

**CHINA AND THE UNITED STATES
FIND COMMON GROUND ON
CLIMATE COOPERATION**

CHEN Gang

EAI Background Brief No. 1587

Date of Publication: 6 May 2021

Executive Summary

1. The United States and China have committed to cooperate on tackling the climate crisis despite rising tensions between the two powers.
2. On 22 April 2021, Chinese President Xi Jinping delivered an address at a virtual climate change summit hosted by US President Joe Biden after US Special Presidential Envoy for Climate John Kerry visited Shanghai and met China Special Envoy for Climate Change Xie Zhenhua.
3. A joint statement released by the two special envoys demonstrates that climate change could be a rare area of collaboration for the two superpowers in a strained relationship.
4. This collaboration may open up a continuous bilateral dialogue to formulate concrete action between the two countries, boding well for the November 2021 UN climate summit (COP26) in Glasgow.
5. The United States and China have pledged to achieve carbon neutrality by 2050 and 2060 respectively, an essential development for the Paris Agreement's goal of limiting global warming preferably to 1.5°C compared to pre-industrial levels.
6. The two powers had close cooperation in this area during President Barack Obama's time and was disrupted by the Trump administration's suppression of climate science and abandonment of global cooperation on climate action.
7. During Xi's state visit to the United States between 22 and 28 September 2015, Obama and Xi signed a joint presidential statement on climate change.
8. At the bilateral level, China and the United States jointly held the first session of the US-China Climate-Smart/Low Carbon Cities Summit in Los Angeles in September 2015 and the second session in Beijing in June 2016.

9. The then US Secretary of State John F Kerry delivered a keynote address at the second summit, as did then China's State Councillor Yang Jiechi. The summit registered an attendance of over 1,000 participants, including Xie Zhenhua, leaders from 49 Chinese cities and provinces and 17 US cities, states and counties.
10. Climate change is not only an environmental challenge for China, but also a good opportunity for it to address its serious energy shortage problem caused by growing demand, inefficient use and limited fossil fuel reserves.

CHINA AND THE UNITED STATES FIND COMMON GROUND ON CLIMATE COOPERATION

CHEN Gang*

Commitment to Climate Change Cooperation Despite Strained Ties

- 1.1 The United States and China “committed to cooperating with each other”¹ to tackle the climate crisis despite rising tensions between the two powers. On 22 April 2021, Chinese President Xi Jinping attended and addressed a virtual climate change summit hosted by US President Joe Biden after US Special Presidential Envoy for Climate John Kerry visited Shanghai and met China Special Envoy for Climate Change Xie Zhenhua.
- 1.2 The Shanghai meeting concluded with the two Special Envoys releasing a joint statement on climate change cooperation² to tackle the climate crisis, particularly, enhancing respective actions and cooperating in multilateral processes, such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.
- 1.3 The two sides recalled the Paris Agreement’s aim to suppress global average temperature increase to well below 2°C and to channel efforts to limiting it to 1.5°C through enhanced climate actions and cooperation on identifying and addressing related challenges and opportunities.
- 1.4 Both the United States and China share the Summit’s goal of raising global climate ambition on mitigation, adaptation and support on the road to COP 26 in Glasgow. They also hope to develop by the November 2021 COP (Conference of the Parties

* Chen Gang is Assistant Director and Senior Research Fellow at the East Asian Institute, National University of Singapore.

¹ US Department of State, “U.S.-China Joint Statement Addressing the Climate Crisis”, <https://www.state.gov/u-s-china-joint-statement-addressing-the-climate-crisis/>, accessed 22 April 2021.

² Ibid.

to the UNFCCC) 26 in Glasgow, their respective long-term strategies aimed at net zero GHG emissions/carbon neutrality.

- 1.5 The two countries set their sight on taking appropriate actions to maximise international investment and finance in support of the transition from carbon-intensive fossil fuel-based energy to green, low-carbon and renewable energy in developing countries. In this connection, they will each implement a phasedown of hydrofluorocarbon production and consumption reflected in the Kigali Amendment to the Montreal Protocol.
- 1.6 The United States and China have also promised to continue the discussion, in preparation of the COP 26 and beyond, on concrete actions to be taken in the 2020s to reduce emissions in accordance with the Paris Agreement-aligned temperature limit. Measures include policies and technologies to decarbonise industry and power through a circular economy; ensuring energy storage and grid reliability; enhancing CCUS (carbon capture, utilisation and storage) and green hydrogen capability; increasing deployment of renewable energy; promoting green and climate resilient agriculture, energy efficient buildings and green, low-carbon transportation; and cooperation on addressing emissions of methane and other non-CO₂ greenhouse gases and emissions from international civil aviation and maritime activities. Other near-term policies and measures include reducing emissions from coal, oil and gas. They will also further cooperation on promoting a successful COP 15 of the Convention on Biological Diversity in Kunming, China.
- 1.7 The joint statement demonstrates that climate change could be a rare area of collaboration for the two superpowers in a strained relationship. Washington has been highly critical of Beijing's assertive policies on Taiwan and the South China Sea and over its approach to human rights in Hong Kong and Xinjiang. The United States and China still have unresolved trade and technology disputes, with both countries imposing punitive tariffs upon each other's exports.
- 1.8 A pathway may now be open for the two countries to engage in continuous bilateral dialogue in the formulation of concrete actions, boding well for the upcoming UN

climate summit (COP26) in Glasgow in November.³ Both the United States and China have pledged to achieve carbon neutrality by 2050 and 2060 respectively, which was deemed essential for the Paris Agreement's goal of limiting global warming preferably to 1.5°C compared to pre-industrial levels.

- 1.9 As a Democrat, Joe Biden drew a sharp line between his climate change policy and that of his republican predecessor, Donald Trump, bringing the United States back to the Paris Agreement and planning for global leadership in global climate politics. As vice president of the Barack Obama administration (2009-2017), Biden played a role in Obama and Xi Jinping's signing of a joint presidential statement on climate change in the United States in September 2015.⁴
- 1.10 During the virtual climate summit, Xi repeated previous goals China had set without announcing any new climate change policy. Xi first announced China's carbon neutrality target by 2060 in a speech at the United Nations general assembly in September 2020, on top of the world's largest emitter's existing commitment to peaking emissions before 2030. This indicated that China still views the United Nations as the formal venue for the country's climate diplomacy.
- 1.11 The two countries, however, did not establish a dedicated US-China working group on climate change, a suggestion raised by Chinese diplomats during bilateral talks in Anchorage in March 2021, an indication of limits in the two countries' pursuit of a common ground due to conflicts on multiple fronts.

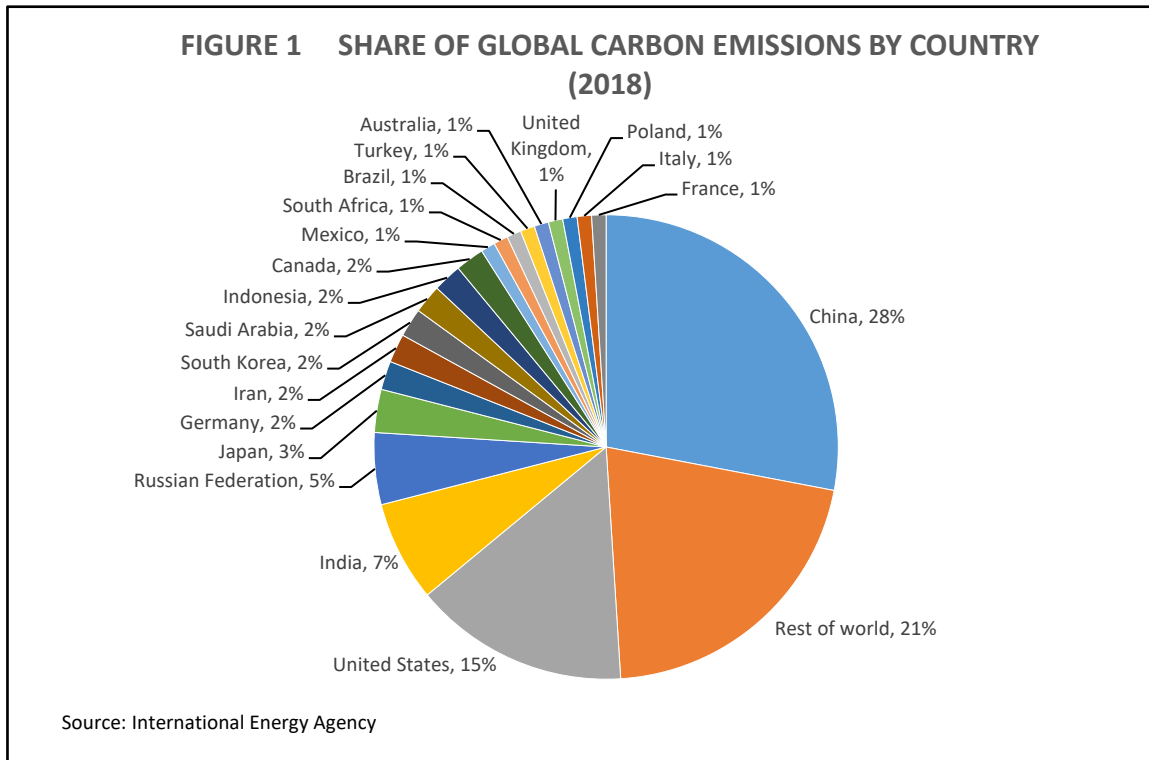
US-China Climate Cooperation During the Obama Administration

- 2.1 Accounting for more than 40% of global greenhouse-gas emissions (Figure 1), China and the United States are the two largest carbon emitters that are under global scrutiny for implementation of the Paris Agreement. China contributed about 28%

³ "Commentary: Cooperation between US, China at global climate summit could yield significant benefits," <https://www.channelnewsasia.com/news/commentary/us-china-biden-climate-change-summit-net-zero-carbon-emissions-14665376>, accessed 23 April.

⁴ For details of this joint climate statement, please refer to Chen Gang and Wu Dan, "China enhances low carbon cooperation with the United States", *EAI Background Brief*, No. 1075, 12 November 2015.

of the world's total emissions, which was about 13 percentage points higher than that of the United States (Figure 1).



2.2 China and America, dubbed the G-2 in global governance, have been at odds for years over the climate issue, using the inaction of its counterpart as an excuse for not capping its own domestic emissions. The two giants' acceptance of carbon neutrality targets by mid-century is vital for the implementation of the Paris Agreement that aims to keep global temperature increase within 1.5°C from the pre-industrial level by 2100.

2.3 The two powers had close cooperation in this area during the Obama administration, but the cooperation was cut by the Trump administration's suppression of climate science and abandonment of global cooperation on climate action. The two governments had signed a number of documents on clean energy and emission cutting cooperation⁵ since the Copenhagen climate change summit in 2009 until Trump came to power.

⁵ Chen Gang and Wu Dan, "China enhances low carbon cooperation with the United States", pp. 4-5.

- 2.4 At the bilateral level, China and the United States jointly held the first session of the US-China Climate-Smart/Low Carbon Cities Summit in Los Angeles from 15 to 16 September 2015, and the second session in Beijing from 7 to 8 June 2016.⁶ The then US Secretary of State John F Kerry and then China's State Councillor Yang Jiechi each delivered a keynote address at the second summit. The two leaders highlighted the importance of climate change cooperation as a key pillar of the US-China bilateral relationship and the vital role of the two countries in achieving the successful adoption of the Paris Agreement at COP 21 in Paris.⁷
- 2.5 The Second US-China Climate-Smart/Low Carbon Cities Summit in 2016 was attended by over 1,000 people, including China Special Envoy for Climate Change Xie Zhenhua, leaders from 49 Chinese cities and provinces and 17 US cities, states and counties. Sixty-six more municipal leaders from the two countries have endorsed the US-China Climate Leaders Declaration, pushing the total to 77. Endorsers of the Declaration launched at the inaugural summit in Los Angeles in 2015 declared their intention to take four actions: establish ambitious climate targets, regularly report on greenhouse gas emissions, formulate climate action plans and expand bilateral cooperation (see Table 1 for list of MOUs signed in 2016).⁸

**TABLE 1 MEMORANDA OF UNDERSTANDING AND ARRANGEMENTS
MADE BETWEEN THE UNITED STATES AND CHINA, 2016**

1.	The Compact of Mayors, the world's largest coalition of city leaders addressing climate change, partnered China's Alliance of Peaking Pioneer Cities to jointly take enhanced actions to mitigate carbon emissions, reinforce climate resilience and strengthen cooperation.
2.	The cities of Los Angeles and Lanzhou agreed to carry out exchanges and enhance cooperation in areas including clean energy, low-carbon transport and climate-smart buildings.
3.	Beijing Municipal Commission of Development and Reform and California Governor's Office made a deal to share best practices in areas including clean energy, carbon emissions trading, low-carbon transportation and smart grid technologies.
4.	The California Environmental Protection Agency and Beijing Municipal Environmental Protection Bureau concurred to renew and strengthen cooperation in the areas of air quality management, water management and services, solid waste management and recycling, and capacity building and public education.
5.	The C40 Cities Climate Leadership Group and WRI China were in agreement to support the cities of Wuhan and Shenzhen in developing citywide greenhouse gas emission inventories following the UN-recognised and globally applied GPC standard, as well as identifying potential peak emissions pathways.

⁶ US Department of State, "Second U.S.-China Climate-Smart/Low-Carbon Cities Summit", <https://2009-2017.state.gov/secretary/remarks/2016/06/258168.htm>, accessed 24 April 2021.

⁷ Ibid.

⁸ Ibid.

6.	The Institute for Sustainable Communities (ISC) and the Development and Reform Commission of Hunan province collaborated on developing a low-carbon action plan for the city cluster of Changsha, Zhuzhou and Xiangtan; the ISC, National Centre for Climate Change Strategy and International Cooperation and Development and Reform Commission of Qingdao agreed to provide capacity building assistance to the Qingdao city in support of its climate mitigation and adaptation goals.
7.	The Lawrence Berkeley National Laboratory and Chinese research institutes signed two MOUs, one with the Guangzhou Institute of Energy Conversion in the fields of low carbon cities and smart grids, and the other with the Energy Research Institute of China's National Development and Reform Commission in the fields of energy efficiency and low-carbon development.
8.	General Electric and Huadian Power International Co. invested in over \$300 million in two distributed power projects in Shunde and Sanhui cities.
9.	PowerFlame and the Beijing Municipal Environmental Protection Bureau undertook a feasibility study and pilot project, supported by the US Trade and Development Agency to evaluate and demonstrate US burner technologies to reduce nitrogen oxides at several different gas-fired boiler pilot sites in Beijing.
10.	OSIsoft was on a pilot project to provide technical assistance on smart grid substation communication architecture to the China Electric Power Research Institute, a subsidiary research institute of the State Grid Corporation of China, under a grant from the US Trade and Development Agency.
11.	Caterpillar and Shanghai Lingang Economic Development Co. conducted a joint research to develop the remanufacturing industry and its contribution to the circular economy.
12.	The US-China Energy Cooperation Programme undertook new low-carbon development projects in Haidong and Zhenjiang, as well as established a new partnership on low-carbon, sustainable infrastructure with the National New Zone for Green Development Alliance and China Chamber of Commerce for Import and Export of Machinery and Electronic Products.
13.	Eaton Corporation and Guangzhou Power Supply Co. Ltd. collaborated on a new micro grid project in the city of Nansha.
14.	A memorandum of understanding was signed by the Energy Foundation to assist the city of Guangzhou in achieving its 2020 peaking goal through cooperation in areas such as medium- and long-term roadmapping, sustainable and intelligent transportation, renewable energy supply, and smart grid.
15.	World Resources Institute worked with the city of Chengdu in areas such as greenhouse gas emissions accounting, development of an emissions peaking roadmap, and identification of emission reduction projects.
16.	Rocky Mountain Institute was in partnership with the Lanzhou Environment Energy Exchange to work on sustainable urban development issues including city peaking plan implementation, energy-efficient industry and low-carbon construction.
17.	The Natural Resources Defence Council announced its provision of expert, technical and financial assistance to the city of Wuhan in support of its low-carbon development goals.
18.	The City of Philadelphia Commerce Department, China Partnership of Greater Philadelphia and Greater Waukegan Development Coalition entered into a partnership with the Tianjin Economic-Technological Development Area to expand green business and trade opportunities in the United States and China.
19.	The Utah Sustainability Commission and China Minsheng New Energy Corporation agreed to promote business opportunities in areas including micro grid and solar technology development. ⁹

Source: US Department of State, "Second U.S.-China Climate-Smart/Low-Carbon Cities Summit", <https://2009-2017.state.gov/secretary/remarks/2016/06/258168.htm>, accessed 24 April 2021.

2.6 Based on the agreement to cooperate on carbon, utilisation and storage in November 2014, the two countries have identified a project site operated by Shan'xi Yanchang

⁹ Ibid.

Petroleum Corporation in Yan'an-Yulin in Shan'xi province.¹⁰ On financial assistance for developing countries to combat climate change, China announced a new financial commitment of RMB20 billion (US\$3.1 billion) to establish the South-South Cooperation Fund on Climate Change

Impact of Carbon Neutrality Pledge on China's Energy Policy Priorities

- 3.1 As the world's largest energy consumer, China accounts for about 24% of global energy consumption, or an almost 3.3 billion tonnes of oil in 2019. Since 2011, it has burnt more coal than all other countries combined.¹¹ China also remained as the world's top crude oil importer, surpassing the United States in 2017, and largest natural gas importer, overtaking Japan in 2018.¹²
- 3.2 Alongside China's devouring appetite for conventional fossil fuels, the country has been quickly building up capacities of non-fossil fuels including hydro, nuclear, wind and solar power in a carbon-constrained new normal where emissions of greenhouse gases can no longer be assumed to be costless. China has been formulating the world's most ambitious policies and investing heavily in the construction of new hydropower and nuclear plants, in addition to its impressive input in emerging renewable energies as wind and solar power. Between 2012 and 2017, all the low-carbon power sectors experienced fast development, with the shares of wind, nuclear and solar in total installed capacity edging up substantially, mainly at the cost of coal-burning thermal power.
- 3.3 Between 2012 and 2017, China's installed capacity of hydropower and on-grid wind power increased from 248.9 GW (gigawatts) and 60.8 GW to 341.2 GW and 163.7 GW respectively, or 19% and 9% of China's total installed capacity, while solar and nuclear power grew from a respective 3.3 GW and 12.6 GW to 130.3 GW and 35.8

¹⁰ Chen Gang and Wu Dan, "China enhances low carbon cooperation with the United States", p. 4.

¹¹ "China's plan to cut coal and boost green growth", <https://www.nature.com/articles/d41586-020-02464-5>, accessed 29 October 2020.

¹² <https://www.reuters.com/article/china-japan-lng-idUSL4N1XN3LO>, accessed 29 October 2020.

GW, making up 8% and 2% of the total capacity.¹³ China has become the world's largest developer of hydropower, wind power and solar power, and now with new carbon neutrality target pledged by the Chinese leaders in the international arena, hydropower and nuclear power, together with renewables such as wind, solar, biomass and geothermal energy, will be boosted at full speed in a zero-carbon scenario.

- 3.4 China will mostly rely on wind, solar and nuclear power in its energy mix by 2060, while significantly reducing the consumption of coal, oil and natural gas by a respective 96%, 65%, and 75% between 2025 and 2060. China has to increase the consumption of wind, solar and nuclear power by 346%, 587% and 382% respectively during this period, as compared to a modest growth of 50% for hydropower and 100% for biomass.¹⁴
- 3.5 Considering the exorbitant costs and risks involved in developing low carbon energy, China's all-out promotion of non-fossil fuels has been closely related to the government's robust support for and heavy subsidies to the emerging low-carbon electricity industry. Both hydro and nuclear power projects are environmentally risky and need considerable front-loaded investment. Wind and solar power projects are capital-intensive as well, despite negligible fuel costs. In addition, wind and solar power generation can vary greatly in different timescales, and therefore pose substantial challenges to incorporating electrical generation into grid systems, which could in turn increase costs for energy demand management, load-shedding, storage solutions and system interconnection. In promoting the production of low-carbon alternatives, the Chinese government has taken a differentiated approach to supporting policies, with variations in targeted growth scopes in mid- and long-term plans, which is profoundly changing the electricity generation market's existing structure and the country's energy mix dominated by coal burning.

¹³ China Electricity Council, "China's installed power capacity increases 7.6 per cent in 2017" (2017 quanguo fadian zhuangji rongliang zengzhang 7.6%), <http://www.cec.org.cn/nengyuanyudianlitongji/hangyetongji/dianlixingyeshuju/2018-03-02/178238.html>, accessed 10 April 2020.

¹⁴ Bert Hofman, "China has a plan for that", EAI Commentary, No. 20, <https://research.nus.edu.sg/eai/wp-content/uploads/sites/2/2020/10/EAIC-20-20201020.pdf>, accessed 29 April 2021.

- 3.6 As all these four non-fossil fuel sectors are heavily reliant on the government's supportive policies, the competition for favourable policy targets and fiscal support will be extremely intense in the carbon neutrality scenario besides their existing contests with coal-fired thermal power in China's electricity market. Although non-fossil fuels are on track to become winners as a whole vis-à-vis hydrocarbons, they will still witness broadly different growth trajectories among them, which will result in significant redistribution of their proportions in China's energy market.
- 3.7 China's ambition of developing renewable energy is challenged by the imbalanced geographic distribution of these energies. While China's bountiful hydroelectric resources are mostly located in the southwest, its wind and solar resources are concentrated in the vast but sparsely populated northwestern and northern areas; this exacerbates the situation of imbalanced distribution of fossil fuel resources as the economically vibrant coastal area in the east has high energy demand but is constantly afflicted with energy shortages.
- 3.8 The overconcentration of conventional coal, hydroelectricity, and emerging wind and solar resources in the western part of China has aggravated the heated competition among various energy sectors, imposing enormous pressure on the country's transmission networks. As a result, China's renewable energy development is characterised by huge wastages and overcapacity in the northwestern and northern provinces, with the world's worst curtailment rates amidst excessive investment powered by massive government subsidies. If China cannot effectively handle the geographic mismatch between the resource-rich but less-developed hinterland and voracious energy demand in the resource-less coastal areas, the carbon neutrality ambition could end up with huge inefficiency and overcapacity in wind and solar power projects.
- 3.9 China will have to develop more off-shore windmills and solar photovoltaics (PV) projects in eastern China to meet the coastal areas' expanding energy appetite. Moreover, state grid companies need to invest more in smart grid construction to meet the need for connecting intermittent wind and solar power generation to the grid. China's investment in grid construction in the 14th Five-Year Plan (FYP,

2021-25) is expected to exceed RMB6 trillion (US\$920 billion) to ensure that 95% of the hydropower, wind and solar power capacity can be utilised.¹⁵

Is Net Zero Emissions Possible?

- 4.1 Net zero emission means that all man-made greenhouse gas emissions must be removed from the atmosphere through reduction measures, thus reducing the Earth's net climate balance, after removal via natural and artificial sink to zero.¹⁶ Renewables will have to make up the bulk of the energy infrastructure by 2060, alongside with nuclear. Since hydrocarbon sources cannot be fully done away with, even by 2060, carbon capture will have to play its role.¹⁷
- 4.2 Achieving this goal will require technical progress in a whole range of fields, including promulgation of renewable energy technology, high voltage power transmission, storage, hydrogen production and distribution, new materials and more. Tsinghua experts estimate that the carbon neutral plan will require some US\$15 trillion in investment for the coming 30 years, which will be about 15% of cumulative gross domestic product for the 14th FYP.¹⁸ Since the 14th FYP is the first FYP after the announcement of the carbon neutrality goal, China has room to roll out more aggressive policies to boost renewables and invest enormously in the low-carbon and energy-saving sectors to turn around the still-growing carbon emissions.
- 4.3 Aside from technology and investment, China also needs institutional changes like the establishment of a mature carbon emission trading market, formulation of stringent environmental regulations that forestall the approval of new coal-fired power stations and evaluation of local officials' performances according to their achievement in emission control.

¹⁵ <https://www.yicai.com/news/100794157.html>, accessed 28 December 2020.

¹⁶ [https://www.myclimate.org/information/faq/faq-detail/what-does-net-zero-emissions-mean/#:~:text=Net%20zero%20emission%20means%20that,emissions%3F\)%2C%20to%20zero](https://www.myclimate.org/information/faq/faq-detail/what-does-net-zero-emissions-mean/#:~:text=Net%20zero%20emission%20means%20that,emissions%3F)%2C%20to%20zero), accessed 5 May 2021.

¹⁷ Bert Hofman, "China has a plan for that", EAI Commentary, No. 20, <https://research.nus.edu.sg/eai/wp-content/uploads/sites/2/2020/10/EAIC-20-20201020.pdf>, accessed 29 April 2021.

¹⁸ Ibid.

- 4.4 Net zero carbon target is a crucial part of Xi's ecological protection task. At the closing ceremony of the annual session of the National People's Congress in 2018, Xi vowed to build a beautiful China where the skies are bluer, the land is greener and the waters are clearer. Climate change is not only an environmental challenge for China, but also a good opportunity to address the country's serious energy shortage problem caused by growing demand, inefficient use and limited fossil fuel reserves. The relationship between economic growth and energy utilisation matters greatly not only from an emissions perspective, but from an energy security perspective as well.
- 4.5 According to World Bank data, China's carbon emissions per PPP \$ of GDP, namely, carbon intensity, is still much higher than the world's average, and especially OECD countries.¹⁹ Changes in carbon intensity can arise from technological changes and through structural changes in the economy, for instance, a move from heavy industry to a service economy. Recent achievement in reducing energy and carbon intensity was in part related to the country's "supply side" reform under Xi's leadership, which had shut down numerous highly polluting factories and eliminated excessive capacities in steel, coal and other heavy industries across the country. To peak its emissions by 2030 and achieve the carbon neutrality target by 2060, China has to continue to achieve technological breakthrough in low-carbon sectors and make the economic structural shift from manufacturing to service industry.
- 4.6 China is not alone in announcing the target of net-zero CO₂ emissions. Many economies including the United States, European Union, Japan, South Korea, Canada, Brazil and Argentina have committed to carbon neutrality by 2050. Since carbon neutrality by mid-21st century is essential for the Paris Agreement's goal of limiting global warming preferably to 1.5°C compared to pre-industrial levels,²⁰ over 100 signatories to the Paris Agreement are actively discussing achieving that goal by 2050.

¹⁹ <https://data.worldbank.org/indicator/EN.ATM.CO2E.PP.GD.KD?end=2016&start=1990&view=chart>, accessed 29 December 2020.

²⁰ "The Paris Agreement", <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>, accessed 29 December 2020.

- 4.7 China's active participation in international climate change cooperation has much to do with its concern for preserving a favourable international image as a "responsible major power". Enhancing China's international image and elevating its international stature are important Chinese foreign policy goals. In Xi's time, Beijing has been consistent in moving in to fill gaps left by the United States. China regards climate change issue as an important opportunity to display global leadership and project soft power, especially after the US withdrawal from the Paris Agreement under President Donald Trump.
- 4.8 International climate change politics since its beginning has been a finger-pointing game, in which China often finds itself in the eye of the storm, either being blamed for irresponsibility or leading accusations that rich nations are trying to sabotage climate talks. China's carbon neutrality pledge implies that the country is ready to accept costly international obligations in exchange for leadership in global governance.