China needs to reduce emissions to below 8,458 MtCO₂e by 2030 and to below 5,462 MtCO₂e by 2050 to be within its ‘fair-share’ range compatible with global 1.5°C IPCC scenarios. China’s present 2030 NDC will only limit its emissions to 13,744-15,194 MtCO₂e. However, in September 2020 President Xi Jinping announced China would increase the ambition of its NDC to peak CO₂ emissions before 2030. In addition, China would set a long-term goal of becoming carbon-neutral before 2060. Depending on the timing and scope this could move China’s emissions close to, or within, the ‘fair-share’ range compatible with 1.5°C. All figures exclude land use emissions and are based on pre-COVID-19 projections.

China’s total GHG emissions (excl. land use) have more than tripled since 1990, with the increase slowing down since 2014. Emissions are projected to continue increasing but could peak before 2030.

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

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS ABOVE G20 AVERAGE

China needs to stop developing new coal and phase out coal-fired power by 2040.

 Sources: Climate Action Tracker, 2020; Standaert, 2019; Amelang, 2020; Enkhardt, 2020; Ker, 2020; Shaw, 2020

Sources: Yun, 2020; Gao, 2020; Global Energy Monitor, 2020; Hillbrand and Horowitz, 2020

CORONAVIRUS RECOVERY

The Chinese government has announced a USD 7tn economic stimulus package to combat the impact of COVID-19. The measures have not been targeted at decarbonising the economy. Instead, a further 40.8 GW of new coal plants have been proposed, as the government relaxes restrictions on new coal plant development.

Reference: Global Energy Monitor, 2020
**SOCIO-ECONOMIC CONTEXT**

**Human Development Index**

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

Data for 2018. Source: UNDP, 2019

**Gross Domestic Product (GDP) per capita (PPP constant 2015 international $)**

China: 16,779

G20 Average: 22,230

Data for 2019. Sources: World Bank, 2020

**JUST TRANSITION**

Coal has been the dominant energy source of China’s energy mix for decades. Increasing concerns surrounding coal’s impact on domestic air quality and water availability, and growing pressure to reduce greenhouse gas emissions, led to a drop in coal use from 2013. Yet coal still represents 61% of China’s total energy mix and 65% of the electricity generation mix. While China has measures like its coal cap policy to reduce coal from its energy system, its post-COVID-19 recovery stimulus includes proposals for dozens of new coal plants. Given coal’s dominance, reducing its use could negatively impact employment in related sectors. In 2018, about 5 million people worked in the coal mining industry, with 20% of them having a college education level or above, but most coal workers have very limited job choices and are vulnerable to transition. Supporting re-employment is a long-term policy in China. The most recent policy includes support for enterprise development, including financial support for new small enterprises, re-employment training, and the unemployed.

References: Enerdata, 2020; Fei, 2018
1. ADAPTATION
ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

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

China is vulnerable to climate change and adaptation actions are needed.

On average, 1,056 fatalities and over USD 35bn losses occur annually due to extreme weather events.

With global warming, society and its supporting sectors are increasingly exposed to severe impacts such as heatwaves, drought and reduction in crop duration in the agricultural sector.

VULNERABLE TO CLIMATE CHANGE
HIGH COST OF EXTREME WEATHER
SEVERE IMPACTS ON AGRICULTURE SECTOR

ADAPTATION NEEDS

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

Annual weather-related fatalities

<table>
<thead>
<tr>
<th>High</th>
<th>Death rate</th>
<th>RANKING 15th IN THE G20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Germanwatch, 2019

Annual average losses (USD mn PPP)

<table>
<thead>
<tr>
<th>High</th>
<th>Losses</th>
<th>RANKING 3rd IN THE G20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Germanwatch, 2019

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

Impact ranking scale:

1 Very low 2 Low 3 Medium 4 High 5 Very high

<table>
<thead>
<tr>
<th>WATER</th>
<th>% of area with increase in water scarcity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 1 1</td>
</tr>
<tr>
<td></td>
<td>% of time in drought conditions</td>
</tr>
<tr>
<td></td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEAT AND HEALTH</th>
<th>Heatwave frequency</th>
<th>Days above 35°C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 1 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 1 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGRICULTURE</th>
<th>Maize</th>
<th>Reduction in crop duration</th>
<th>Hot spell frequency</th>
<th>Reduction in rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td>1 1 1</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rice</th>
<th>Reduction in crop duration</th>
<th>Hot spell frequency</th>
<th>Reduction in rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td>1 1 1</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th>Reduction in crop duration</th>
<th>Hot spell frequency</th>
<th>Reduction in rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td>1 1 1</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>


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.
**Adaptation readiness**

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

China’s observed adaptation readiness is well below the G20 average. Measures in line with SSP1 would produce improvements in readiness to bring it in line with the 2015 G20 average between 2040 and 2045. Other measures, as represented by SSP2 and SSP3, would continue to undermine its readiness to adapt in the long term.

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

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

Source: Andrijevic et al., 2020

---

**ADAPTATION POLICIES**

**National Adaptation Strategies**

<table>
<thead>
<tr>
<th>Document name</th>
<th>Publication year</th>
<th>M&amp;E process</th>
<th>Fields of action (sectors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Strategy for Climate Change Adaptation</td>
<td>2013</td>
<td>Target year 2020; is to be merged with national five-year plan</td>
<td>Agriculture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Nationally Determined Contribution (NDC): Adaptation**

**Targets**

Target year 2020: is to be merged with national five-year plan

**Actions**

See sectors specified in the National Strategy for Climate Change Adaptation (2013)
2. 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

China’s GHG emissions have more than tripled from 1990-2017 and the government’s climate target for emissions to peak in 2030 are not in line with a 1.5°C pathway.

In 2030, global CO₂ emissions need to be 45% below 2010 levels and reach net-zero by 2050. Global energy-related CO₂ emissions must be cut by 40% below 2010 levels by 2030 and reach net-zero by 2060. Source: Rogelj et al., 2018

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

China’s GHG emissions (excl. land use) increased by 258% between 1990 and 2017 in all sectors except waste. A range of projections show that, under current policies and projections, emissions will continue to increase up to 2030, at a sufficient pace to meet its national mitigation targets – including peaking before 2030. China’s current targets are far from compatible with the Paris Agreement, having been assessed as ‘highly insufficient’. China will need to scale up climate action and scale up its national targets to become 1.5°C ‘fair-share’ compatible.

Energy-related CO₂ emissions by sector

The largest driver of overall GHG emissions are CO₂ emissions from fuel combustion. In China, they peaked in 2013 and decreased until 2016, but have risen since 2017, driven by increasing emissions from electricity generation. At 48%, the electricity sector is the largest contributor to energy-related CO₂ emissions, followed by the industry sector at 28%.

Source: Enerdata, 2020

CORONAVIRUS RECOVERY

The measures in the USD 7tn economic stimulus package have not been targeted at decarbonising the economy. China’s COVID-19 stimulus has focused heavily on infrastructure, which reportedly will include high-speed rail, smart grids and electric vehicle chargers. However, a further 40.8 GW of new coal plants have been proposed, as the government relaxes restrictions on new coal plant development.

References: Global Energy Monitor, 2020
**Energy Overview**

Fossil fuels still make up 88% of China's energy mix (including power, heat, transport fuels, etc.), and coal is the predominant resource with a share of 61% in 2019, above the target of 57.5% by 2020. Renewable energy sources have increased over the last few years at around half of newly-installed capacity of global total 2016 to 2018, but remains at a low share in TPES.

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

*Source: Rogelj et al., 2018*

---

### Energy Mix

This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating, cooking, but also for transport fuels. Fossil fuels still make up 88% of China's energy mix, decreasing from 90% over the past decade, higher than the G20 average of 81%, with coal still contributing 61%. The share of renewables (including modern biomass and hydro) in the energy mix increased (by 158%) from 2010-2019, and in 2019 represents a 7% share. Nuclear energy has more than tripled in that period.

### Solar, Wind, Geothermal, and Biomass Development

Solar, wind, geothermal and biomass account for only 2.7% of China's energy supply – the G20 average is 6.4%. The share in total energy supply has increased by 114% in the last 5-years (2014-2019), more than the G20 average of 28%. Wind now makes up the largest share, overtaking modern biomass in 2019.

*Source: Enerdata, 2020*

---

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

- **5-year trend**: High
- **Current year (2019)**: Low

*Source: own evaluation*
**Carbon Intensity of the Energy Sector**

Carbon intensity shows how much CO₂ is emitted per unit of energy supply.

In China, carbon intensity has consistently been above the G20 average, reflecting the high use of fossil fuels in the energy mix. However, there has been a downward trend since 2013.

*Source: Enerdata, 2020*

---

**Energy Supply per Capita (GJ/capita)**

Energy use per capita in China is with 96 GJ/capita, on par with the G20 average, but is increasing much faster (8.2%, 2014-2019) compared with the slower rate of increase of the G20 average (2%).

*Source: Enerdata, 2020; The World Bank, 2019b*

---

**Energy Intensity of the Economy (TJ/PPP USD2015 millions)**

China’s energy intensity is above the G20 average, but has decreased by 22% (2013-2018), nearly double the G20 rate of decline (-12%) in that time.

*Source: Enerdata, 2020*

---

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

5-year trend (2014-2019): Low

Current year (2019): Medium

*Source: own evaluation*
China still produces 65% of electricity from coal. A phase out of coal-fired power generation before 2040 is necessary to stay within a 1.5°C limit.

Source: Climate Action Tracker, 2019

Coal and decarbonisation

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

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

STATUS OF DECARBONISATION

Electricity mix

China is increasingly producing power from renewables, with solar and wind increasing fastest. Renewables now make up 27% of the power mix — equal to the G20 average. Hydro still contributes the largest share (17% of power generation). However, coal power is still increasing in absolute terms and makes up 65% of the power mix — one of the G20’s highest levels.

Decarbonisation rating: share of renewables compared to other G20 countries

5-year trend (2014-2019): Medium

Current year (2019): Medium

Source: own evaluation
**POLICY ASSESSMENT**

### Renewable energy in the power sector

China continues to lead the world in terms of additions of new wind and solar capacity, but installations have slowed in 2019, with a decline from 66 GW in 2018 to 56 GW in 2019, alongside a winding down and move towards phasing out subsidies and continued addition of coal-fired power capacity. The recently introduced Renewable Energy Obligation only sets targets for three years and is not incentivising the acceleration of investment over the long-term. The recently released draft Energy Law gives priority to renewable energy for development. After the COVID-19 lockdowns, the industry is projecting a 15-30% gain to 35-40 GW installed. Combined total wind and solar capacity additions in 2020 could climb 25% to around 70 GW.

*References: own evaluation, based on Standaert, 2019; Global Energy Monitor, 2020, Hove, 2020*

### Coal phase-out in the power sector

China has no phase-out plans for coal-fired power generation but aims to reduce its share in the total energy mix to less than 58% by 2020. In addition to lifting a two-year ban on new coal-fired power plant construction in 2018, China eased restrictions for future domestic coal plant construction in 2020. A nationwide carbon trading system is due to start in 2020 – coal power is the first industry to be included.

*References: own evaluation, based on Shearer, Yu and Nace, 2019; Global Energy Monitor, 2020*
TRANSPORT SECTOR

Emissions from energy used to transport people and goods

Transport emissions per capita are rising in China (23%, 2013-2018), and to stay within a 1.5°C limit, passenger and freight transport need to be decarbonised. **47% of passenger transport is by private car, and 47% of freight transport is by road,** with both sectors dominated by fossil fuels. Electric vehicle sales are increasing significantly, and public transport and bicycle use are developing fast.

Share in energy-related CO₂ emissions from transport sector

Source: Enerdata, 2020

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

Source: Rogelj et al., 2018

COMPATIBILITY

10% Direct emissions

1% Electricity-related emissions

1.5°C

STATUS OF DECARBONISATION

Transport energy mix

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

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

Electricity and biofuels make up only 4% of the energy mix in transport.

Transport emissions per capita excl. aviation (tCO₂/capita)

Decarbonisation rating: transport emissions compared to other G20 countries

5-year trend (2013-2018):

Current year (2018):

Source: own evaluation

Data for 2018. Sources: Enerdata, 2020; The World Bank, 2019

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

+23% China

+5.5% G20 average
Aviation emissions per capita
(tCO₂/capita)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>G20 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>0.08</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Data for 2017. Source: Enerdata, 2020

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

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>G20 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>+59.3%</td>
<td>+18.7%</td>
</tr>
</tbody>
</table>

Source: own evaluation

Decarbonisation rating: aviation emissions compared to other G20 countries

5-year trend (2012-2017): Very low
Current year (2017): High

Motorisation rate

135 Vehicles per 1,000 inhabitants (2018)

47% of the kilometres travelled is by car and there are 135 vehicles per 1,000 inhabitants in China.
Source: Vieweg et al., 2018

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Electric vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>4.48%</td>
</tr>
</tbody>
</table>

Data for 2018. Source: IEA, 2019

Freight transport (modal split in % of tonne-km)

<table>
<thead>
<tr>
<th>Year</th>
<th>Road</th>
<th>Rail</th>
<th>Pipeline</th>
<th>Inland waterways</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>47%</td>
<td>19%</td>
<td>4%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Data for 2015. Source: Vieweg et al., 2018

POLICY ASSESSMENT

Phase out fossil fuel cars

The government has no phase-out strategy for fossil fuel cars but a target of 5 million electric vehicles by 2020, and has raised the target from 20-25% new cars sold by 2025. A previously-considered target of 60% sales by 2035 was dropped, but pure electric cars are to become mainstream by 2035. Since 2018, China has required manufacturers to sell a minimum quota of zero-emission vehicles. The Chinese government has recently decided to extend current subsidies and support for electric vehicles (New Energy Vehicles), which were originally going to be phased out by the end of 2020, and has released goals for charging infrastructure support.


Phase out fossil fuel heavy-duty vehicles

As of 2020, Stage 3 fuel consumption reduction thresholds for new tractors, trucks and buses have been increased from the previous Stage 2 Standard. Reductions of 13.8-15.9% compared to the previous standard (2011-2014) will apply by mid 2021. A three-year plan adopted in 2018 aims to reduce the carbon intensity of the freight sector. China has no plan to reduce absolute emissions from the freight sector.

Reference: own evaluation, based on Transport Policy, 2020b

Modal shift in (ground) transport

China has no longer-term strategy for a modal shift but aims for public transport to represent 30% of motorised travel in urban centres by 2020. The 2011 Transit Metropolis Programme supports cities in improving their public transport systems, inter-modal integration, and transit-oriented developments. The length of metro lines has doubled since 2012, and more than 6,000 km are under construction. More than 30 cities in China have announced plans to electrify their bus and taxi fleets by 2022.

Reference: own evaluation
China’s direct building emissions – including heating, cooking – make up 5% of total CO₂ emissions. Per capita, building-related emissions are slightly above the G20 average and are increasing at a rapid rate. To stay within the 1.5°C limit, China needs to implement more stringent energy efficiency measures.

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

Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc).

Building-related emissions per capita are slightly above the G20 average. But in contrast to the G20 average, China’s emissions are increasing rapidly (34% from 2014-2019) compared with the G20 growth rate of 1.8%.


- **China**: +34.37%
- **G20 average**: +1.82%

Decarbonisation rating: building emissions compared to other G20 countries

- Current year (2019): Medium (Source: own evaluation)

Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc. In China, energy use per m² is in the lower range of the G20 countries.

**POLICY ASSESSMENT**

**Near zero energy new buildings**

In 2019, China established the Zero Energy Buildings Technology Standard. The aim is to increase the 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 are planned to be near zero energy (100% by 2025 would be 1.5°C compatible). China has mandatory energy efficiency codes for urban residential and commercial buildings.

**Renovation of existing buildings**

China has no strategy for retrofitting buildings. However, the central government makes large investments in renovation, provided through different funds, and plans to turn more than 60% of existing residential buildings in urban areas into energy-efficient buildings by 2020. China’s new Zero Energy Buildings Technology Standard focuses on new buildings and does not prioritise the retrofitting of existing buildings.

**Source:** Own evaluation
Industry-related direct emissions make up more than a quarter of energy-related CO₂ emissions in China. Emissions from this sector have almost tripled since 2000, but emissions intensity is falling faster than in other G20 countries.

Share in energy-related CO₂ emissions from industrial sector

- Direct emissions: 28%
- Electricity-related emissions: 28%

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

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

**Industry emissions intensity**

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>G20 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>(tCO₂e/USD2015 GVA)</td>
<td>1.49</td>
<td>0.71</td>
</tr>
</tbody>
</table>

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

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

- China: -28%
- G20 average: -12%

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

- 5-year trend (2011-2016): Very high
- Current year (2016): Very low

Source: own evaluation

**Carbon intensity of cement production**

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>World average</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kgCO₂/tonne product)</td>
<td>540</td>
<td>614</td>
</tr>
</tbody>
</table>


**Carbon intensity of steel production**

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>World average</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kgCO₂/tonne product)</td>
<td>1,840</td>
<td>1,900</td>
</tr>
</tbody>
</table>

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

Data for 2016. Sources: World Steel Association, 2018; CAT Decarbonisation Data Portal, 2020

POLICY ASSESSMENT

**Energy Efficiency**

Medium

China's policies include the 100, 1,000, 10,000 Programme as part of the 13th Five-Year Plan (2016-2020) forcing energy efficiency and waste energy recovery. China has mandatory energy audits and a mandate for energy managers, as well as incentives to introduce Energy Management systems.

Reference: own evaluation
In order to stay within the 1.5°C limit, China needs to make the land use and forest sector a net sink of emissions, e.g. by halting the expansion of residential areas and infrastructure development, and creating new forests.

Global deforestation needs to be halted and changed to net CO₂ removals by around 2030.

Source: Rogelj et al., 2018

**AGRICULTURE SECTOR**

Emissions from agriculture

China’s agricultural emissions come mainly from the use of synthetic fertilisers, livestock manure, and digestive processes from livestock (enteric fermentation). A 1.5°C pathway requires dietary shifts, increased organic farming, and less fertiliser use.

Global methane emissions (mainly enteric fermentation) need to decline to 10% by 2030 and to 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).

Source: Rogelj et al., 2018

**Emissions from agriculture (excluding energy)**

In China, the largest sources of GHG emissions in the agricultural sector are the use of synthetic fertilisers, livestock manure, and digestive processes from livestock (enteric fermentation). A shift to organic farming, more efficient use of fertilisers, and dietary changes could help reduce emissions.

Due to rounding, some graphs may sum to slightly above or below 100%.
MITIGATION: TARGETS AND AMBITION

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

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

<table>
<thead>
<tr>
<th>Targets</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To achieve the peaking of carbon dioxide emissions before 2030, and making best efforts to peak earlier</td>
<td>Actions specified in the following sectors: energy, industry, buildings, transport, forestry, waste</td>
</tr>
<tr>
<td>To lower carbon dioxide emissions per unit of GDP by 60% to 65% of the 2005 level by 2030</td>
<td></td>
</tr>
<tr>
<td>To increase non-fossil-fuel share of electricity to 20% by 2030</td>
<td></td>
</tr>
<tr>
<td>To increase forest stock volume by 4.5 billion cubic metres by 2030 compared to 2005</td>
<td></td>
</tr>
</tbody>
</table>

Climate Action Tracker (CAT) evaluation of NDC and actions

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

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

To peak emissions and rapidly decrease levels afterward as required by the Paris Agreement, China will need to strengthen its green policy measures – including furthering commitments to accelerate the penetration of renewable energy systems and electric vehicles, while reversing support for the coal industry. Post-COVID-19 recovery activities need to be less carbon-intensive, as China’s energy system is run primarily on fossil fuels.

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

TRANSPARENCY: FACILITATING AMBITION

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

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

NDC Transparency Check recommendations

For more visit www.climate-transparency.org/ndc-transparency-check

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

- Include information on sources of data used in quantifying the reference point(s)
- Provide details on domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner
- Provide assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to NDC
- Provide details on whether the NDC is considered to be fair

AMBITION: LONG-TERM STRATEGIES

<table>
<thead>
<tr>
<th>Status</th>
<th>2050 target</th>
<th>Interim steps</th>
<th>Sectoral targets</th>
<th>Net-Zero target</th>
</tr>
</thead>
<tbody>
<tr>
<td>In preparation</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

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.
3. FINANCE
MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

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


Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2050.

**FOSSIL FUEL SUBSIDIES**

Sources: I4CE, 2019; OECD, 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.


**COMPATIBILITY**

Source: Rogelj et al., 2018

China’s USD 7tn COVID-19 economic recovery plan is not focussed on climate change mitigation, but rather on stabilising employment through fossil fuel expansion, even though coal is not included in the package. Given the dominance of coal as an energy generation source, the government has chosen to double-down on coal investment, with a 250 GW of coal capacity currently planned or under development. This is a 21% increase from 2019. Local employment generation from coal plant construction is seen as a means to recover economically from the pandemic.

**CORONAVIRUS RECOVERY**

China’s USD 7tn COVID-19 economic recovery plan is not focussed on climate change mitigation, but rather on stabilising employment through fossil fuel expansion, even though coal is not included in the package. Given the dominance of coal as an energy generation source, the government has chosen to double-down on coal investment, with a 250 GW of coal capacity currently planned or under development. This is a 21% increase from 2019. Local employment generation from coal plant construction is seen as a means to recover economically from the pandemic.

Reference: Global Energy Monitor, 2020
**PUBLIC FINANCE**

Governments steer investments through their public finance institutions, including via development banks, both at home and overseas, and green investment banks. Developed G20 countries also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

**Public finance for fossil fuels**

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

*Source: Oil Change International, 2020*

**Provision of international public support**

(annual average 2017 and 2018)

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

<table>
<thead>
<tr>
<th>Bilateral, regional and other channels</th>
<th>Multilateral climate finance contributions</th>
<th>Core / General Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual average contribution</td>
<td></td>
<td>Annual average contribution:</td>
</tr>
<tr>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Theme of support: No data available

Theme of support: No data available

China is not listed in Annex II of the UNFCCC and is, therefore, not formally obliged to provide climate finance. Despite this, China continues to provide international public finance via the Global Environment Facility (GEF) Trust Fund. In its first Biennial Update Report (BUR) to the UNFCCC, China included a chapter on its south-south cooperation, though did not do so in its recent second BUR. While China may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Between 2016 and 2018, China was the G20 largest provider of public finance for fossil fuels – for both oil and gas, as well as coal – with USD 20.2bn a year for oil and gas, and USD 4.4bn for coal. This represents a dramatic increase in China’s support for fossil fuels compared to the previous period 2013 to 2015, when a yearly average of USD 15.1bn was provided to fossil fuels by Chinese public finance institutions. This increase was mostly driven by six multibillion-dollar loans from the China Development Bank for oil and gas projects in Brazil, Angola, and Russia.
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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Instruments</th>
<th>Objective</th>
<th>Under Discussion/implementation</th>
<th>None identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Financial Principles</td>
<td>n/a</td>
<td>This indicates political will and awareness of climate change impacts,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>showing where there is a general discussion about the need for aligning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>prudential and climate change objectives in the national financial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>architecture.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced supervisory review, risk</td>
<td>Climate risk disclosure requirements</td>
<td>Disclose the climate-related risks to which financial institutions are exposed</td>
<td>Mandatory</td>
<td>Voluntary</td>
</tr>
<tr>
<td>disclosure and market discipline</td>
<td>Climate-related risk assessment and climate stress-test</td>
<td>Evaluate the resilience of the financial sector to climate shocks</td>
<td>Under Discussion/implementation</td>
<td>None identified</td>
</tr>
<tr>
<td>Enhanced capital and liquidity</td>
<td>Liquidity instruments</td>
<td>Mitigate and prevent market illiquidity and maturity mismatch</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>requirements</td>
<td>Lending limits</td>
<td>Limit the concentration of carbon-intensive exposures</td>
<td>Mandatory</td>
<td>Voluntary</td>
</tr>
<tr>
<td></td>
<td>Differentiated reserve requirements</td>
<td>Limit misaligned incentives and channel credit to green sectors</td>
<td>Mandatory</td>
<td>Voluntary</td>
</tr>
</tbody>
</table>

The People’s Bank of China (PBoC) has released several mandatory and voluntary sustainable finance regulations, including a green credit Monitoring and Evaluation and Key Performance Indicators checklist (2014), green bond rules (2015) and Guidelines for Establishing the Green Financial System (2016), including the establishment of a mandatory environmental information disclosure system for all listed companies and bond issuers. The China Banking Regulatory Commission (CBRC) has also played a role in green financial policy, launching a green credit statistics system (2014). In 2018, the Guidelines for Establishing the Green Financial System were made concrete by the Asset Management Association of China’s Green Finance Guidelines, which clarify the definition, scope, and purpose of green investment activities in China. The PBoC is a founding member of the NGFS to share and advance practices on climate risk management in the financial sector and is a supporter of both the Sustainable Banking Network (SBN) and the TCFD. Since 2017, the PBoC has incorporated green finance into the macro-prudential assessment system, through positive incentives for commercial banks to increase their stock of green credit and boost green deposits to supplement green credit.

Nationally Determined Contribution (NDC): Finance

<table>
<thead>
<tr>
<th>Conditionality</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment needs</td>
<td>Not specified</td>
</tr>
<tr>
<td>Actions</td>
<td>Not mentioned</td>
</tr>
<tr>
<td>International market mechanisms</td>
<td>No contribution from international credits for the achievement of the target</td>
</tr>
</tbody>
</table>
For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2020

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

2 The 1.5°C fair-share ranges for 2030 and 2050 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with 1.5°C ‘fair-share’ ranges reaching below zero, particularly between 2030 and 2050, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions reduction efforts via, for example, international finance. On a global scale, negative emissions technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions. The CAT’s evaluation of NDCs shows the resulting temperature outcomes if all other governments were to put forward emissions reduction commitments with the same relative ambition level. 3 In order to maintain comparability across all countries, this report utilises the PRIMAP year of 2017. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories.

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

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

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

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).

### BIBLIOGRAPHY


For more information on the country profile for China, please contact: Beijing University of Technology Jiang Kejun, kjiang@eri.org.cn