriculture, energy, waste

Climate Action Tracker (CAT) evaluation of NDC and actions

	Critically Insufficient
●	Highly Insufficient
	Insufficient
	2°C Compatible
	1.5°C Compatible
	Role Model

NDCs with this rating fall outside of a country's 'fair-share' range and are not at all consistent with holding warming to below 2°C let alone with the Paris Agreement's stronger 1.5°C limit. If all government NDCs were in this range, warming would reach between 3°C and 4°C.

Indonesia's emissions remain on an upwards trajectory and yet it is still likely to overachieve its NDC targets, when excluding emissions from the forestry sector, with currently implemented policies. Shifting investments away from the coal expansion planned for the next five years towards renewable, zero-carbon solutions is crucial in getting Indonesia onto a sustainable development pathway compatible with the Paris Agreement. The power sector plan for the next 10 years gives the government an opportunity to adjust course and instead plan for a just transition to phase out coal by 2040.

Evaluation as at October 2020, based on country's NDC. Source: Climate Action Tracker

TRANSPARENCY: FACILITATING AMBITION

Countries are expected to communicate their NDCs in a clear and transparent manner in order to ensure accountability and comparability.

The NDC Transparency Check has been developed in response to Paris Agreement decision (1/CP.21) and the Annex to decision 4/CMA.1. While the Annex is only binding from the second NDC onwards, countries are "strongly encouraged" to apply it to updated NDCs, due in 2020.

NDC Transparency Check recommendations
For more visit www.climate-transparency.org/ndc-transparency-check

To ensure clarity, transparency and understanding, it is recommended that Indonesia provides additional detailed information in the upcoming NDC Update (compared to the existing NDC), incl.:

- State timeframe and period of implementation of the NDC target.

- Include information on how Indonesia will account for its NDC

- Provide information on considerations of fairness and ambition of the NDC

- Provide justification that the target is a progression compared to previous target(s)

- Include information and plans to reach a long-term temperature goal and further analysis on when the country's emissions may peak

AMBITION: LONG-TERM STRATEGIES

Status	No strategy yet
2050 target	Not applicable
Interim steps	Not applicable
Sectoral targets	Not applicable
Net-Zero target	Not applicable

3. FINANCE
MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

🌐 **PARIS AGREEMENT**   **Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.**

NO EXPLICIT CARBON PRICE

Indonesia spent USD 8.588bn on fossil fuel subsidies in 2019, with the majority spent on petroleum and electricity. Indonesia has no explicit carbon price, but the government is setting up a regulation to develop a carbon market for carbon trading in order to meet the Paris Agreement target.
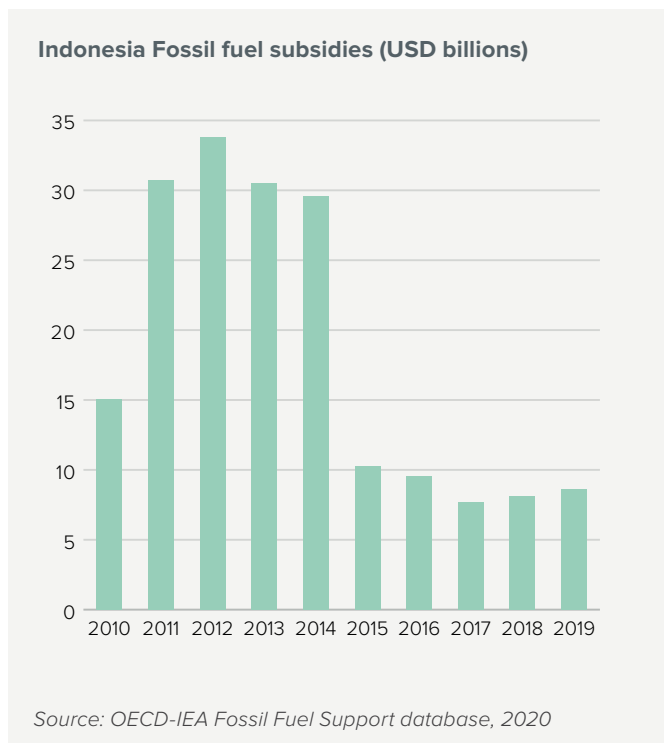
1.5°C COMPATIBILITY
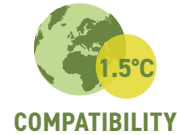
Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025.
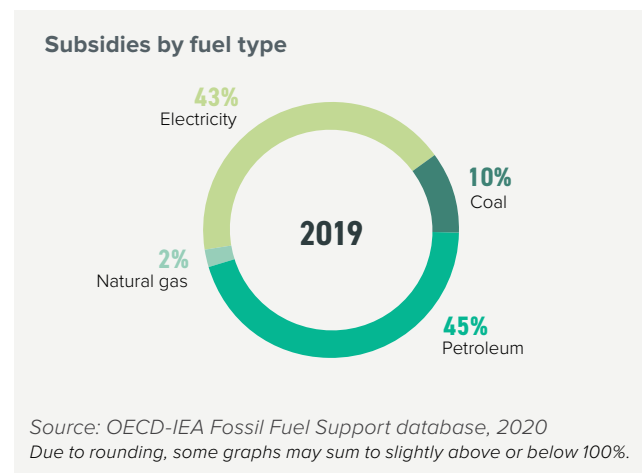
Source: Rogelj et al., 2018

FISCAL POLICY LEVERS

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

Fossil Fuel Subsidies

Indonesia Fossil fuel subsidies (USD billions)

Source: OECD-IEA Fossil Fuel Support database, 2020

Fossil Fuel Subsidies by fuel type

Subsidies by fuel type

43% Electricity
10% Coal
2% Natural gas
45% Petroleum
2019

Source: OECD-IEA Fossil Fuel Support database, 2020
Due to rounding, some graphs may sum to slightly above or below 100%.

In 2019, Indonesia's fossil fuel subsidies totalled USD 8.6bn (compared to USD 15.1bn in 2010, and the previous decade's peak of USD 33.8bn in 2012. 96% of the subsidies quantified were for the consumption of fossil fuels, and the remainder for their production. The highest subsidies were for petroleum, at USD 3.9bn, and for fossil fuel-based electricity, at USD 3.6bn. The largest subsidy is annual compensation to state-owned Perusahaan Listrik Negara for selling (fossil-fuel-dominated) electricity at below market prices (USD 3.6bn).

Carbon pricing and revenue

No data available

Indonesia does not have a national carbon tax nor an emissions trading scheme. 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 achieve its NDC target. As confirmed during the COP25 in Madrid in 2019, Indonesia plans to implement a mandatory ETS in 2024, with a voluntary pilot starting in 2021 for the power sector.
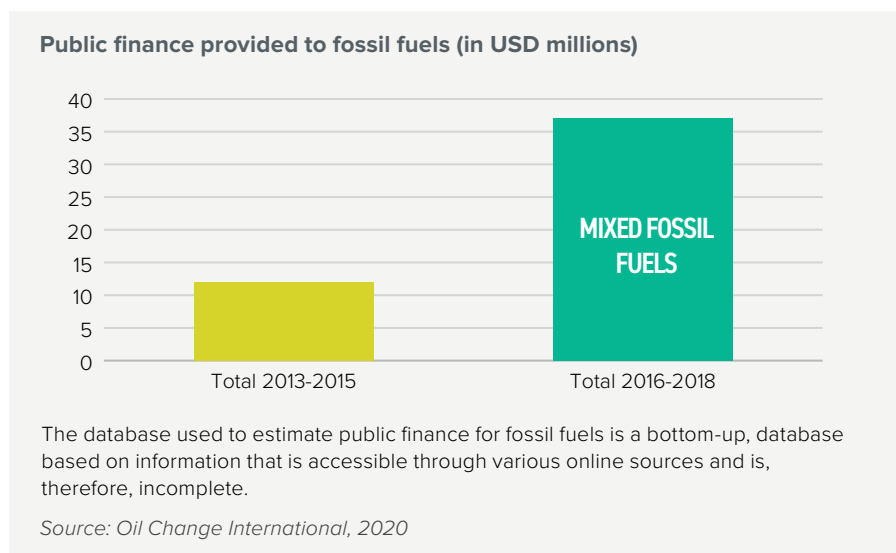
⚙ **CORONAVIRUS RECOVERY** In April 2020, Indonesia adjusted the state budget to address the COVID-19 pandemic risks to the economy. Substantial funds have been allocated to fossil fuel companies and not to green investment. Almost IDR 100tn (out of more than IDR 327tn) will support state-owned companies, Pertamina (oil) and PLN (electricity). By mid-July 2020, the government had committed USD 6.49bn to support fossil fuel energy, compared to just USD 237.17m for clean energy through new or amended policies since the beginning of 2020.

References: Energy Policy Tracker, 2020; Embassy of the Republic of Indonesia, 2020; Rahman and Akhlas, 2020; Prasidya, 2020

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 fossil fuels

Public finance provided to fossil fuels (in USD millions)

MIXED FOSSIL FUELS

Total 2013-2015	Total 2016-2018

The database used to estimate public finance for fossil fuels is a bottom-up, database based on information that is accessible through various online sources and is, therefore, incomplete.

Source: Oil Change International, 2020

Between 2016-2018, Indonesia provided public finance support of an average of USD 37m a year to fossil fuel projects. This represents an increase from the 2013-2015 average annual support of USD 12m for oil and gas projects. Indonesia has a number of majority government-owned banks active in the energy sector which are not captured in the scope of this data.

Provision of international public support
(annual average 2017 and 2018)

Climate finance contributions are sourced from Party reporting to the UNFCCC.

Bilateral, regional and other channels	**Multilateral climate finance contributions**	**Core / General Contributions**
Annual average contribution: **No data available**	**No data available**	Annual average contribution: **No data available**
Theme of support: **No data available**	Theme of support: **No data available**	

Indonesia is not listed in Annex II of the UNFCCC, so is not formally obliged to provide climate finance. It has nevertheless contributed international public finance via the Green Climate Fund, most recently pledging USD 0.5m to the Fund's replenishment in late 2019 (it also made a USD 0.25m pledge at the Fund's establishment). While Indonesia may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

FINANCIAL POLICY AND REGULATION

Financial policy and regulation

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

Category	Instruments	Objective	Under Discussion/ implementation	None 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.	🟢	

			Mandatory	Voluntary	Under Discussion/ implementation	None identified
Enhanced supervisory review, risk disclosure and market discipline	Climate risk disclosure requirements	Disclose the climate-related risks to which financial institutions are exposed				🔴
	Climate-related risk assessment and climate stress-test	Evaluate the resilience of the financial sector to climate shocks	🟢			
Enhanced capital and liquidity requirements	Liquidity instruments	Mitigate and prevent market illiquidity and maturity mismatch				🔴
	Lending limits	Limit the concentration of carbon-intensive exposures			🟠	
		Incentivise low carbon-intensive exposures	🟢			
	Differentiated reserve requirements	Limit misaligned incentives and channel credit to green sectors				🔴

In 2014 Otoritas Jasa Keuangan (OJK/Indonesia Financial Services Authority) 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. OJK 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. In 2018, the Indonesia Sustainable Finance Initiative (ISFI) was launched. It aims to support the implementation of the Sustainable Finance Roadmap and to promote and implement inclusive, sustainable finance practices. Bank of Indonesia is a member of the NGFS while the OJK is a member of the Sustainable Banking Network (SBN).

Nationally Determined Contribution (NDC): Finance

Conditionality	NDC partly conditional on international financial support (Indonesia could increase its contribution to 41% emission reduction against business-as-usual (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

ENDNOTES

For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2020

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 emissions 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.

3 In order to maintain comparability across all countries, this report utilises the PRIMAP year of 2017. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories.

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

5 The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement, the IPCC's 2018 SR15 and the Climate Action Tracker (2016). The table below displays the criteria used to assess a country's policy performance.

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

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

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

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)
Energy efficiency in Industry	0-49% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	50-79% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	80-89% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	Over 90% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net-zero deforestation	No 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

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