

# AUSTRALIA

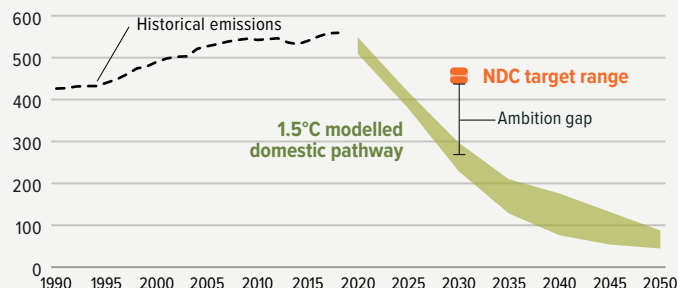


## NOT ON TRACK FOR A 1.5°C WORLD

**1.5°C** Australia's NDC target is to reduce emissions 11-15% below 2005 levels, or approximately 442-464 MtCO<sub>2</sub>e, by 2030. To keep below the 1.5°C temperature limit, Australia's 2030 emissions would need to be around 269 MtCO<sub>2</sub>e (or 49% below 2005 levels), leaving an ambition gap of 173 MtCO<sub>2</sub>e. All figures exclude land use emissions.

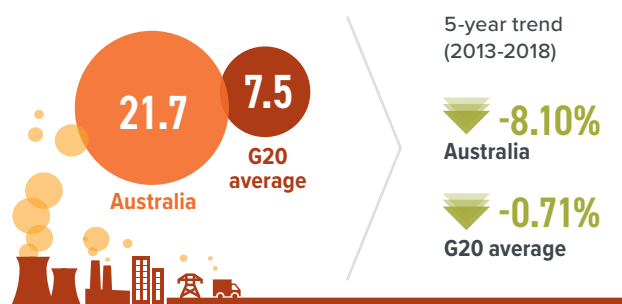
Gütschow et al., 2021; Climate Analytics, 2021

1.5°C compatible emissions pathway (MtCO<sub>2</sub>e/year)<sup>1</sup>



## PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS ABOVE G20 AVERAGE

GHG emissions (incl. land use) per capita (tCO<sub>2</sub>e/capita)<sup>2</sup> in 2018



Australia's per capita emissions are 2.90 times the G20 average. Total per capita emissions decreased by 8% between 2013 and 2018.

Climate Action Tracker, 2021; Gütschow et al., 2021; United Nations, 2019

## KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION



**Australia updated its NDC without raising ambition in December 2020.** The Paris Agreement requires that each NDC should represent a progression on the previous submission. Australia could resubmit and enhance its NDC for COP26.



The Long-Term Emissions Reduction Strategy being developed by the **federal government** could **compliment a much-needed net zero target** with legislated, economy-wide and sectoral mitigation policies.



The 2021-22 **federal budget adopted a "gas-fired" recovery, ignoring the lowest cost options of wind, solar and battery storage**, which offer greater opportunities for employment and export-market development.

Australian Government, 2021c; Bloomberg NEF, 2019; Climate Action Tracker, 2020a; CSIRO, 2018

## RECENT DEVELOPMENTS



**Fossil fuels are being replaced with subsidised fossil fuels, creating high uncertainty and mixed signalling for renewable energy investors.** A coal plant will be replaced by a \$600m government-funded gas plant in New South Wales and operated by a government owned company. This is despite the fact that many large private industry players are seeking power purchase agreements (PPAs) to meet renewable targets.



The Low Emissions Technology Statement prioritises five technologies, including carbon capture and storage (CCS) and so-called "clean" hydrogen. **CCS and fossil fuel hydrogen will delay the decarbonisation of the energy sector** by prolonging the life of aging fossil fuel plants with a highly emissions-intensive alternative.



**Effective climate policy is evident at the state and territory level**, through state-based energy efficiency measures, renewable energy targets and waste policies.

DISER, 2021; Gooley, 2021; Howarth & Jacobson, 2021; Mazengarb, 2021c



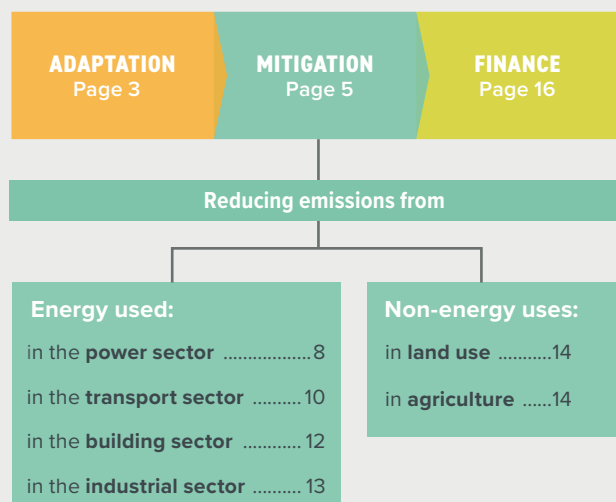
## CORONAVIRUS RESPONSE AND RECOVERY

The government has promoted a "gas-fired" recovery over a green recovery, solidifying a fossil fuel-based trajectory despite stranded asset risks. The budget for 2021-22 allocated AUD 58.6m on gas infrastructure and new gas supply without new support for renewables or electric vehicles (EVs). The government announced a AUD 600m public funded 660 MW gas-fired power plant in Hunter Valley to replace the Liddell coal station in New South Wales, despite objections from local businesses. The Australia Energy Market Operator (AEMO) underlines the uncertainty of the gas sector within the next 20 years, as scenarios show possible decline from economic activity, risks of stranded assets and replacement with hydrogen. The International Energy Agency found investment in new fossil fuel supply is not required for a net zero pathway.

AEMO, 2021; Australian Government, 2021c; International Energy Agency, 2021; Mazengarb, 2021a

## CONTENTS

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

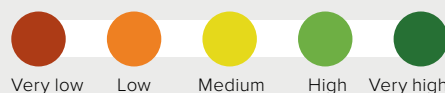


## LEGEND

**Trends** show developments over the past five years for which data are available. The colour-coded arrows indicate assessment from a climate protection perspective: Orange is bad, green is good.



**Decarbonisation Ratings**<sup>3</sup> 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.



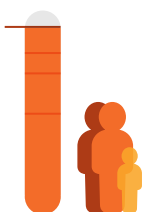
**Policy Ratings**<sup>4</sup> evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



## SOCIO-ECONOMIC CONTEXT

### Human Development Index (HDI)

**0.94**  
Very high

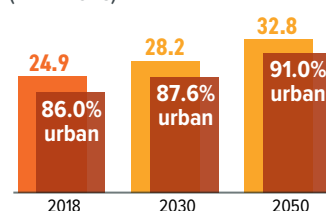


The HDI reflects life expectancy, level of education, and per capita income. Australia ranks very high.

Data for 2019. UNDP, 2020

### Population and urbanisation projections

(in millions)

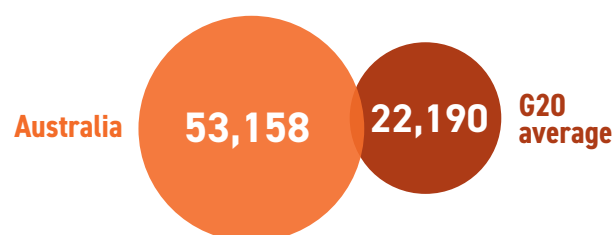


Australia's population is projected to increase by 32% by 2050 and become more urbanised. Population growth and rapid urbanisation can make urban areas vulnerable to climate change, and cities will need to bolster resilience to climate impacts.

United Nations, 2019; United Nations, 2018

### Gross Domestic Product (GDP) per capita

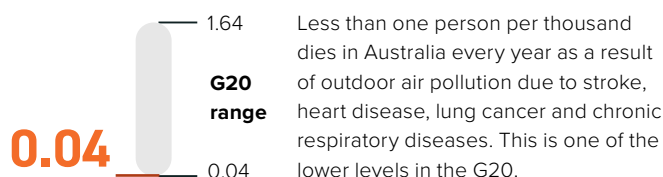
(PPP constant 2015 international \$) in 2019



World Bank, 2021; United Nations, 2019

### Death rate attributable to air pollution

Ambient air pollution attributable death rate per 1,000 population per year, age standardised in 2019



Institute for Health Metrics and Evaluation, 2020

This source differs from the source used in last year's profiles and, therefore, the data are not comparable.

## A JUST TRANSITION

Australia's economy is fossil fuel-intensive and the government has strengthened support for the gas industry to play a large role in economic recovery. The economy is already one of the largest exporters of coal and gas. Rather than a just transition, government entities are propping up the fossil fuel industry. Federal and state governments provided AUD 10.3b on tax breaks for the fossil fuel industry in 2020-21. Industry players such as the Adani Group have huge expansion plans of an additional 12 GW of coal power capacity, 132 Mt per annum of new coal mining capacity, and coal and LNG terminals among other projects.

However, some coal plants have closed or are scheduled to close and towns are trying to reforge their economies. Some states have started just transition initiatives, such as the Latrobe Valley Worker Transfer Scheme in Victoria and the Collie Delivery Unit in Western Australia. To be 1.5°C compatible, gas needs to be phased out of the power sector between 2035 and 2039 and coal by 2029. The federal government has the opportunity now to set a strategy to transition the economy to renewable energy and to support regional employment in areas where coal and gas plants need to close.

Campbell et al., 2021; Climate Analytics, 2021; Market Forces, 2021



# 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.



Australia is undergoing widespread, rapid climate change, and the IPCC (in AR6) warns of **unprecedented climate extremes such as drought, floods and bushfires.**



**Extensive bushfires devastated several states in late 2019 and early 2020.** Fires burnt 24 million hectares, causing extensive harm to ecological habitats. Over 3,000 homes were destroyed and 33 people died, with financial impacts estimated at over AUD 10 billion.



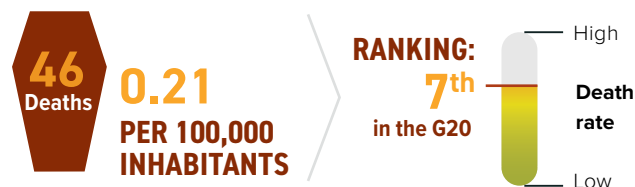
Recurring bleaching events of the Great Barrier Reef highlight the vulnerability of the oceans and the **impacts on dependent economic activities like tourism.**

## ADAPTATION NEEDS

### Climate Risk Index

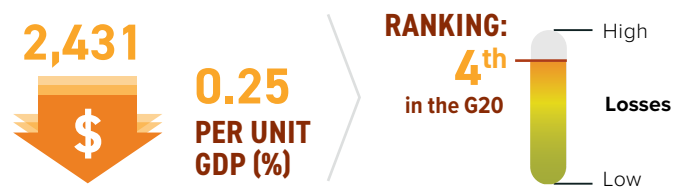
Impacts of extreme weather events in terms of fatalities and economic losses that occurred. All numbers are averages (2000-2019).

Annual weather-related fatalities



Based on Germanwatch, 2019

Annual average losses (US\$ millions PPP)



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	Wheat			

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 RESPONSE AND RECOVERY

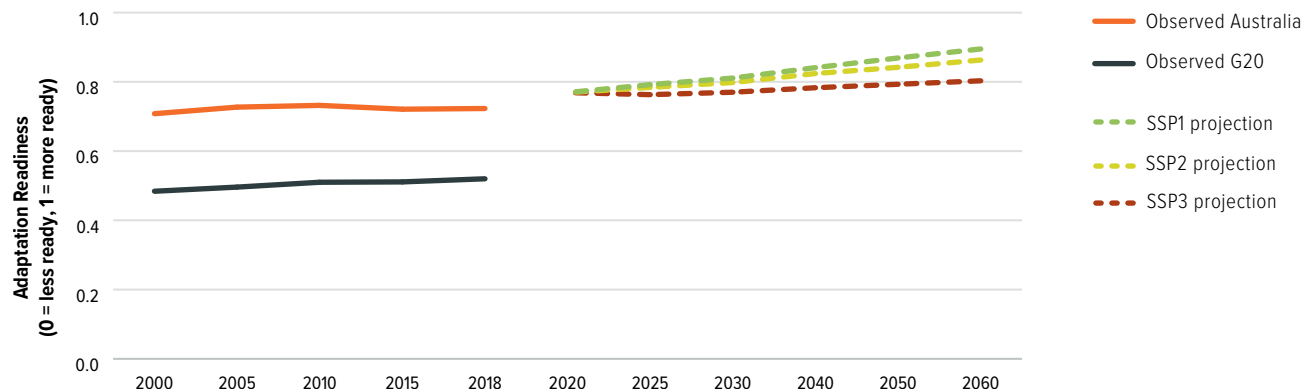
Economic recovery efforts have centred on expanding natural gas production rather than on a 'green' recovery or building climate resilience in Australia. COVID-19 slowed bushfire recovery efforts in the extensive fires of 2020. Flooding also disrupted the COVID-19 vaccination rollout in New South Wales in March 2021. Australia needs a resilient approach to adaptation and crisis response.

Carter, 2020; Mercer, 2021; Simonovic et al., 2021

## Adaptation Readiness

The figure shows 2000-2018 observed data from the Notre Dame Global Adaptation Initiative (ND-GAIN) Index overlaid with projected Shared Socioeconomic Pathways (SSPs) from 2020 to 2060.

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



Australia scored well above the G20 average in 2018 in terms of adaptation readiness, owing to strong scores in governance and economic readiness. Adaptation challenges still exist – as evidenced by the sweeping bushfires of 2019-20 and severe droughts – but the country is well positioned to adapt if it puts in place measures compatible with SSP1 and SSP2. Less stringent measures, as represented by SSP3, do not improve its ability to adapt much in the period to 2060.

The readiness component of the Index created by the ND-GAIN encompasses social (social inequality, information and

communications technology infrastructure, education and innovation), 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 projections of future governance and, therefore, of possible adaptation readiness. The three scenarios shown here in dotted lines are described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2), and a 'Regional Rivalry' (SSP3) scenario.

*Based on Andrijevic et al., 2020; ND-Gain Index, 2021*

## ADAPTATION POLICIES

### National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)												Monitoring & evaluation process	
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism		Water
National Climate Resilience and Adaptation Strategy	2015	<div></div>	<div></div>	<div></div>		<div></div>		<div></div>	<div></div>	<div></div>			<div></div>	<div></div>	Evaluate progress towards building resilience and adaptation to climate change and review plans and actions

### Nationally Determined Contribution (NDC): Adaptation

#### TARGETS

None

#### ACTIONS

Develop an adaptation communication before COP26.

# MITIGATION

## REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE



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



Australia's GHG emissions, excluding LULUCF, have increased by 31% (1990-2018) and the government's climate targets for 2030 (445-467 MtCO<sub>2</sub>e excluding LULUCF, equivalent to 4% to 9% above 1990 emissions by 2030) are **not on track for a 1.5°C fair share pathway**. Australia does not have a long-term target.

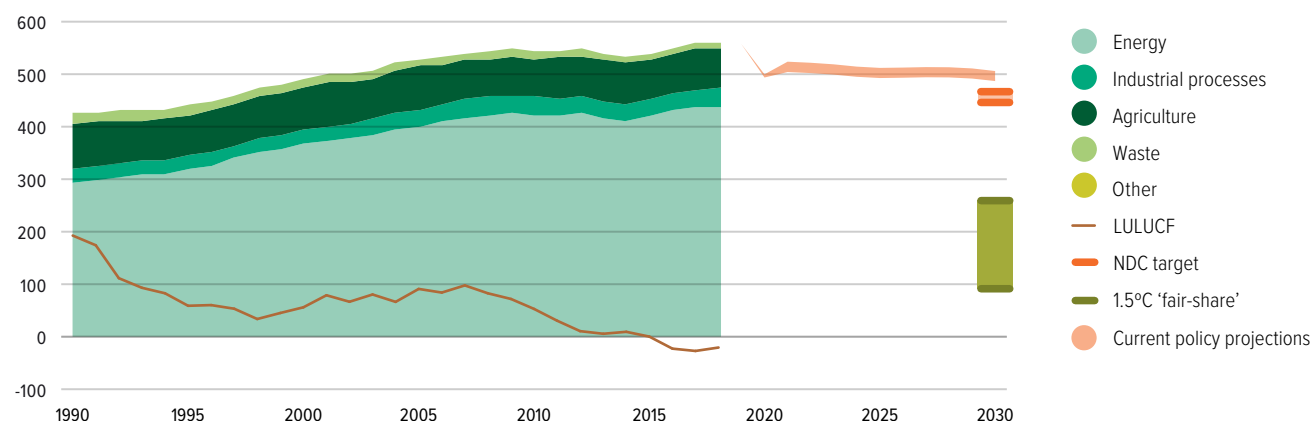


In 2030, global CO<sub>2</sub> emissions need to be 45% below 2010 levels and reach net zero by 2050. Global energy-related CO<sub>2</sub> emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

Rogelj et al., 2018

### GHG emissions across sectors and CAT 1.5°C 'fair-share' range (MtCO<sub>2</sub>e/year)<sup>5</sup>

Total GHG emissions across sectors (MtCO<sub>2</sub>e/year)

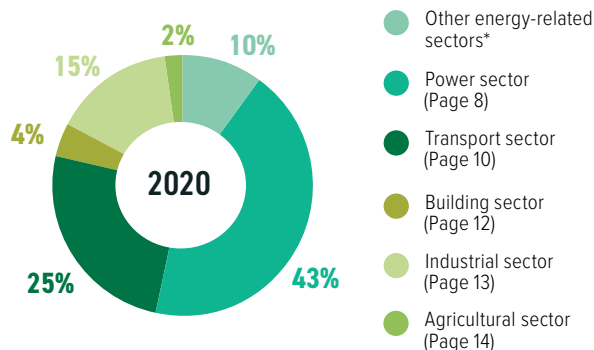
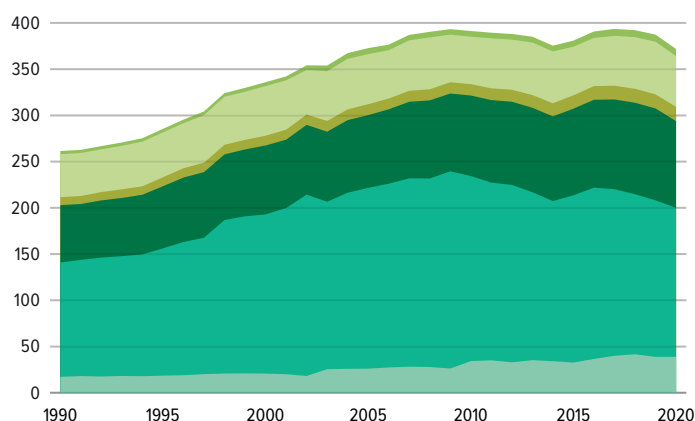


Australia's emissions (excl. land use) increased by 31% between 1990 and 2018 to 560 MtCO<sub>2</sub>e. When considered by category, increases were largely due to energy- and industry-related emissions. Energy emissions increased 48% since 1990 and industry emissions increased 31%. Decreases in emissions can be seen across the agriculture and waste sectors over the past three decades. Australia's 2030 target is not 1.5°C 'fair-share' compatible. To be 1.5°C 'fair-share' compatible, Australia would need to strengthen its domestic emissions reductions and increase its international financial support.

Gütschow et al., 2021; Climate Action Tracker, 2020a, 2021

### Energy-related CO<sub>2</sub> emissions by sector

Annual CO<sub>2</sub> emissions from fuel combustion (MtCO<sub>2</sub>/year)



**The largest driver of overall GHG emissions are CO<sub>2</sub> emissions from fuel combustion.** In Australia, GHG emissions excluding LULUCF have been decreasing since 2017 due to increasing renewables in the power sector. Excluding the power sector these emissions continue to increase. Electricity and heat generation at 43% is the largest contributor, followed by transport and industry with 25% and 15%, respectively.

Enerdata, 2021

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

\*'Other energy-related sectors' covers energy-related CO<sub>2</sub> emissions from extracting and processing fossil fuels.

## ENERGY OVERVIEW



**Fossil fuels make up 92% of Australia's energy mix**, where the shares of coal, gas and oil roughly represent a third each. The carbon-intensity of the energy mix has decreased over the past four years, but is still much higher than the G20 average. The share of renewables in the energy mix is only 7%.

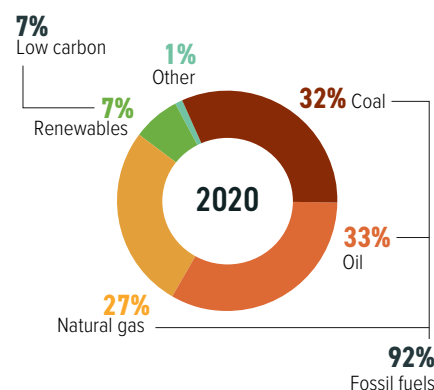
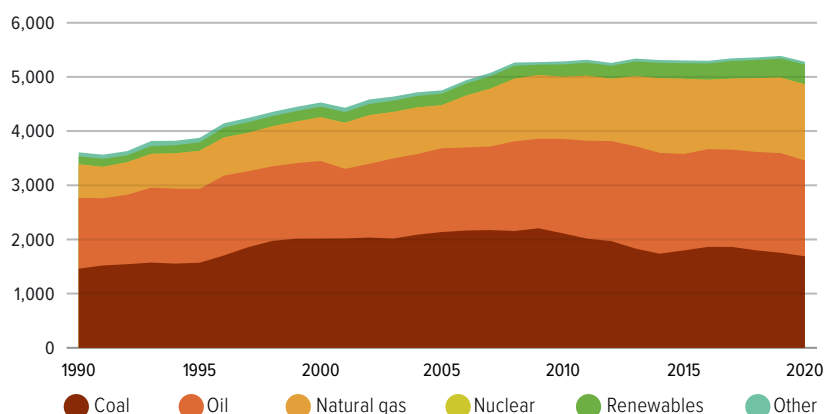


The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage (CCS).

*Rogelj et al., 2018*

## Energy mix

Total primary energy supply (TPES) (PJ)

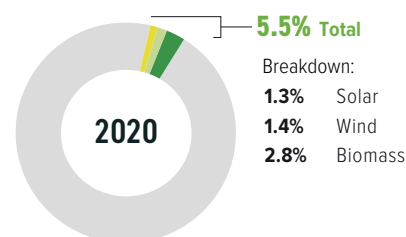
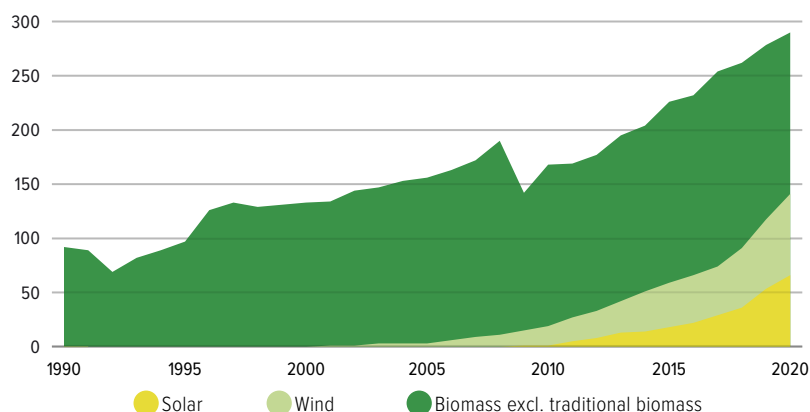


This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating, and cooking, but also for transport fuels. Fossil fuels (oil, coal, and gas) constitute 92% of the Australia energy mix in 2020, which is much higher than the G20 average. The level of coal and oil in the energy mix has decreased by 4% in the past year, yet gas increased 1% and renewable energy 4% (2019 to 2020).

*Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%*

## Solar, wind, geothermal, and biomass development

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

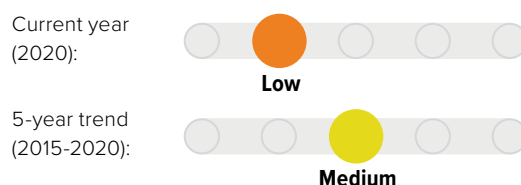


Solar, wind, and biomass account for 5.5% of Australia's energy supply – the G20 average is 7% (including geothermal). There is no geothermal utilised in Australia. The average five-year trend for renewable energy in total energy supply has increased by around 28% (2015-2020). Bioenergy (for electricity and heat) makes up the largest share, but solar and wind energy is experiencing growth.

*Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%*

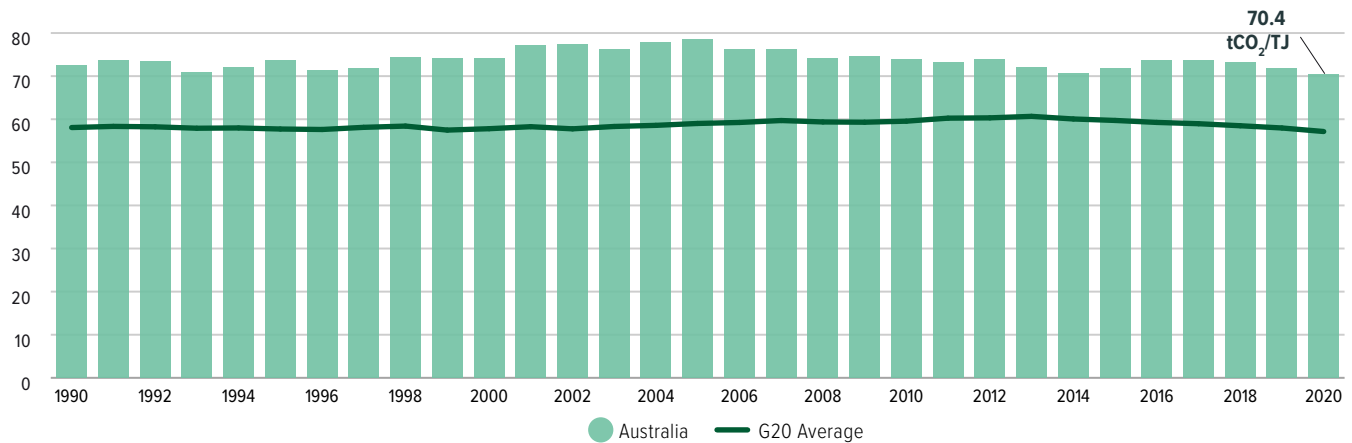
*Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.*

Decarbonisation rating: renewable energy share of TPES compared to other G20 countries



## Carbon intensity of the energy sector

Tonnes of CO<sub>2</sub> per unit of TPES (tCO<sub>2</sub>/TJ)

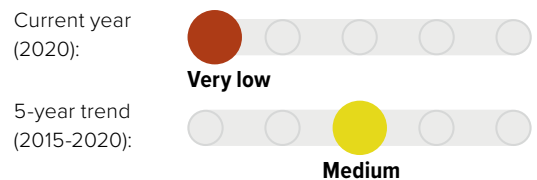


Carbon intensity is a measure of how much CO<sub>2</sub> is emitted per unit of energy supply.

Carbon intensity is the CO<sub>2</sub> emitted per unit of energy supply. In Australia, carbon intensity has slightly decreased year-on-year since 2015 from 72 tCO<sub>2</sub>/TJ to 70 tCO<sub>2</sub>/TJ in 2020, in part due to a drop in coal. Australia's energy has a higher carbon intensity than the G20 average.

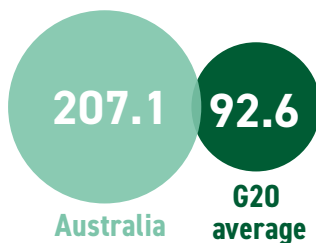
Enerdata, 2021

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

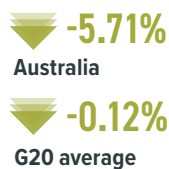


## Energy supply per capita

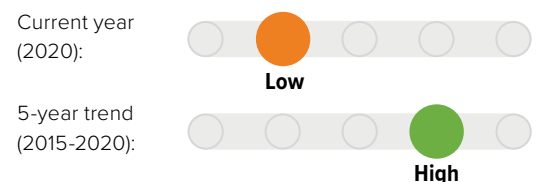
TPES per capita (GJ/capita) in 2020



TPES per capita (GJ/capita): 5-year trend (2015-2020)



Decarbonisation rating: energy supply per capita compared to other G20 countries

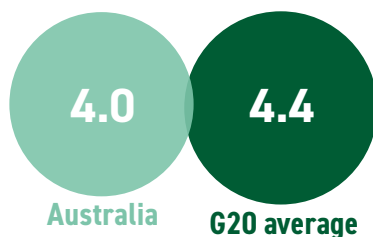


Energy use per capita in Australia is, with 207.05 GJ/capita in 2020, well above the G20 average, but has been decreasing faster at 5.71% between 2015 and 2020 in contrast to the decreasing G20 average of 0.12% over the same period.

Enerdata, 2021; United Nations, 2019

## Energy intensity of the economy

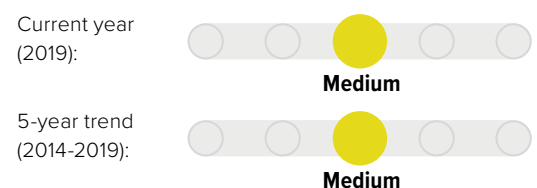
(TJ/million US\$2015 GDP) in 2019



Energy intensity of the economy: 5-year trend (2014-2019)



Decarbonisation rating: energy intensity compared to other G20 countries



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. Australia's energy intensity is lower than the G20 average and has been decreasing at a slightly lower rate of 10.28% (2014-2019) as compared to the G20 (10.56%).

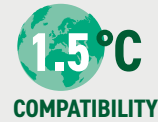
Enerdata, 2021; World Bank, 2021

## POWER SECTOR

Emissions from energy used to make electricity and heat

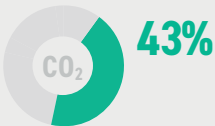


Australia produced **58% of its electricity from coal in 2020**. Installed capacity of coal is expected to decrease from 25 GW in 2020 to 19 GW in 2030. Gas capacity is expected to increase from 19 GW in 2020 to 20 GW in 2030; however, this is expected to be larger given new gas funding announcements in the 2021 budget. Solar, wind, and battery storage are each expected to increase (191%) in capacity from 23 GW in 2020 to 67 GW over the next decade.



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

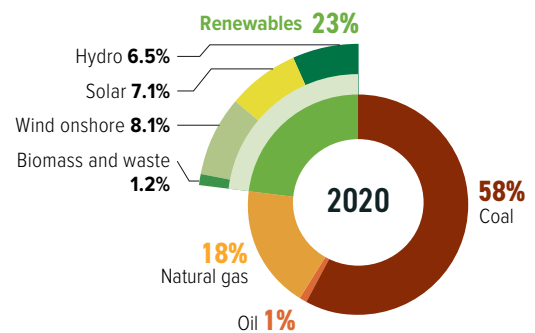
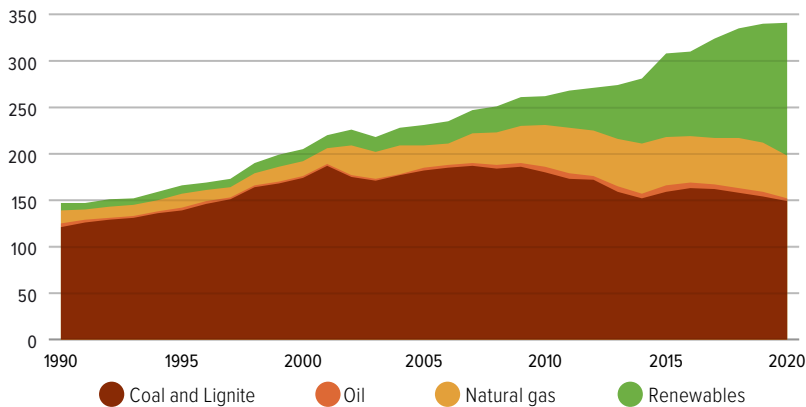
Rogelj et al., 2018; Climate Action Tracker, 2020b



Share of energy-related CO<sub>2</sub> emissions from electricity and heat production in 2020.

## Electricity generation mix

Gross power generation (TWh)

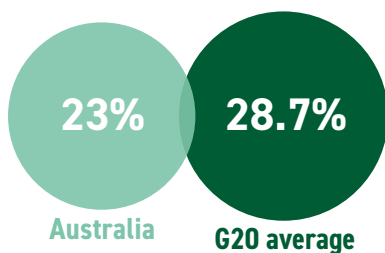


Australia generated **77% of its electricity from fossil fuels in 2020**. The share of renewable energy in Australia's power sector has been increasing and accounted for 23% of the power mix in 2020.

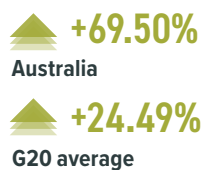
Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%

## Share of renewables in power generation

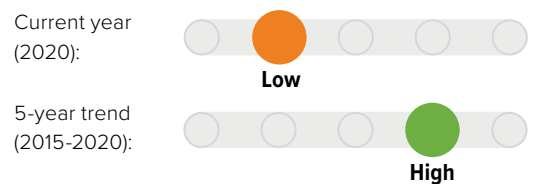
(incl. large hydro) in 2020



Share of renewables in power generation:  
5-year trend (2015-2020)



Decarbonisation rating: share of renewables compared to other G20 countries

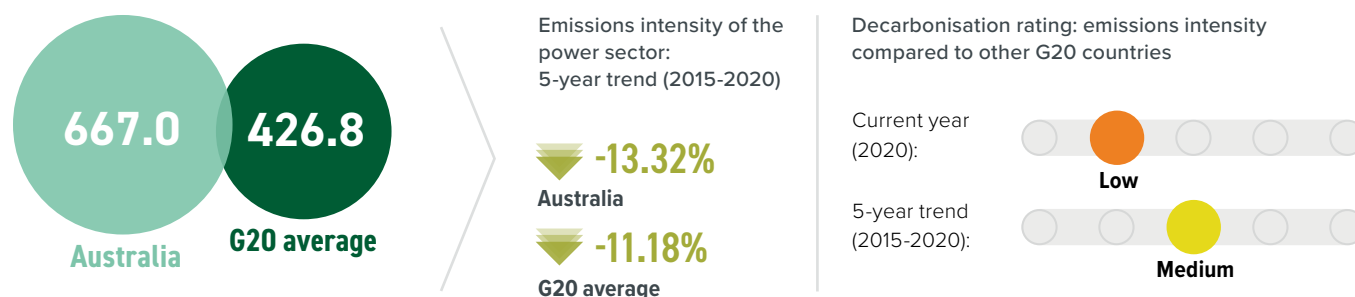


Enerdata, 2021



## Emissions intensity of the power sector

(gCO<sub>2</sub>/kWh) in 2020

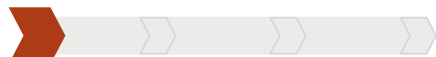


For each kilowatt hour of electricity, 667 g of CO<sub>2</sub> are emitted in Australia. This is far higher than the G20 average, but it is decreasing at a higher rate (13.3%) compared to the G20 average (11.2%). **The emissions intensity is high because of the high share of fossil fuels in the power mix and, in particular, the high share of coal.**

Enerdata, 2021

## POLICY ASSESSMENT

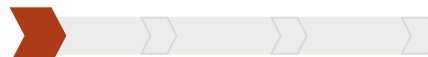
### Renewable energy in the power sector



Australia lacks a national policy or specific renewable energy target to increase the share of renewable energy. The renewable energy target (33 GWh of electricity from renewable energy by 2020) was met in 2019. In the absence of national policy, however, state government policies do show ambition in accelerating renewable uptake, as most states have renewable energy targets, plans for renewable energy zones, and support for transmission lines and regional stand-alone systems.

Clean Energy Council, 2020; Climate Action Tracker, 2020a

### Coal phase-out in the power sector



Australia has no national target or policy in place for phasing out coal. The government's Low Emissions Technology Statement released in September 2020 does not rule out the use of coal. The Australian national and state governments continue to subsidise the coal industry, spending AUD 631m in 2020-21 to support the industry. The government encourages utilities to extend coal-fired power generation to operate beyond their scheduled shutdown: it has considered support for a new coal-fired power plant, and offered incentives to fossil fuel generation through a power subsidy scheme.

Campbell et al., 2021; Climate Action Tracker, 2020a; Taylor, 2019

## CORONAVIRUS RESPONSE AND RECOVERY

If the economic recovery efforts were directed at a green recovery, it could prove to be a win-win scenario for achieving both mitigation and economic growth outcomes. A zero carbon power sector could bring about 46,000 additional jobs from 2021 to 2030, increasing to 76,000 jobs when including local manufacturing of solar panels, batteries and wind turbines. Beyond the power sector, a green recovery could be extended economy wide, creating employment opportunities in, for example, ecosystem restoration, public and active transport infrastructure, organic and food waste collection, and building retrofits.

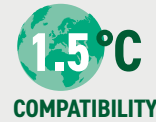
Climate Action Tracker, 2020d; Climate Council, 2020

## TRANSPORT SECTOR

Emissions from energy used to transport goods and people



COVID-19 related lockdown measures resulted in a temporary decline in transport emissions, 78% of passenger transport was by road in 2018, and 34% of freight transport was by road in 2016. Both sectors are **still dominated by fossil fuels**. EVs make up less than 1% of new car sales. In order to stay within a 1.5°C limit, passenger transport, freight transport and mass transit need to be decarbonised.



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

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

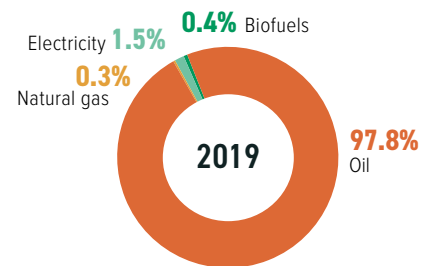
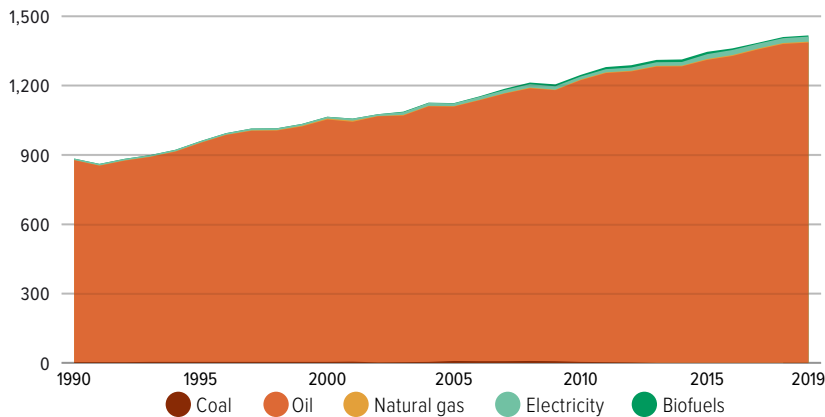


**1.10%**  
Indirect emissions  
**25.23%**  
Direct emissions

Share of transport in energy-related CO<sub>2</sub> emissions

## Transport energy mix

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

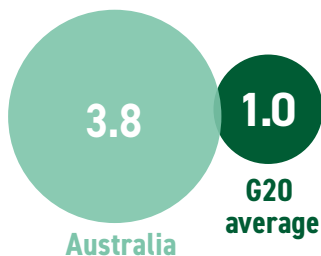


Electricity, natural gas and biofuels make up only 2.18% of the energy mix in transport.

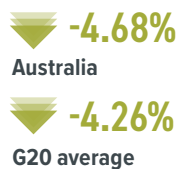
Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%

## Transport emissions per capita

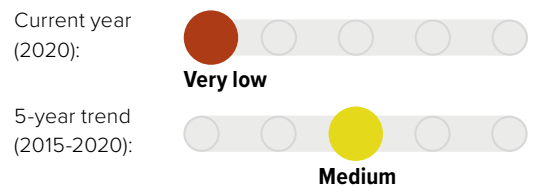
excl. aviation (tCO<sub>2</sub>/capita) in 2020



Transport emissions:  
5-year trend (2015-2020)



Decarbonisation rating: transport emissions  
compared to other G20 countries

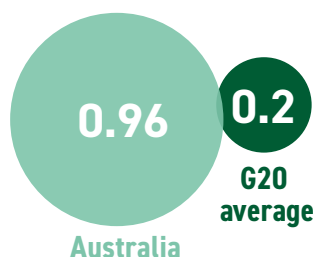


Reductions in transport emissions per capita in 2020, and concomitant changes in the 5-year trends and decarbonisation ratings, reflect widespread economic slowdowns and transport restrictions imposed in response to the COVID-19 pandemic. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2021, please see the Highlights Report at [www.climate-transparency.org](http://www.climate-transparency.org)

Enerdata, 2021; United Nations, 2019

## Aviation emissions per capita<sup>6</sup>

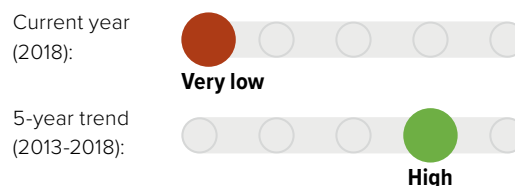
(tCO<sub>2</sub>/capita) in 2018



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



Decarbonisation rating: aviation emissions  
compared to other G20 countries



Enerdata, 2021; International Energy Agency, 2020; United Nations, 2019

## Motorisation rate

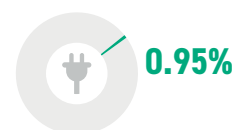


**578 VEHICLES**  
per 1,000 inhabitants in  
2019 in Australia\*

Enerdata, 2021

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

Australia's share of EV sales  
in 2020 was less than 1%.



IEA, 2021

## Passenger transport

(modal split in % of passenger-km) in 2018\*



Enerdata, 2021

## Freight transport

(modal split in % of tonne-km) in 2016\*



Freight transport by air, pipelines  
and waterways are excluded due  
to lack of data.

Enerdata, 2021

\*Owing to the variety of sources and data years available, these data are not comparable across G20 countries.

## POLICY ASSESSMENT

### Phase out fossil fuel cars



Low

Australia has no policy for reducing emissions from light-duty vehicles or to phase out fossil fuel cars. Australia requires the Euro 5 and Euro V noxious emissions standards for light-duty vehicles and is considering Euro 6 and Euro VI standards. Since 2009, new light vehicles sold require a fuel consumption label on the windscreen to inform buyers. A Future Fuels Strategy was released in February 2021 for public consultation that rules out EV subsidies and phasing out or banning internal combustion engine vehicles. The paper proposes plans for a gas-intensive electricity grid, noting the benefits of hybrid vehicles over EVs powered by electricity from natural gas, rather than supporting increased uptake of renewables in the grid as the transport sector electrifies. Australia differs from other G7 economies where EVs have been considered a critical part of the low carbon transition.

Australian Government, 2021a; DISER, 2021

### Phase out fossil fuel heavy-duty vehicles



Low

Australia does not have any plans to phase out heavy-duty vehicles (HDVs). There are no fixed plans to reduce emissions or improve efficiency for HDVs. Australia requires the Euro 5 and Euro V noxious emissions standards for HDVs and is considering Euro 6 and Euro VI standards.

The Future Fuels Strategy Discussion Paper notes government could support road freight businesses to improve fleet productivity with a Freight Energy Productivity Programme. The programme would offer grants to trial efficient HDV technology to provide companies with evidence to justify technology investment. The strategy is subject to results from the public consultation.

DISER, 2021

### Modal shift in (ground) transport



Low

The Future Fuels Strategy discussion paper focuses on road transport rather than modal shifts to rail or non-motorised transport. There is no longer-term strategy for promoting a modal shift, and no progress made in this area in the past year.

The 2020-21 budget plans for AUD 110bn over 10 years on infrastructure with many of the projects focused on roads, road upgrades and a few rail projects. Larger projects include AUD 2bn allocated to Melbourne Intermodal Terminal, AUD 2bn for the Great Eastern Highway in New South Wales, and AUD 2.6bn for the North-South Corridor (a highway).

Australian Government, 2021c; DISER, 2021

## BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

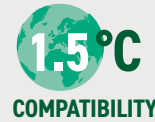


Direct emissions and indirect emissions from the building sector in Australia account for 4% and 23% of total energy-related CO<sub>2</sub> emissions, respectively. **Per capita emissions from the building sector are around three times the G20 average.** The low energy efficiency of the current building stock requires policy to support energy efficiency renovations.



**3.89%**  
Direct emissions  
**22.55%**  
Indirect emissions

Share of buildings in energy-related CO<sub>2</sub> emissions. Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.)



**1.5°C**  
**COMPATIBILITY**

**By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be**

95-100% below 2015 levels by 2050, mostly through increased efficiency, reduced energy demand, and electrification in conjunction with complete decarbonisation of the power sector.

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

## Building emissions per capita

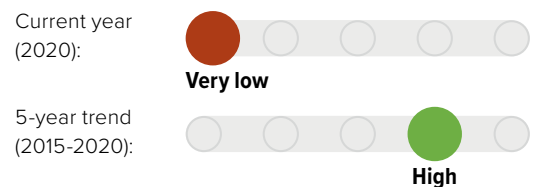
(incl. indirect emissions) (tCO<sub>2</sub>/capita) in 2020



Building emissions:  
5-year trend (2015-2020)



Decarbonisation rating: building emissions compared to other G20 countries



Building-related emissions per capita are around three times the G20 average as of 2020. This reflects the high fossil fuel share of the electricity mix. Australia has decreased the level at a higher rate of 16.19% in the past 5 years (2015-2020) compared to 2.91% for G20.

*Enerdata, 2021; United Nations, 2019*

## POLICY ASSESSMENT

### Near zero energy new buildings



Australia's building policies focus on the commercial sector. The National Construction Code covers energy efficiency standards in commercial properties, and the 2022 update is expected to incorporate rental properties. Sellers and lessors are required to disclose the energy efficiency rating of large office spaces under the Commercial Buildings Disclosure Programme. Businesses can voluntarily reduce or offset emissions through the National Carbon Offset Standard. The Energy Efficient Communities Programme offers grants to support businesses and community groups to lower their energy bills.

*Climate Action Tracker, 2020d*

### Renovation of existing buildings



There is no national strategy for energy retrofits for buildings. The Trajectory for Low-emissions Buildings policy addendum recognises energy efficiency requirements are needed for renovations. Despite the lack of a national policy, some states have energy efficiency requirements and funding. The slow policy response for the energy efficiency of new buildings as long lived assets means that renovations will be required to compensate for the low energy efficiency of the current building stock.

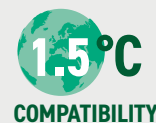
*Australian Government, 2020c; Vorrath, 2020*

## INDUSTRY SECTOR

### Emissions from energy use in industry



Direct emissions and indirect emissions from industry in Australia make up 14.8% and 14.1% of energy-related CO<sub>2</sub> emissions, respectively. **Australia lacks not only effective policies to increase the energy efficiency of the industry sector, but also any effective policies to reduce emissions and to decarbonise the sector.** However, Australian businesses are calling for stronger government action, such as renewable investments and industrial precincts to support an industrial renewable switch.



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

*Rogelj et al., 2018*



**14.75%**

Direct emissions

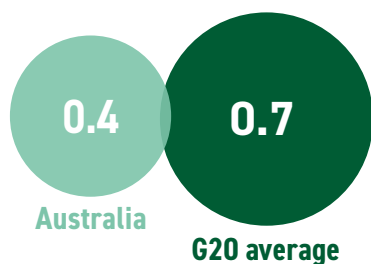
**14.10%**

Indirect emissions

Share of industry in energy-related CO<sub>2</sub> emissions.

## Industry emissions intensity<sup>7</sup>

(tCO<sub>2</sub>e/USD2015 GVA) in 2017



Industry emissions intensity:  
5-year trend (2012-2017)

**-16.75%**  
Australia

**-16.45%**  
G20 average

Decarbonisation rating: industry emissions intensity compared to other G20 countries

Current year  
(2017):



5-year trend  
(2012-2017):



*Enerdata, 2021; World Bank, 2021*

## Carbon intensity of steel production<sup>8</sup>

(kgCO<sub>2</sub>/tonne product) in 2016



Steel production and steelmaking are significant GHG emissions sources, and challenging to decarbonise. However, Australia has a competitive position to capitalise on zero carbon metals based on the huge renewable energy potential and mineral resources.

*World Steel Association, 2018; Climate Action Tracker, 2020c; Butler et al., 2021; Lord, 2019; Mazengarb, 2021b*

## POLICY ASSESSMENT

### Energy efficiency



There is no overall strategy to decarbonise the industry sector, or mandatory energy efficiency policies for this sector. The National Energy Productivity Plan (NEPP) aims to improve energy productivity (economic output per unit of energy used) by 40% between 2015 and 2030. Yet, **there have been no policies that have significantly increased industry energy efficiency, such as high-efficiency standards and regulation, facilitation for energy management, or energy auditing.**

In terms of decarbonising the sector, the only subsector projected to experience a fall in emissions is the hydrochlorofluorocarbon (HFC) phase down legislated in 2017. The Safeguard Mechanism introduced in 2016, which aimed to limit emissions increases from large industrial facilities to a baseline level was, however, raised in 2019 and allowed emissions to increase once again.

*Australian Government, 2020b; Climate Action Tracker, 2020a*

## LAND USE SECTOR

### Emissions from changes in the use of the land



To stay within the 1.5°C limit, **Australia needs to halt deforestation and ensure the land use and forest sector remains a net sink of emissions.** It also needs to increase the level of the carbon sink. Emissions from this sector are highly uncertain.

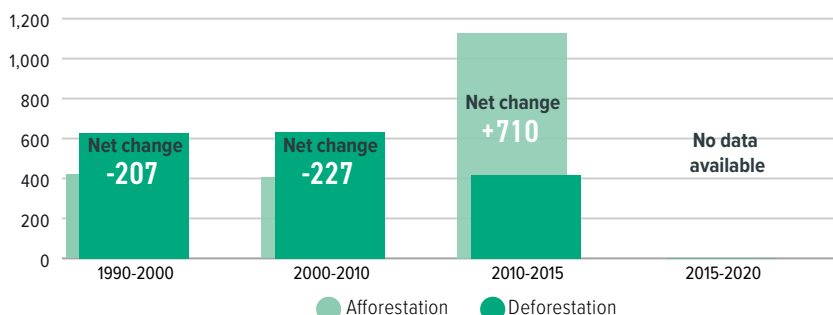


**Global deforestation needs to be halted and changed to net CO<sub>2</sub> removals by around 2030.**

*Rogelj et al., 2018*

## Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year



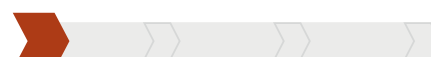
Between 2010-2015, Australia gained 710 kha of forest area per year. No data is available yet from this source for 2015-2020, but the fires of 2019 and 2020 caused extensive damage to land and forested areas, burning an estimated 24m hectares.

*Global Forest Resources Assessment, 2020*

*Note: There is a change of source and methodology for measuring this indicator from last year's profiles, which means the two years may not be directly comparable.*

## POLICY ASSESSMENT

### Target for net zero deforestation



**Low**

Australia does not have targeted or effective policy aimed at reducing deforestation. However, Australia is the only developed nation in a list of 24 global deforestation hotspots. Particular prevalent in Eastern Australia, the main drivers of deforestation are the development of livestock and the harvesting of timber. Other causes of deforestation are large scale agriculture, tree plantations, mining operations, transport infrastructure, urban expansion and fires. The Emission Reduction Fund aims to be economy wide, but 80% of the fund has been directed towards carbon stocks and, in particular, increasing or maintaining vegetation coverage, often through early season burning. Stored carbon has a high risk of reversal through fires. The Low Emission Technology Statement includes soil carbon as a priority; however, measuring changes in soil carbon remains a barrier to adoption.

*Climate Action Tracker, 2021; WWF, 2021*

## AGRICULTURE SECTOR

### Emissions from agriculture



Australia's agricultural emissions are mainly from the digestive processes (mainly cattle) and livestock manure. **A 1.5°C compatible pathway requires behavioural and dietary shifts and less fertiliser use.**

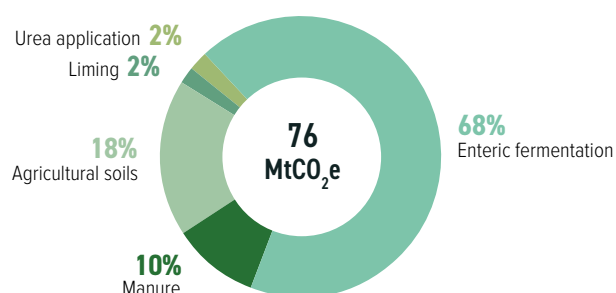


**Methane emissions (mainly enteric fermentation) need to decline by 10% by 2030 and by 35% by 2050** (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

*Rogelj et al., 2018*

## Emissions from agriculture (excluding energy)

Emissions from the agriculture sector in 2018



In Australia, the largest sources of GHG emissions in the agricultural sector are digestive processes in animals (enteric fermentation 68%), agricultural soils (18%) and livestock manure (10%). Dietary changes and efficient use of fertilisers as well as reductions in food waste could help reduce emissions from this sector.

*Australian Government, 2020a*

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

## MITIGATION: TARGETS AND AMBITION

### WARMING OF

2.4°C

The combined mitigation effect of Nationally Determined Contributions (NDCs) assessed by April 2021 is **not sufficient and will lead to a warming of 2.4°C by the end of the century**. This highlights the urgent need for all countries to submit more ambitious targets by COP26, as they agreed to do in 2015, and to **urgently strengthen their climate action to align to the Paris Agreement's temperature goal**.

*Climate Analytics, 2021a*

## AMBITION: 2030 TARGETS

### Nationally Determined Contribution (NDC): Mitigation

#### TARGETS

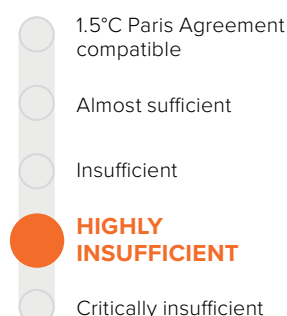
Reduce GHG emissions by 26-28% below 2005 levels by 2030 (including LULUCF).

#### ACTIONS

- Annual Technology Investment Roadmap.
- Establish the first regional hydrogen export hub.
- Future Fuels Package.
- Carbon Capture, Use and Storage Development Fund.
- Technology Co-Investment Fund.
- Support renewable energy investment with Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC).
- Grid Reliability Fund.
- Build on Emissions Reduction Fund, Climate Solutions Package, Safeguard Mechanism, investment in renewables, NEPP, and voluntary climate action for businesses.

## Climate Action Tracker (CAT) evaluation of targets and actions

### AUSTRALIA'S OVERALL RATING



This CAT evaluation is a **new, overall rating**, that combines the several, separately rated elements, of policies and actions, domestic and internationally supported targets, 'fair-share target' and the country's contribution to climate finance. The "Highly insufficient" rating indicates that Australia's targets, policies and climate finance are not Paris Agreement Compatible. The federal government accelerated a "gas-fired" recovery not a green economic recovery, refused to increase its 2030 domestic emissions target or set a net-zero emissions target, and is not on track to meet its current target.

Australia's 2030 domestic emissions reduction target is consistent with warming of 4°C if all other countries followed a similar level of ambition. Under current policies, emissions will continue to rise and are consistent with more than 3°C warming. To achieve a better rating, Australia needs to set a more ambitious target for emissions reductions with associated policies, and provide finance to support other countries. For the full assessment of the country's target and actions, and the explication of the methodology see [www.climateactiontracker.org](http://www.climateactiontracker.org)

*Climate Action Tracker, 2021*

## 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, which sets out the "information to facilitate clarity, transparency and understanding" as crucial elements of NDCs.

### NDC Transparency Check recommendations

Australia's NDC was submitted to the UNFCCC in 2016 and updated on 30 December 2020. Comparing its last NDC update with its first NDC concerning the Annex elements, which further enhances clarity, transparency, and understanding, Australia has provided additional information in its last NDC update, including:

- More detailed information is provided on the land sector, the approaches to report and account for emissions from natural disturbances, and harvested wood products.

There is still room for improvement to increase comparability, transparency, and understanding in Australia's successive NDC or NDC updates, including:

- Specify the start and end date of the implementation period.
- Include specific information on the policies and measures to implement the NDC and detail how they add to the 2030 target with quantifiable information.
- Provide information on the planning process for developing its NDC or any public engagement or stakeholder processes.

For more visit [www.climate-transparency.org/ndc-transparency-check](http://www.climate-transparency.org/ndc-transparency-check)

## AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies by 2020. Long-term strategies are an essential component of the transition toward net zero emissions and climate-resilient economies.

Status	To be delivered before COP26
Interim steps	-
Sectoral targets	-
Net zero target	Vague messaging to reach net zero by midcentury
Net zero year	No intention to adopt a 2050 target

# FINANCE

## MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS



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



**Australia spent USD 7.6bn on fossil fuel subsidies in 2020-21, mainly on petroleum.** National government project commitments include discounted loans to natural gas projects, financial support to fossil fuel infrastructure projects, and diesel fuel storage grants and other projects following the “gas-fired” recovery.



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

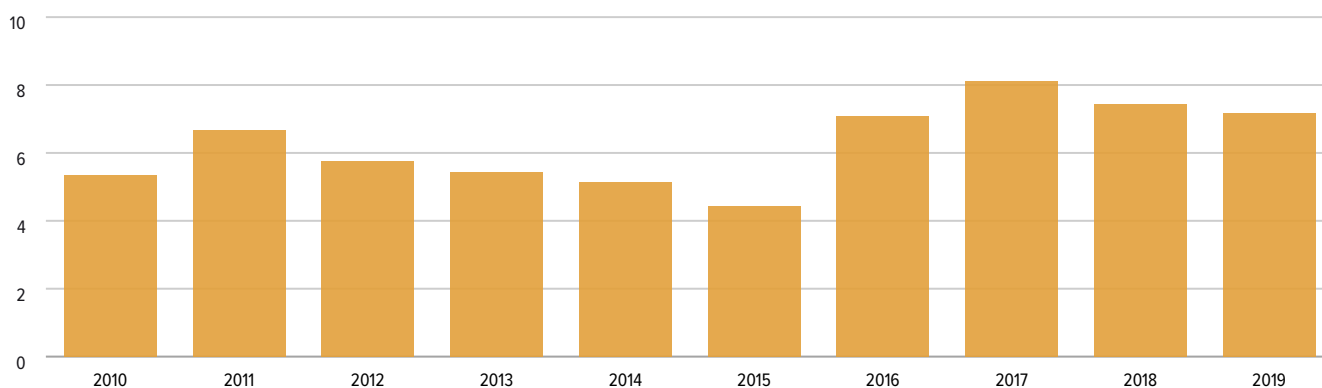
*Rogelj et al., 2018*

### FISCAL POLICY LEVERS

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

### Fossil fuel subsidies

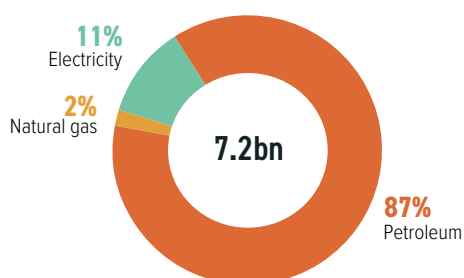
(USD billions)



OECD-IEA Fossil Fuel Support database, 2020

### Fossil Fuel Subsidies by fuel type

USD in 2019



Over the past decade (2010-2019), Australia's fossil fuel subsidies have oscillated and generally increased in the past four years, reaching a value of USD 7.2bn in 2019. Over this period, most of the subsidies were directed to support the production and consumption of petroleum.

Comparable data is not available yet for 2020. However, according to the Energy Policy Tracker data, during 2020 Australia has pledged at least USD 580m to fossil fuel energy as part of its energy-related funding commitments and COVID-19 economic response. These include USD 492m for support to airlines, including refunding and waiving aviation fuel excise tax, air service charges and regional aviation security charges. A number of policies approved in 2020 in support of fossil fuels could not be quantified yet. These include the opening up of major gas basins (e.g. Beetaloo Basin, North Bowen and Galilee Basin) for production, as well as several short- and medium-term tax deferrals and tax cuts for petroleum producers and mining companies in South Australia and Western Australia. A report comparing the 2020-21 budget finds that federal and state government funding amounts to USD 7.6bn (AUD 10.3bn) on spending and tax breaks for the fossil fuel industry, with the largest subsidy offered through the federal fuel tax credit scheme (AUD 7.8 bn).

*Energy Policy Tracker, 2021; OECD-IEA Fossil Fuel Support database, 2020; Campbell et al., 2021*  
Due to rounding, some graphs may sum to slightly above or below 100%



### CORONAVIRUS RESPONSE AND RECOVERY

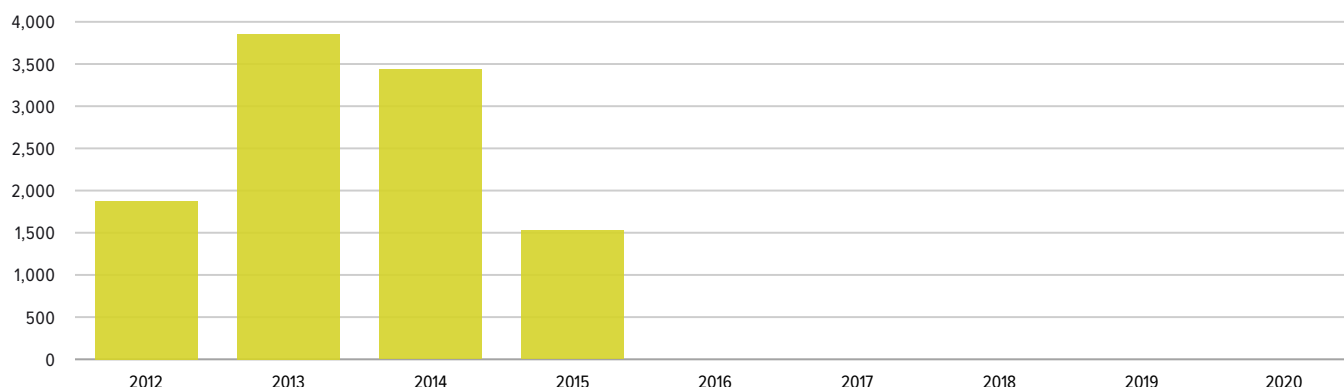
The 2020-21 federal budget included several large sums allocated to fossil fuels. Export Finance Australia offers discounted loans to natural gas projects (USD 514m). The Northern Australia Infrastructure Facility supports fossil fuel projects (USD 234m). The government has offered over USD 150m worth of grants for diesel fuel storage. Other projects supporting fossil fuels relate to COVID-19 government initiatives such as the “gas-fired” recovery.

*Campbell et al., 2021*



## Carbon pricing and revenue

(USD millions)



In 2015, Australia ended its national carbon pricing system. Australia has an Emissions Reduction Fund (ERF) Safeguard Mechanism, a voluntary scheme that involves the government purchasing carbon credit units using a reverse auction to select projects that are seeking to generate such credits. The equivalent carbon rate established by the ERF Safeguard Mechanism amounted to around USD 11/tCO<sub>2</sub>e for 2020. No other carbon pricing or emissions trading schemes, whether at national or subnational level, are currently under consideration.

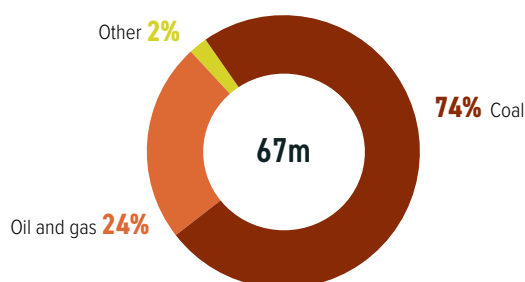
I4CE, 2021; Energy Policy Tracker, 2021

## PUBLIC FINANCE

Governments steer investments through their public finance institutions, including via development banks both at home and overseas, and green investment banks. Developed G20 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

USD per annum (2018-19 average)



Between 2018 and 2019, Australia provided an average of USD 50m per year in public finance for the coal sector, USD 16m per year for the oil and gas sector, and another USD 1.4m per year for mixed fossil fuels, totalling USD 67m of support per year. Public fossil fuel finance flows mostly through its ECA Export Finance and Institution Corporation (EFIC). This includes, most notably, USD 90m financing for the Wiggins Island Coal Export Terminal in Australia, and USD 114m for financing the Ichthys LNG located in the Browse Basin, off the coast of Western Australia. Australia has also continued to support coal projects due to the loopholes existing in the ECAs OECD Coal-Fired Electricity Generation Sector Understanding.

Oil Change International, 2020

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

### Provision of international public support

USD millions, annual average 2017 and 2018

#### Bilateral, regional and other channels

Annual average contribution:

**118.82**

#### Multilateral climate finance contributions

Annual average contribution:

**120.85**

#### Core / General Contributions

Annual average contribution:

**393.06**

Australia is ranked ninth as a provider of climate finance in 2017-18 through bilateral flows and eighth through the multilateral climate funds in absolute values. Although it performs much better relative to GDP for its multilateral climate fund contributions (where it falls fourth). Australia has seen an increase in bilateral channels of finance and small decrease in multilateral climate funds since the 2015-16 period. Climate change is a divisive election issue in Australia and, while it did not contribute to the Green Climate Fund's replenishment, it has announced a 50% increase on its commitments to climate finance in 2020-2025 (up to AUD 1.5 bn).

## 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.



**Some progress has been made by Australia to bring in green financial policies and regulations.** In November 2020, the finance industry-led Australian Sustainable Finance Initiative released the Australian Sustainable Finance Roadmap with 37 recommendations

to align the financial system to support a more resilient, sustainable and prosperous future for Australia.

The Reserve Bank of Australia (RBA) conducted an analysis of the climate change-induced financial stability risks for Australian financial institutions. The analysis highlights the steps being taken by Australian financial regulators, like the Australian Prudential Regulation Authority (APRA) and the Australian Securities and Investments Commission (ASIC), to address emerging climate risks. The analysis showed that entities across regulated industries are taking steps to increase their understanding of climate risks, but further improvement is needed.

Also, the climate risks disclosure by listed companies has often been too fragmented and non-comprehensive, proving unhelpful for investors. APRA has also established links on climate risks with international regulators, like United Nations Environment's Sustainable Insurance Forum (SIF) and International Association of Insurance Supervisors (IAIS) to enhance its scrutiny on climate risk management. APRA has also released a draft Prudential Practice Guide on Climate Change Financial Risks (CPG 229). The supervisory guidance framework is designed to assist APRA-regulated entities in managing climate-related risks and opportunities. The final CPG 229 is set to be released by the end of 2021.

The federal government supports the Clean Energy Finance Corporation (CEFC) to facilitate financial flows with programmes supporting clean energy and energy efficiency for businesses. State governments also have financing programmes such as green loans, discounts and incentives to reduce energy consumption.

*Australia Financial Stability Review, 2019; Australia Financial Stability Review, 2020; Australian Government, 2021b; Green Finance Platform, 2021*

### Nationally Determined Contribution (NDC): Finance

Conditionality	Not applicable
Investment needs	Not specified
Actions	Not mentioned
International market mechanisms	Not mentioned

## ENDNOTES

Where referenced, “Enerdata, 2021” refers to data provided in July 2021. 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/g20report2021](http://www.climate-transparency.org/g20-climate-performance/g20report2021)

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

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

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

4 The selection of policies rated and the assessment of 1.5°C compatibility are primarily informed by the Paris Agreement and the IPCC’s 2018 SR15. The table below displays the criteria used to assess a country’s policy performance.

5 The 1.5°C ‘fair-share’ ranges for 2030 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, 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. In order to maintain comparability across all countries, this report harmonises all data with PRIMAP, 2021 dataset to 2018. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories. Where countries submitted updated NDC targets before August 2021, these have been analysed and included.

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

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