Climate Transparency

BROWN TO GREEN:
THE G20 TRANSITION TO A LOW-CARBON ECONOMY | **2018**

CHINA

GREENHOUSE GAS (GHG) EMISSIONS (INCL. FORESTRY) PER CAPITA
(tCO$_2$e/capita)

8.8
China

8
G20 average

*Data from 2015 | Source: PRIMAP 2018*

The gap:
Is China on track to stay below the Paris Agreement temperature limit?

Based on implemented policies, China's GHG emissions are expected to increase to between 11,779 and 13,437 MtCO$_2$e by 2030 (excl. forestry). This is not in line with an emission pathway compatible with the Paris Agreement.[1]

China's NDC, with CO$_2$ emissions peaking around 2030, is not consistent with the Paris Agreement's temperature limit but would lead to a warming of between 3°C and 4°C.[2]

China shows strong progress on energy efficiency for buildings and renewable energy but generally sectoral policies still fall short of being consistent with the Paris Agreement, especially on coal.[3]

Current NDC[2]

+ 4°
+ 3°
+ 2°
+ 1.5°
+ 1.3°
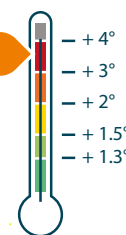
Source: CAT 2018

Recent developments:
What has happened since the Paris conference?

China's coal consumption increased again in 2017, after a three-year decline, bringing uncertainty over the country's future coal use.

China announced in 2017 the launch of an emissions trading scheme for its power sector, with a trial period from 2019.

China has exceeded its 2020 renewable electricity target of 105 GW installed capacity three years early. More than half of new global solar PV capacity in 2016 and 2017 was installed in China.

Brown and green performance:
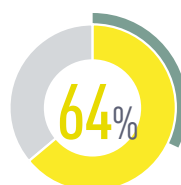Where does China lead or lag compared to G20 countries?

ENERGY INTENSITY OF THE ECONOMY
Total Primary Energy Supply in TJ per GDP in million US$2015 (PPP)

5.76

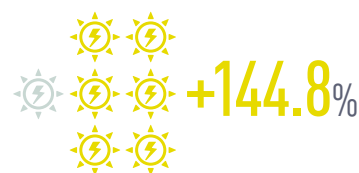G20 average: **4.72**

Data from 2017 | Source: Enerdata 2018

SHARE OF COAL IN THE ENERGY MIX
%

64%

G20 average: **32%**

Data from 2017 | Source: Enerdata 2018

2012-2017 TREND IN SHARE OF NEW RENEWABLES IN THE ENERGY MIX

+144.8%

G20 average: **+27.9%**

Source: Enerdata 2018

This country profile is part of the **Brown to Green 2018** report. The full report and other G20 country profiles can be downloaded at: *http://www.climate-transparency.org/g20-climate-performance/g20report2018*

BACKGROUND INDICATORS: CHINA

GDP PER CAPITA[4]
(PPP US$ const. 2015, international)

16,302 China

20,790 G20 average

Source: World Bank 2017

HUMAN DEVELOPMENT INDEX[5]

0.75

low   very high
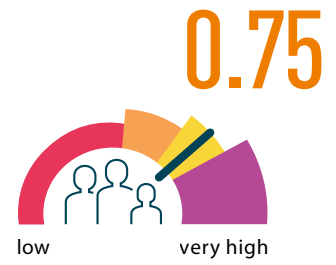
Data from 2017 | Source: UNDP 2018

CHINA'S EXPOSURE TO CLIMATE IMPACTS[6]

This indicator shows the extent to which human society and its supporting sectors are affected by the future changing climate conditions based on an approximately 2°C scenario. This sectoral exposure will be even higher given that the efforts depicted in current NDCs will lead to an approximately 3°C scenario.

FOOD

Projected climate impacts on cereal yields

low — high

G20 country range

Projected increase of food demand due to population growth

low — high

G20

WATER

Projected climate impacts on annual run-off

low — high

G20 country range

Projected climate impacts on annual groundwater recharge

low — high

G20

HEALTH

Projected climate impacts on a spread of malnutrition and diarrhoeal diseases

low — high

G20 country range

Projected climate impacts on spread of vector-borne diseases

low — high

G20

ECOSYSTEM SERVICE

Projected climate impacts on biomes occupying the countries

low — high

G20

Projected climate impacts on marine biodiversity

low — high

G20 country range

HUMAN HABITAT

Projected climate impacts on frequency of high temperature periods

low — high

G20 country range

Projected climate impacts on frequency and severity of floods

low — high

G20

INFRASTRUCTURE

Projected climate impacts on hydropower generation capacity

low — high

G20

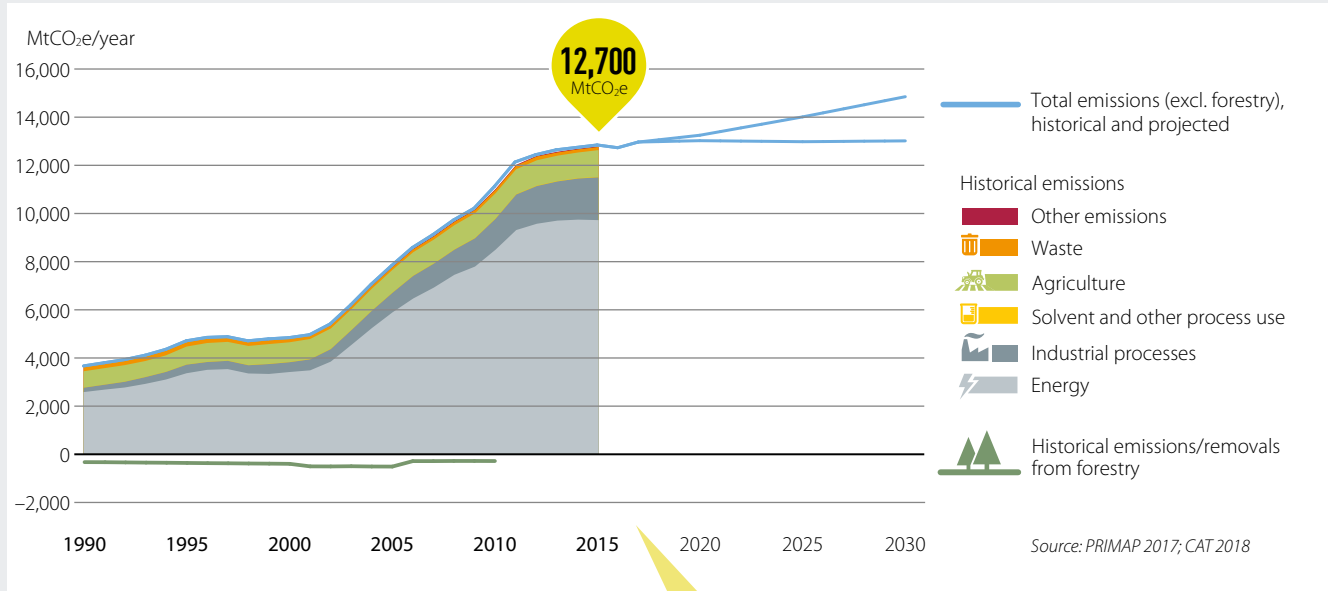Proportion of coastline impacted by sea level rise

low — high

G20

Own composition based on ND-GAIN 2017 (based on data for 2016)

GREENHOUSE GAS (GHG) EMISSIONS
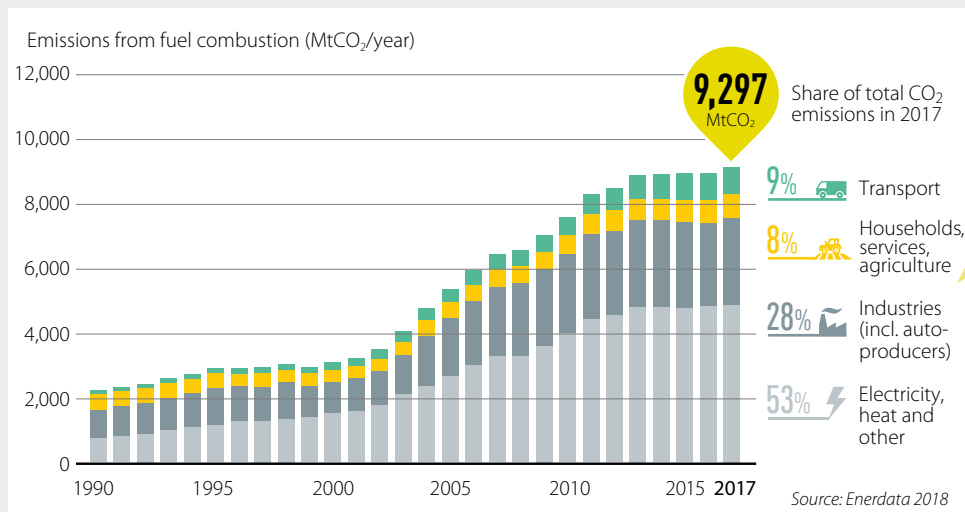
CHINA

TOTAL GHG EMISSIONS ACROSS SECTORS[7]

MtCO$_2$e/year

12,700
MtCO$_2$e

Total emissions (excl. forestry), historical and projected

Historical emissions
- Other emissions
- Waste
- Agriculture
- Solvent and other process use
- Industrial processes
- Energy

Historical emissions/removals from forestry

Source: PRIMAP 2017; CAT 2018

CCPI PERFORMANCE RATING OF GHG EMISSIONS PER CAPITA[8]

Recent developments (2010-2015): **very low** [very low, low, medium, high, very high]

Current level (2015): **medium** [very low, low, medium, high, very high]

Current level compared to a well below 2°C pathway: **low** [very low, low, medium, high, very high]

Source: CCPI 2018
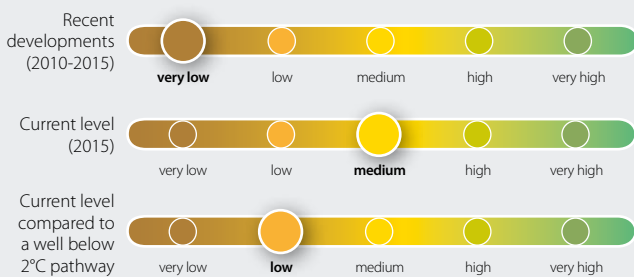
China's emissions more than tripled between 1990 and 2015, and per capita emissions are now above the G20 average. Since 2013 this trend has slowed down considerably and is expected to flatten towards 2030. The energy sector is by far the largest contributor to national emissions.

ENERGY-RELATED CO$_2$ EMISSIONS[9]

Emissions from fuel combustion (MtCO$_2$/year)

9,297
MtCO$_2$

Share of total CO$_2$ emissions in 2017

9% Transport

8% Households, services, agriculture

28% Industries (incl. auto-producers)

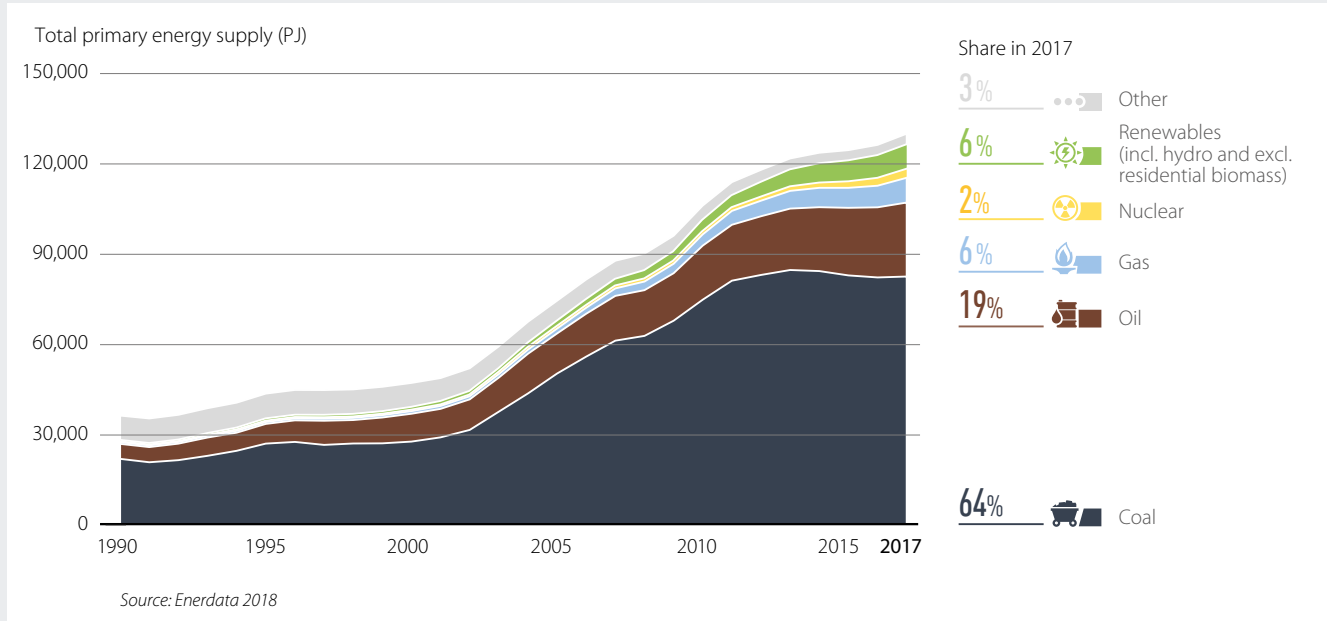**53**% Electricity, heat and other

Source: Enerdata 2018

The largest driver for overall GHG emissions are CO$_2$ emissions from energy, which increased in China by 8% (2012–2017), at a much slower pace than in previous years. Power generation and industries make up the largest share.
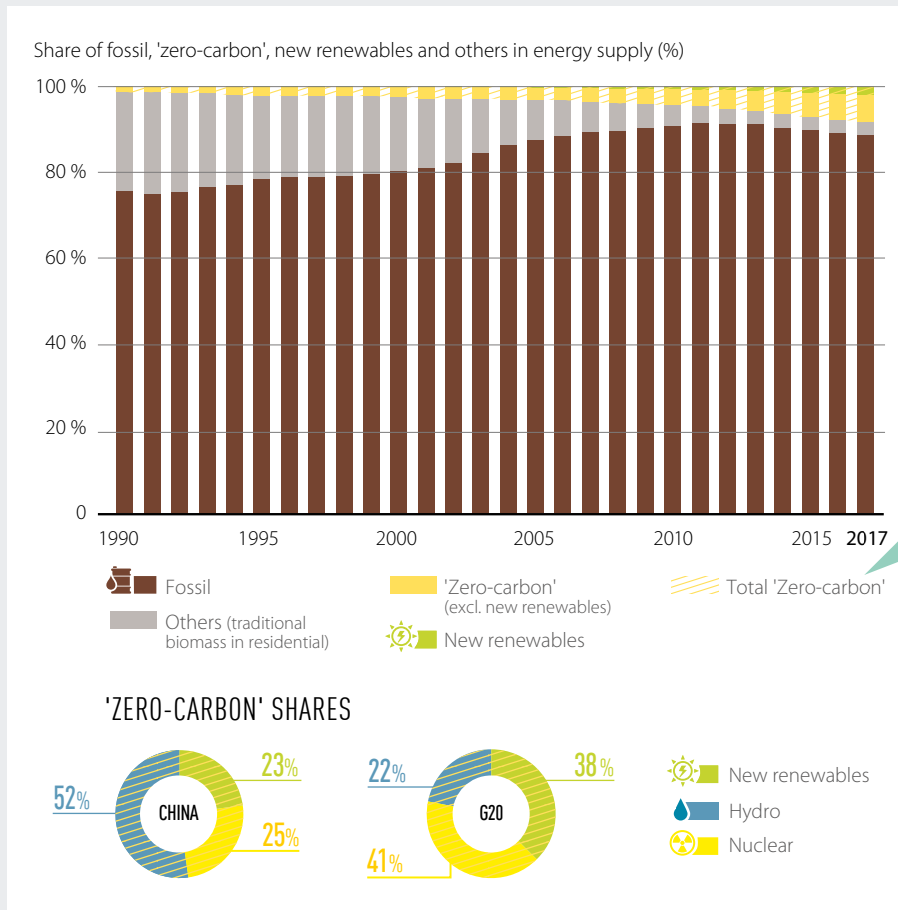
DECARBONISATION

CHINA

ENERGY MIX[10]

Total primary energy supply (PJ)

Share in 2017

3 % — Other

6 % — Renewables (incl. hydro and excl. residential biomass)

2 % — Nuclear

6 % — Gas

19 % — Oil

64 % — Coal

Source: Enerdata 2018

SHARE OF FOSSIL FUELS AND 'ZERO-CARBON' FUELS IN ENERGY SUPPLY[11]

Share of fossil, 'zero-carbon', new renewables and others in energy supply (%)

Legend:
- Fossil
- 'Zero-carbon' (excl. new renewables)
- Total 'Zero-carbon'
- Others (traditional biomass in residential)
- New renewables

'ZERO-CARBON' SHARES

CHINA
- 52%
- 23%
- 25%

G20
- 22%
- 38%
- 41%

- New renewables
- Hydro
- Nuclear

Source: Enerdata 2018

PERFORMANCE RATING OF SHARE OF FOSSIL FUELS[12]

Recent developments (2012-2017): very low / low / medium / **high** / very high

Current level (2017): very low / **low** / medium / high / very high

Source: own evaluation

> Zero-carbon fuels include nuclear, hydropower, new renewables. In China, the share of these in the energy mix has more than doubled (2012–2017) but at 8%, is still below the G20 average (14%).

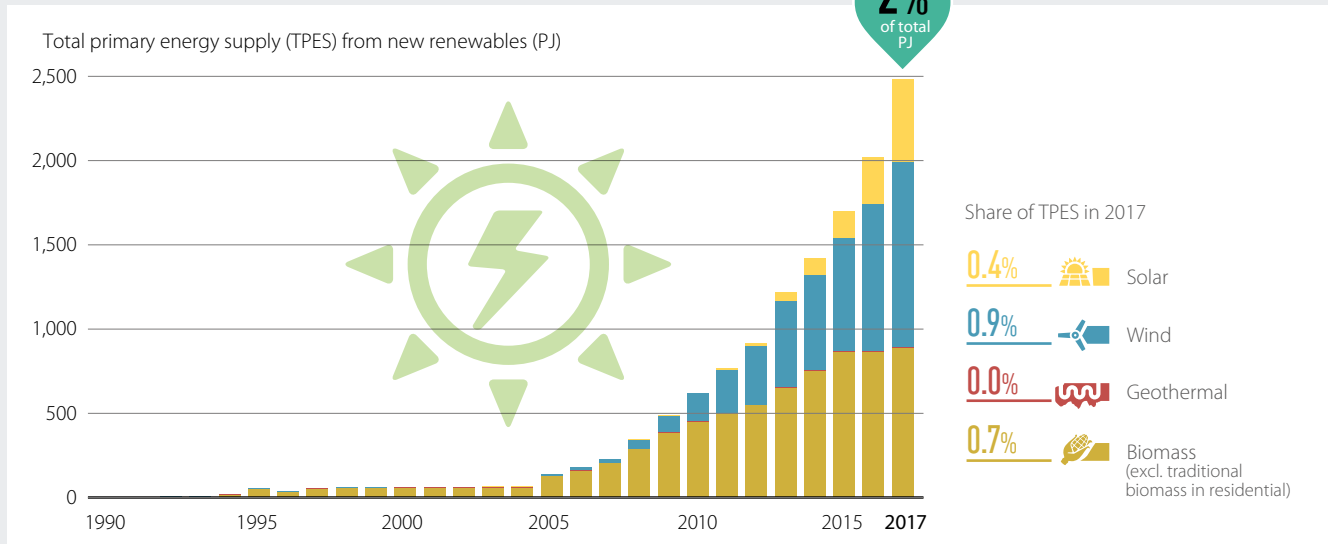### PERFORMANCE RATING OF SHARE OF ZERO-CARBON TECHNOLOGY[12]

Recent developments (2012-2017): very low / low / medium / high / **very high**

Current level (2017): very low / **low** / medium / high / very high
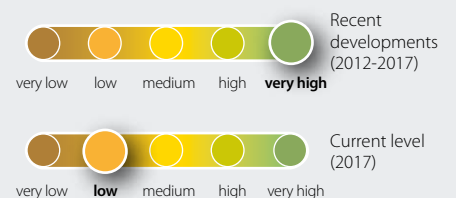
Source: own evaluation

DECARBONISATION

CHINA

NEW RENEWABLES[13]

2% of total PJ

Total primary energy supply (TPES) from new renewables (PJ)

2,500	
2,000	
1,500	
1,000	
500	
0	

1990   1995   2000   2005   2010   2015   **2017**

Share of TPES in 2017

0.4% ☀ Solar
0.9% 🌬 Wind
0.0% 〰 Geothermal
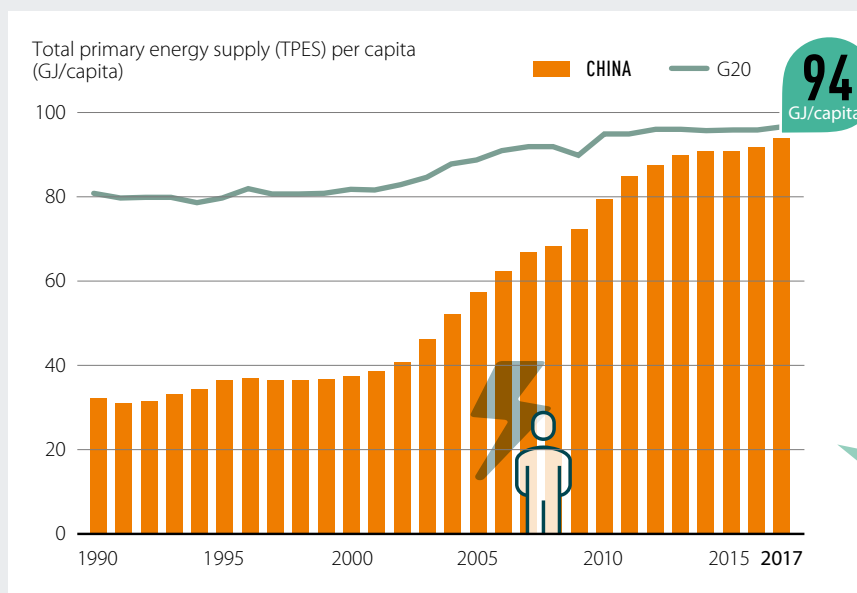**0.7%** 🌾 Biomass (excl. traditional biomass in residential)

Source: Enerdata 2018

"New renewables" includes solar, wind, geothermal and biomass (excl. traditional biomass in residential use) energy. China sources only 2% of its energy supply from new renewables but shows one of the highest growth rates in the G20: energy production from wind, biomass, solar and geothermal energy increased by 170% (2012–2017).
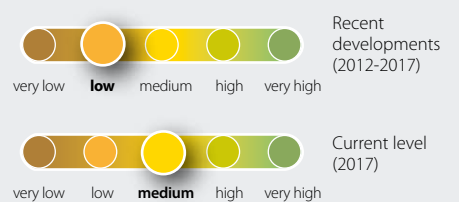
PERFORMANCE RATING OF NEW RENEWABLES[12]

Recent developments (2012-2017)

very low   low   medium   high   **very high**

Current level (2017)

very low   **low**   medium   high   very high

Source: own evaluation

ENERGY USE PER CAPITA[14]

Total primary energy supply (TPES) per capita (GJ/capita)

■ **CHINA**   — G20

94 GJ/capita

100	
80	
60	
40	
20	
0	

1990   1995   2000   2005   2010   2015   **2017**

PERFORMANCE RATING OF ENERGY USE PER CAPITA[12]

Recent developments (2012-2017)

very low   **low**   medium   high   very high

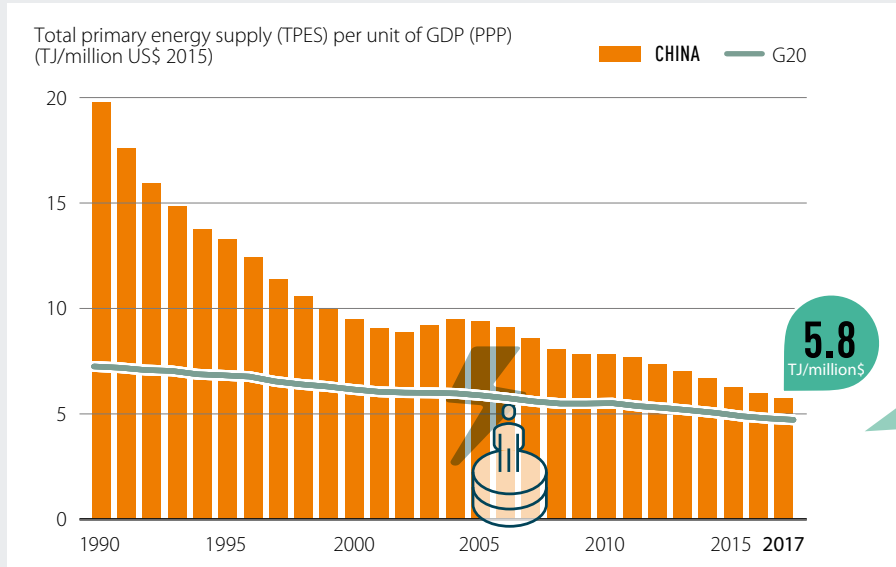Current level (2017)

very low   low   **medium**   high   very high

Source: own evaluation

Energy use per capita in China has increased by 7% (2012–2017) and is now slightly below the G20 average.

Source: Enerdata 2018

DECARBONISATION

CHINA

ENERGY INTENSITY OF THE ECONOMY[15]

Total primary energy supply (TPES) per unit of GDP (PPP)
(TJ/million US$ 2015)

■ **CHINA** ── G20

5.8
TJ/million$

This indicator quantifies how much energy is used for each unit of GDP. China's energy intensity has decreased rapidly (-22% over 2012–2017) and much faster than the G20 (-11%) but the level is still slightly above the G20 average.
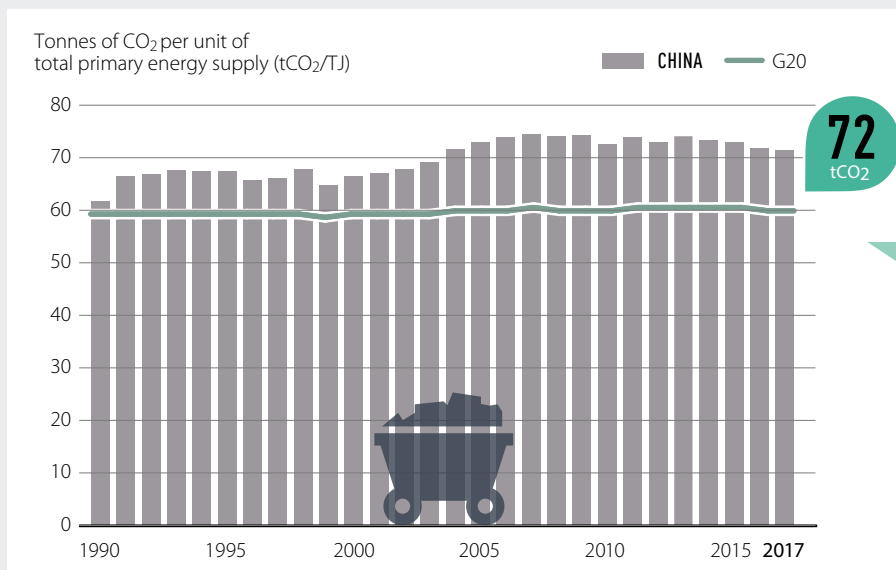
Source: Enerdata 2018

PERFORMANCE RATING OF ENERGY INTENSITY[12]

Recent developments (2012-2017)

very low | low | medium | high | **very high**

Current level (2017)

very low | **low** | medium | high | very high

Source: own evaluation

CARBON INTENSITY OF THE ENERGY SECTOR[16]

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

■ **CHINA** ── G20

72
tCO_2

The carbon intensity of China's energy sector has decreased slightly, reflecting a decreasing share of fossil fuels in the energy mix, but at 72 tCO_2/TJ, it remains well above the G20 average (59 tCO_2/TJ).

Source: Enerdata 2018

PERFORMANCE RATING OF CARBON INTENSITY[12]

Recent developments (2012-2017)

very low | low | medium | **high** | very high

Current level (2017)

very low | low | medium | high | very high
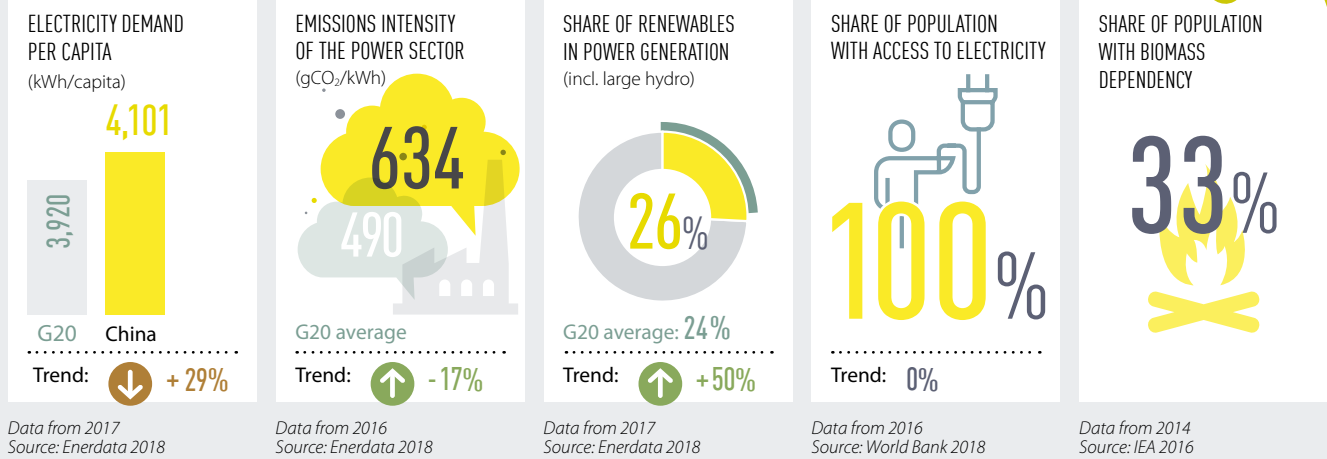
Source: own evaluation

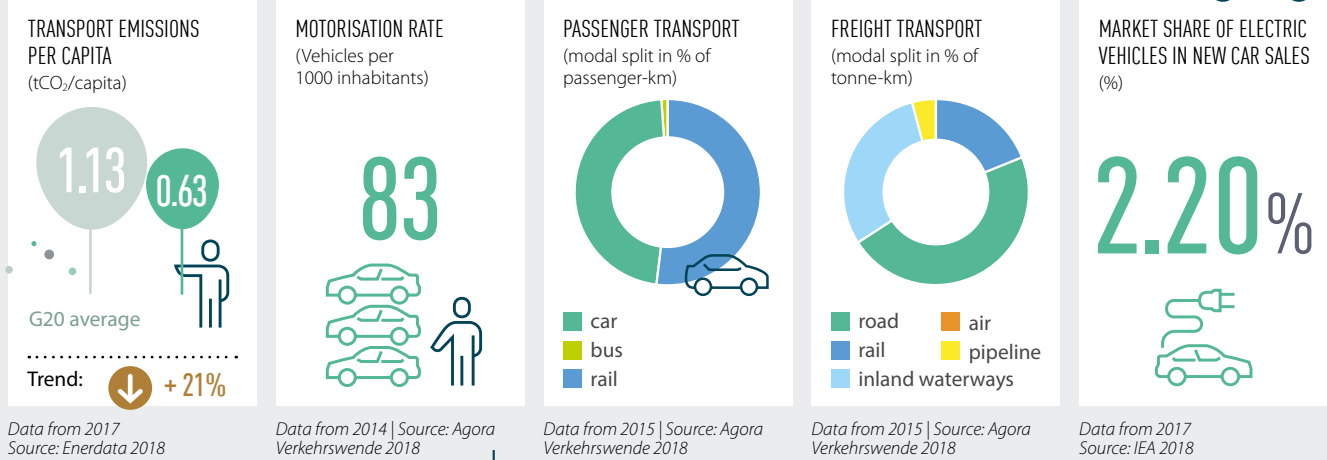## DECARBONISATION

CHINA

SECTOR-SPECIFIC INDICATORS

Legend for trend: negative positive

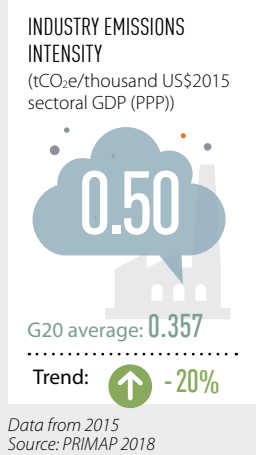The trend number shows developments over the past five years, where data is available
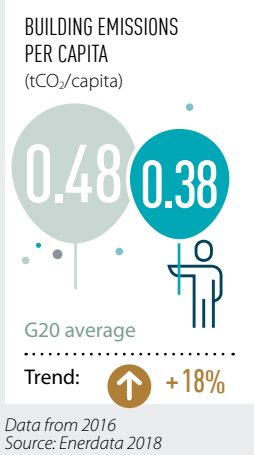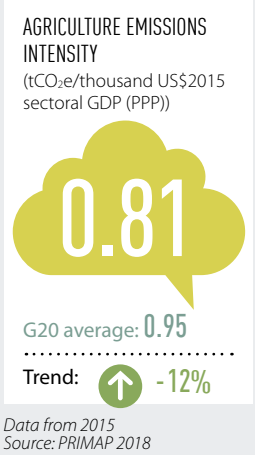
POWER SECTOR

ELECTRICITY DEMAND PER CAPITA
(kWh/capita)

3,920 G20
4,101 China

Trend: ↓ + 29%

Data from 2017
Source: Enerdata 2018

EMISSIONS INTENSITY OF THE POWER SECTOR
(gCO$_2$/kWh)

634
490 G20 average

Trend: ↑ - 17%

Data from 2016
Source: Enerdata 2018

SHARE OF RENEWABLES IN POWER GENERATION
(incl. large hydro)

26%
G20 average: 24%

Trend: ↑ +50%

Data from 2017
Source: Enerdata 2018

SHARE OF POPULATION WITH ACCESS TO ELECTRICITY

100%

Trend: 0%

Data from 2016
Source: World Bank 2018

SHARE OF POPULATION WITH BIOMASS DEPENDENCY

33%

Data from 2014
Source: IEA 2016

TRANSPORT SECTOR

TRANSPORT EMISSIONS PER CAPITA
(tCO$_2$/capita)

1.13 G20 average
0.63

Trend: ↓ + 21%

Data from 2017
Source: Enerdata 2018

MOTORISATION RATE
(Vehicles per 1000 inhabitants)

83

Data from 2014 | Source: Agora Verkehrswende 2018

PASSENGER TRANSPORT
(modal split in % of passenger-km)

- car
- bus
- rail

Data from 2015 | Source: Agora Verkehrswende 2018

FREIGHT TRANSPORT
(modal split in % of tonne-km)

- road
- rail
- inland waterways
- air
- pipeline

Data from 2015 | Source: Agora Verkehrswende 2018

MARKET SHARE OF ELECTRIC VEHICLES IN NEW CAR SALES
(%)

2.20%

Data from 2017
Source: IEA 2018

INDUSTRY SECTOR

INDUSTRY EMISSIONS INTENSITY
(tCO$_2$e/thousand US$2015 sectoral GDP (PPP))

0.50
G20 average: 0.357

Trend: ↑ - 20%

Data from 2015
Source: PRIMAP 2018

BUILDING SECTOR

BUILDING EMISSIONS PER CAPITA
(tCO$_2$/capita)

0.48 G20 average
0.38

Trend: ↑ +18%

Data from 2016
Source: Enerdata 2018

AGRICULTURE SECTOR

AGRICULTURE EMISSIONS INTENSITY
(tCO$_2$e/thousand US$2015 sectoral GDP (PPP))

0.81
G20 average: 0.95

Trend: ↑ - 12%

Data from 2015
Source: PRIMAP 2018

FOREST SECTOR

FOREST AREA COMPARED TO 1990 LEVEL
(%)

133%

Data from 2015
Source: FAO 2018

CLIMATE POLICY

CHINA

COMPATIBILITY OF CLIMATE TARGETS WITH THE PARIS AGREEMENT[2]

Total emissions across sectors ($MtCO_2e$/year)

Total emissions (excl. forestry), historic and projected

Max. emissions level under mitigation targets

Min. emissions level under mitigation targets

Climate Action Tracker's 2°C compatible and 1.5°C Paris Agreement compatible emissions range

Historical emissions/removals from forestry

Source: CAT 2018
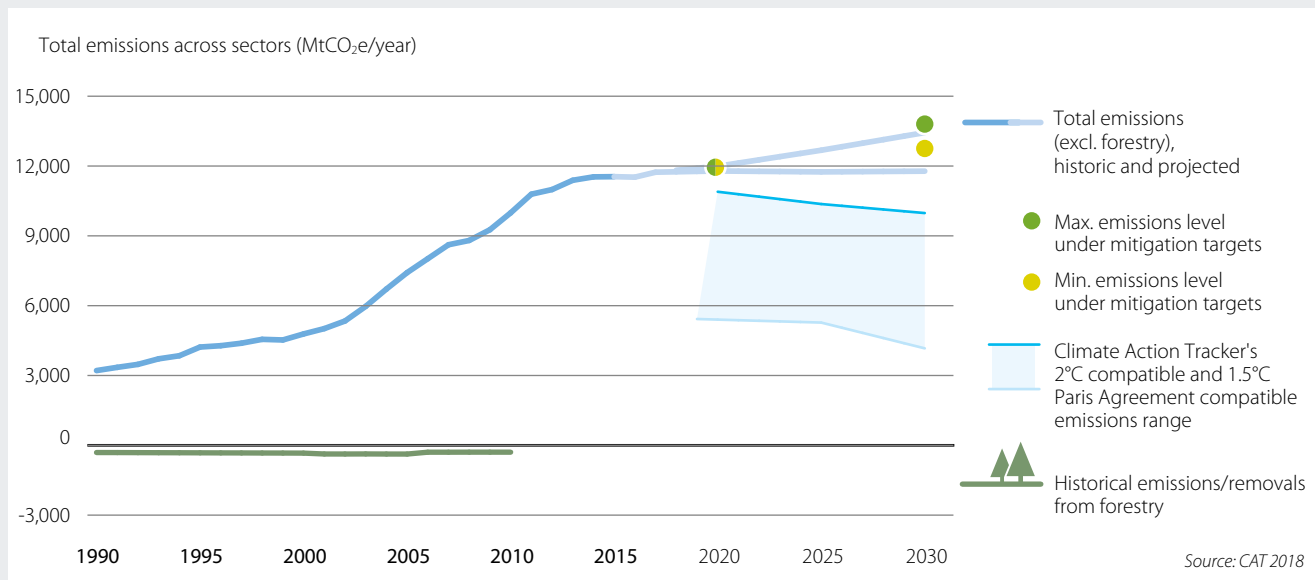
China is on track to over-achieve its NDC targets, although an increase in coal use in 2017, together with rising demand for oil and gas, drove CO2 emissions above 2014 levels, the previous record high. The CAT rates China's NDC "highly insufficient" as it is not ambitious enough to limit warming to below 2°C, let alone to 1.5°C. In 2017, China announced it had already met its 2020 target to reduce carbon intensity of GDP by 45% below 2005 levels, with expectations of reducing it by more than 50% by 2020.

CLIMATE ACTION TRACKER (CAT) EVALUATION OF NDC[2]

| critically insufficient | **highly insufficient** | insufficient | 2°C compatible | 1.5°C Paris Agreement compatible | role model |
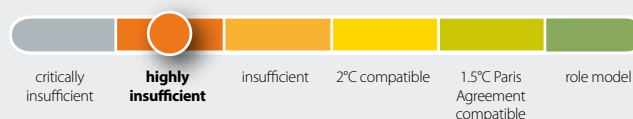
Source: CAT 2018

NATIONALLY DETERMINED CONTRIBUTION (NDC)

MITIGATION

Targets	**Overall targets** • To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak early • To lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level **Coverage** • Sectors covered: Not specified • GHG covered: Carbon dioxide • Percentage of national emissions covered: Not specified **Sectoral targets** • **Energy:** To increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030 • **Forestry:** To increase the forest stock volume by around 4.5 billion cubic metres on the 2005 level by 2030
Actions	Actions specified (sectors: energy, industry, buildings, transport, forestry, waste)

ADAPTATION

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

FINANCE

Conditio-nality	NDC not conditional on international financial support
Investment needs	Not specified
Actions	National actions to align financial flows specified (financial policies, fiscal policy levers and public spending)
International market mechanisms	Not mentioned

own compilation based on UNFCCC 2018

CLIMATE POLICY

CHINA

POLICY EVALUATION[17]

The ratings evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5℃ limit. They do not represent a complete picture of what is necessary.

Legend:
low No action
medium Some action
high Significant action and a long-term vision
frontrunner Significant action, and a long-term vision that is compatible with 1.5℃
! most important measures based on share of emissions and political relevance

	low	medium	high	frontrunner
GHG emissions target for 2050 or beyond	●			
Long-term low emissions development strategy	●			

GHG target and long-term strategy: China usually presents its policies in five-year plans but is currently developing a long-term low emissions strategy, including a reduction target for 2050.

POWER

!	**Renewable energy in power sector**	low **medium** high frontrunner
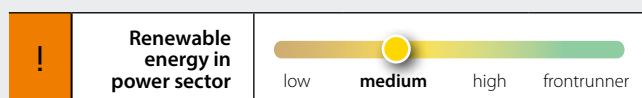
China has no 2050 renewables target but is aiming to reach 680 GW of installed renewable capacity by 2020. China is expected to surpass its 2020 solar energy target, thanks to a successful feed-in tariff system but the government decided to reduce feed-in tariff rates for 2018.

| !	**Coal phase-out**	**low** medium high frontrunner
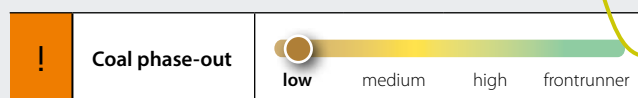
The government has no phase-out plans for coal yet but aims to reduce the share in the energy mix from currently 64% to 58% by 2020. The government introduced strict requirements for the construction of new coal power plants in 2016, to stop construction in provinces with over-supply of electricity. China's air pollution policies, recently strengthened through the 2018–2020 Air Pollution Plan, have already resulted in a reduction of coal use. In 2019, the government will launch trial periods for a new emissions trading scheme for the power sector.

TRANSPORT

|	Phase-out fossil fuel light duty vehicles	low **medium** high frontrunner
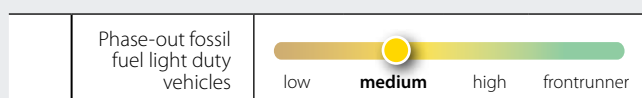
China has no targets to phase out fossil fuel LDVs but has established stringent fuel-efficiency standards, a subsidy scheme for the purchase of EVs which is the highest in the world, a new cap-and-trade scheme obliging car manufacturers to produce at least 12% zero- or low-emission vehicles by 2020, and a target to sell 2 million EVs per year by 2020.

BUILDINGS

|	Near-zero energy new buildings	low medium **high** frontrunner
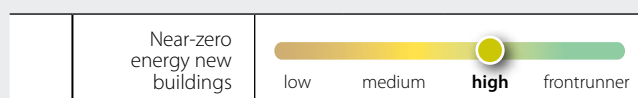
The government aims to increase energy efficiency of new buildings by 20% by 2020 and to construct 50% of new buildings as certified green buildings in urban areas. By 2030, 30% of new and renovated buildings will be near zero-energy.

INDUSTRY

!	**Low-carbon new industry installations**	low **medium** high frontrunner
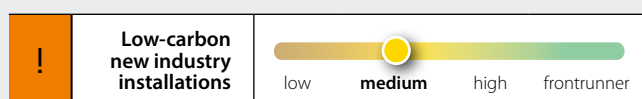
For the top 10,000 energy-consuming companies, there is a programme for energy conservation and low-carbon development.

FORESTS

	Net zero deforestation	low medium high **frontrunner**
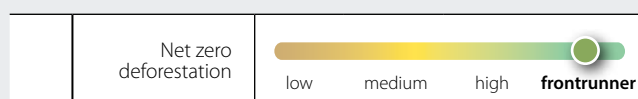
China aims to increase the country's tree coverage from 21.7% to 23% from 2016 to 2020.

Source: own evaluation

CLIMATE POLICY

CHINA

CCPI EXPERTS' POLICY EVALUATION[18]

China's experts rate the country's performance in international climate policy as high, since the country strives for a leading role in climate diplomacy. Experts also give a high rating for national climate-related policies because the government introduced policies to promote renewable energies, and announced the phase-out of fossil fuels subsidies and reduction of coal capacity. However, experts say that China's 2030 NDC targets for GHG emissions and renewables are not ambitious enough.

CCPI EVALUATION OF CLIMATE POLICY (2018)

Evaluation of international climate policy

Evaluation of national climate policy

Source: CCPI 2018
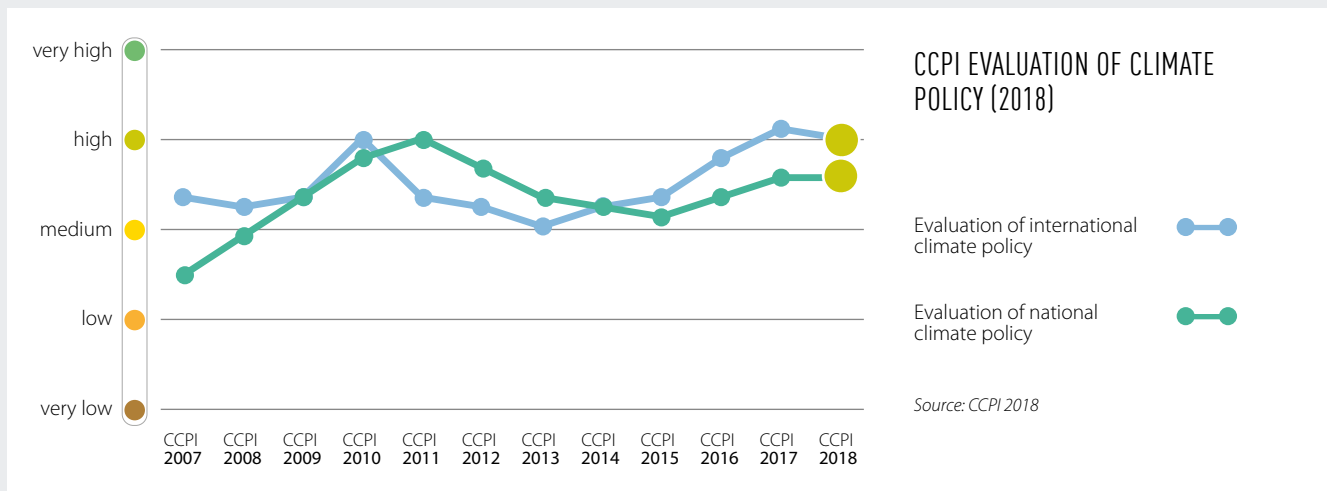
JUST TRANSITION[19]

Emissions trends in China from 2000 to 2018 show that CO_2 emissions (including from energy and industry) peaked in 2014. China's energy transition strategy and air pollution policies contributed to changing the emissions trend. Major long-term national policies included: 1) Renewable energy and nuclear power development. New solar PV capacity in China accounted for more than 50% of global new PV capacity in 2016 and 2017. In 2017 three GenIII nuclear power units began operation, and this is expected to continue. 2) Cap on coal use. The air pollution action plan strongly required provinces and cities with high air pollution to cap coal use by promoting clean energy. 3) Promoting energy conservation to slow down the growth of energy demand.

Reducing coal could affect jobs in related sectors. There are nearly 3.5 million workers in coal mining. About 1.3 million mine workers had to be shifted to other sectors following over-capacity reductions from 2013 to 2016.

FINANCING THE TRANSITION

CHINA

FINANCIAL POLICIES AND REGULATIONS

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.

APPROACHES TO IMPLEMENTING THE RECOMMENDATIONS OF THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)[20]

This indicator establishes the degree of government engagement with the recommendations of the G20 Financial Stability Board's Task Force on Climate-Related Financial Disclosure.

No formal engagement with TCFD	Political and regulatory engagement	Formal engagement with private sector	Publication of guidance and action plans	Encoding into law

Source: CISL 2018

The People's Bank of China launched the Guidelines for Establishing the Green Financial System in 2016, to mobilise and invest in green sectors including the establishment of a mandatory environmental information disclosure system for listed companies and bond issuers. It jointly founded the Central Banks and Supervisors Network for Greening the Financial System advancing financial sector climate risk management.

FISCAL POLICY LEVERS

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

FOSSIL FUEL SUBSIDIES

In 2016, China's fossil fuel subsidies reached US$11.9bn, but have fluctuated widely (US$6.3bn to US$33.5bn) since 2007. From 2007 to 2016, subsidies were below (US$0.001) the G20 average (US$0.003) per unit of GDP. Subsidies primarily targeted consumption (87%), through direct budget support and tax exemptions. The largest subsidy is the petroleum price reform support payments to those most vulnerable to price increases (US$8bn in 2016).

Fossil fuel subsidies (US$ billions)
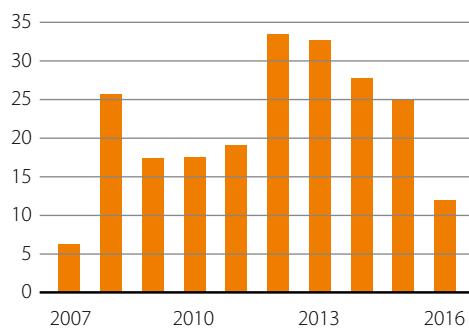
Source: OECD/IEA 2018

CARBON REVENUES

China has several subnational emissions trading schemes, but revenue estimates are largely missing. In 2017, the government introduced a national emissions trading scheme aimed at covering 30% of domestic emissions (in the power sector), following subnational pilot schemes deployed in nine cities and provinces since 2013 (covering various sectors). Emissions are priced between US$1 and US$8/tCO$_2$.

Revenues from explicit carbon pricing (US$ billions)
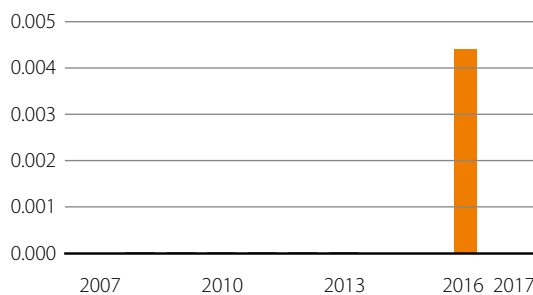
Only estimates for 2016 are available for three subnational schemes.

Source: I4CE 2018

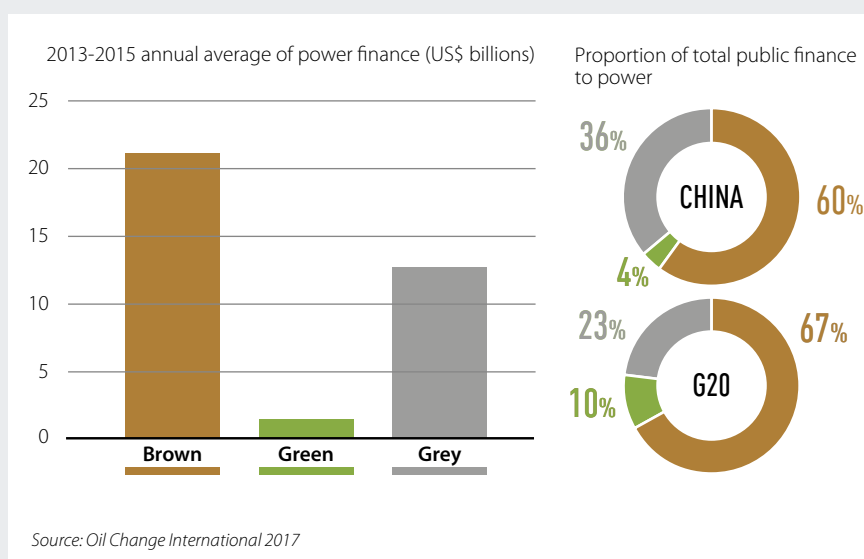# FINANCING THE TRANSITION

CHINA

■ 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.

NATIONAL AND INTERNATIONAL PUBLIC FINANCE IN THE POWER SECTOR[21]

In 2013 to 2015, China's public finance institutions spent an annual average of US$21.1bn brown, US$1.4bn green and US$12.6bn grey financing in the power sector, domestically and internationally. The largest transactions were the Export-Import Bank of China loan (US$6.5bn) to Pakistan's Karachi Nuclear power complex, and the Industrial and Commercial Bank of China loan (US$5.1bn) to nuclear power in Argentina.

coal, oil and gas projects (and associated infrastructure)	**brown**
large-scale hydropower, biofuels, biomass, nuclear, incineration, transmission, distribution, storage, energy efficiency, other general electricity support	**grey**
renewable energy projects (excluding grey financing)	**green**

2013-2015 annual average of power finance (US$ billions)

Proportion of total public finance to power

CHINA
36%
60%
4%

G20
23%
67%
10%

Source: Oil Change International 2017

PROVISION OF INTERNATIONAL PUBLIC SUPPORT

China is not listed in Annex II of the UNFCCC and is therefore not formally obliged to provide climate finance. Despite this, China has provided mitigation finance via the Global Environment Facility (GEF) Trust Fund. In its Biennial Update Report (BUR) to the UNFCCC, China also includes information on its South–South cooperation. Tabular data to report on the scale and nature of such contributions for particular years is not included in the BUR and so is not reported here. While China may channel international public finance towards climate change via multilateral and other development banks, this has not been included in this report.

OBLIGATION TO PROVIDE CLIMATE FINANCE UNDER UNFCCC

YES   **NO**

CONTRIBUTIONS THROUGH THE MAJOR MULTILATERAL CLIMATE FUNDS[22]

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

Source: Climate Funds Update 2017

Annual average contribution (mn US$, 2015-2016)	Theme of support		
	Adaptation	Mitigation	Cross-cutting
1.23	**0%**	**100%**	**0%**

BILATERAL CLIMATE FINANCE CONTRIBUTIONS[23]

Source: Country reporting to UNFCCC

Annual average contribution (mn US$, 2015-2016)	Theme of support			
	Mitigation	Adaptation	Cross-cutting	Other
n.a.	**n.a.**	**n.a.**	**n.a.**	**n.a.**

ANNEX

G20

For more detail on sources and methodologies, please refer to the Technical Note at:
https://www.climate-transparency.org/wp-content/uploads/2018/11/Technical-Note_data-sources-and-methodology.pdf

1) The 2030 projections of the future development of greenhouse gas (GHG) emissions under current policies are based on the Climate Action Tracker (CAT) estimates.

2) The CAT is an independent scientific analysis that tracks progress towards the globally agreed aim of holding warming to well below 2°C, and pursuing efforts to limit warming to 1.5°C. The CAT "Effort Sharing" assessment methodology applies state-of-the-art scientific literature on how to compare the fairness of government efforts and (Intended) Nationally Determined Contribution ((I)NDC) proposals against the level and timing of emission reductions consistent with the Paris Agreement. The assessment of the temperature implications of a country's NDC is based on the assumption that all other governments would follow a similar level of ambition.

3) This assessment is based on the policy evaluation on page 9 of this Country Profile.

4) Gross Domestic Product (GDP) per capita is calculated by dividing GDP with mid-year population figures. GDP is the value of all final goods and services produced within a country in a given year. Here GDP figures at purchasing power parity (PPP) are used. Data for 2017.

5) The Human Development Index (HDI) is a composite index published by the United Nations Development Programme (UNDP). It is a summary measure of average achievement in key dimensions of human development. A country scores higher when the lifespan is higher, the education level is higher, and GDP per capita is higher.

6) The ND-GAIN index summarises a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. This report looks only at the exposure indicators as part of the vulnerability component of the ND-GAIN index for six sectors. It displays the exposure scores provided by the ND-GAIN on a scale from low (score: 0) to high (score: 1).

7) The indicator covers all Kyoto gases showing historic emissions in each of the IPCC source categories (energy, industrial processes, agriculture, etc.). Emissions projections (excl. forestry) under a current policy scenario until 2030 are taken from the Climate Action Tracker and scaled to the historical emissions from PRIMAP (see Brown to Green Report 2018 Technical Note).

8) The ratings on GHG emissions are taken from the Climate Change Performance Index (CCPI) 2018. The rating of "current level compared to a well below 2°C pathway" is based on a global scenario of GHG neutrality in the second half of the century and a common but differentiated convergence approach.

9) CO_2 emissions cover only the emissions from fossil fuels combustion (coal, oil and gas) by sector. They are calculated according to the UNFCCC methodology (in line with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories).

10) Total primary energy supply data displayed in this Country Profile does not include non-energy use values. Solid fuel biomass in residential use has negative environmental and social impacts and is shown in the category "other".

11) Zero-carbon fuels include nuclear, hydropower and new renewables (non-residential biomass, geothermal, wind, solar).

12) Climate Transparency ratings assess the relative performance across the G20. A high scoring reflects a good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

13) New renewables include non-residential biomass, geothermal, wind and solar energy. Hydropower and solid fuel biomass in residential use are excluded due to their negative environmental and social impacts.

14) Total primary energy supply (TPES) per capita displays the historical, current and projected energy supply in relation to a country's population. Alongside the intensity indicators (TPES/GDP and CO_2/TPES), TPES per capita gives an indication on the energy efficiency of a country's economy. In line with a well-below 2°C limit, TPES per capita should not grow above current global average levels. This means that developing countries are still allowed to expand their energy use to the current global average, while developed countries have to simultaneously reduce it to that same number.

15) TPES per GDP describes the energy intensity of a country's economy. This indicator illustrates the efficiency of energy usage by calculating the energy needed to produce one unit of GDP. Here GDP figures at PPP are used. A decrease in this indicator can mean an increase in efficiency but also reflects structural economic changes.

16) The carbon intensity of a country's energy sector describes the CO_2 emissions per unit of total primary energy supply and gives an indication of the share of fossil fuels in the energy supply.

ANNEX (continued)

G20

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

18) The CCPI evaluates a country's performance in national climate policy, as well as international climate diplomacy through feedback from national experts from non-governmental organisations to a standardised questionnaire.

19) See the Brown to Green 2018 Technical Note for the sources used for this assessment.

20) The University of Cambridge Institute for Sustainability Leadership (CISL) in early 2018 reviewed the progress made by the national regulatory agencies of G20 members in making the Task Force on Climate-related Financial Disclosures (TCFD) recommendations relevant to their national contexts. See the Brown to Green Report 2018 Technical Note for more information on the assessment.

21) This data includes bilateral public finance institutions such as national development banks and other development finance institutions, overseas aid agencies, export credit agencies, as well as key multilateral development banks. The analysis omits most finance delivered through financial intermediaries and significant volumes of multilateral development bank (MDB) development policy finance (due to a lack of clarity on power finance volumes). Given a lack of transparency, other important multilateral institutions in which G20 governments participate are not covered. See the Brown to Green Report 2018 Technical Note for further details.

22) Finance delivered through multilateral climate funds comes from Climate Funds Update, a joint ODI/Heinrich Boell Foundation database that tracks spending through major multilateral climate funds. See the Brown to Green Report 2018 Technical Note for multilateral climate funds included and method to attribute approved amounts to countries.

23) Bilateral finance commitments are sourced from Biennial Party reporting to the UNFCCC. Financial instrument reporting is sourced from the OECD-DAC; refer to the Brown to Green Report 2018 Technical Note for more detail. Figures represent commitments of Official Development Assistance (ODA) funds to projects or programmes, as opposed to actual disbursements.

On endnote 17)	Criteria description			
	● Low	● Medium	● High	● Frontrunner
GHG emissions target for 2050 or beyond	No emissions reduction target for 2050 or beyond	Existing emissions reduction target for 2050 or beyond	Existing emissions reduction target for 2050 or beyond and clear interim steps	Emissions reduction target to bring GHG emissions to at least net zero by 2050
Long-term low emissions development strategy	No long-term low emissions strategy	Existing long-term low emissions strategy	Long-term low emissions strategy includes interim steps and/or sectoral targets	Long-term low emissions strategy towards full decarbonisation in the second half of the century; includes interim steps and/or sectoral targets, plus institutions and measures in place to implement and/or regularly review the strategy
Renewable energy in power sector	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 0-25	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 26-60	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 61-100	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), 61-100 plus 100% renewables in the power sector by 2050 in place
Coal phase-out	No consideration or policy in place for phasing out coal	Significant action to reduce coal use implemented or coal phase-out under consideration	Coal phase-out decided and under implementation	Coal phase-out date compatible with 1.5°C
Phase-out of fossil fuel light duty vehicles (LDVs)	No policy or emissions performance standards for LDVs in place	Energy/emissions performance standards or support for efficient LDVs	National target to phase out fossil fuel LDVs in place	Ban on new fossil-based LDVs by 2025/30
Near zero-energy new buildings	No policy or low emissions building codes and standards in place	Building codes, standards or fiscal/financial incentives for low emissions options in place	National strategy for near zero-energy buildings (at least for all new buildings)	National strategy for near zero-energy buildings by 2020/25 (at least for all new buildings)
Low-carbon new industry installations	No policy or support for energy efficiency in industrial production in place	Support for energy efficiency in industrial production (covering at least two of the country's sub-sectors (e.g. cement and steel production))	Target for new installations in emissions-intensive sectors to be low-carbon	Target for new installations in emissions-intensive sectors to be low-carbon after 2020, maximising efficiency
Net zero deforestation	No policy or incentive to reduce deforestation in place	Incentives to reduce deforestation or support schemes for afforestation / reforestation in place	National target for reaching zero deforestation	National target for reaching zero deforestation by 2020s or for increasing forest coverage

CLIMATE TRANSPARENCY

Partners:

Funders:

Supported by:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

based on a decision of the German Bundestag

Data Partners:

http://www.climate-transparency.org/g20-climate-performance/g20report2018

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