ASSESSMENT OF SUBNATIONAL AND NON-STATE CLIMATE ACTION

CHINA

September 2019

NEW CLIMATE INSTITUTE
DATA DRIVEN ENVIROLAB
PBL Netherlands Environmental Assessment Agency
d·i·e Deutsches Institut für Entwicklungspolitik
German Development Institute
BLAVATNIK SCHOOL OF GOVERNMENT
UNIVERSITY OF OXFORD

China

COUNTRY CONTEXT

China's climate change record is mixed. Although it leads the world in terms of renewable energy capacity, recent trends in carbon emissions tell a less optimistic story. China's 3.3% rise in energy consumption led to both an increase in national – and global – carbon dioxide (CO_2) emissions, after a levelling out period between 2014 and 2016 (Climate Action Tracker, 2019a; National Bureau of Statistics of China, 2019). The recent increase in greenhouse gas (GHG) emissions could be partially explained as a result of slowing economic growth, which prompted the country to stimulate production in emission-intensive industries, including new construction of 28 GW worth of coal-fired power plants in 2018. While China has lifted its ban on new coal-fired power plants, it still leads the world in clean energy investment, accounting for 32% of the global total (REN21, 2019) and contributing more than $100 billion USD in 2018 (BNEF, 2019). In 2017, China's carbon intensity declined by 46% relative to 2005 levels, surpassing the 40% to 45% intensity reduction target laid out in the National Climate Change Plan (2014–2020) (People's Republic of China, 2014).

In its nationally determined contribution (NDC), China has pledged to peak CO_2 emissions before 2030, to achieve a 20% share of non-fossil fuel energy sources in total primary energy consumption by 2030, and to reduce the carbon intensity of its GDP by 60% to 65% compared to 2005 levels. Overall, China is on track to meet its NDC as shown in Figure 1 (top panel), through existing policies, such as reducing the carbon intensity of economic production, improving energy efficiency, an up-and-running emissions trading system, as well as air pollution regulations (Kuramochi et al., 2018; den Elzen et al., 2019).

INTERACTIONS BETWEEN THE NATIONAL GOVERNMENT AND SUBNATIONAL AND NON-STATE CLIMATE ACTORS

China's comparatively "state-controlled, top-down" political system (Westman and Broto, 2018) has created a climate governance structure characterised by "central authority and decentralised policy implementation" (Hsu, 2019). In other words, the national government delegates the implementation of its wide-ranging energy and climate policies to local governments and businesses (Hale et al., 2018). Cities and regions also serve as important testing grounds as the national government sets targets and develops plans. For instance, seven cities and provinces piloted an emissions trading system before its national rollout in December 2017. Since 2010, China's National Development and Reform Commission (NDRC) has shortlisted 81 cities and six provinces as low-carbon pilots (Ministry of Ecology and Environment of China, 2018). In many cases, the pilot program serves as a new avenue for cities and the national governments to work together directly.

Financial benefits and technology transfer generated through the Clean Development Mechanism first motivated provincial and municipal governments to engage on climate change outside of central government mandates (Qi and Wu, 2013). Since then, local governments have been assigned greater responsibility to implement energy and climate policy. Sustainability-focused partnerships between state, market, and civil society actors also help facilitate local climate action by increasing access to information, technology, funding and other resources (Westman and Broto, 2018). A recent survey found approximately 150 of these partnerships operating within 15 Chinese cities (Westman and Broto, 2018).

Chinese cities and provinces' Five-Year Plans reflect national goals to reduce energy and carbon intensity and increase the share of renewable energy. Many also introduce their own low-carbon development practices, establishing carbon peaking targets or setting caps on carbon dioxide emissions. According to China's Climate Policies and Actions 2018 Annual Report, GHG inventorying mechanisms have been established in cities like Hangzhou, Ningbo, Wenzhou and Jiaxing at both the city and the county level (Ministry of Ecology and the Environment, 2018). However, these sub-national actors do not necessarily participate actively in international networks or disclose inventory emissions.

Companies are also actively engaged in climate action. The private sector has taken on a growing role in developing sustainable infrastructure (Westman and Broto, 2018), in part to supply the housing, transportation, and energy needed to sustain China's rapid urban development (Thieriot and Dominguez, 2015). As the government works to step up enforcement of environmental regulations and encourage the spread of renewable energy, a growing proportion of Chinese companies are incorporating climate change into their strategy and operations, and taking steps to control emissions (CDP, 2019a). China currently leads the world in terms of the number of jobs – 4.1 million in 2018 – generated by the renewable energy industry (REN21, 2019). The China Business Climate Action Initiative, which encourages businesses and industries to incorporate climate change into their corporate social responsibility and overall strategies, launched during the 2018 Global Climate Action Summit and includes roughly 800,000 participating entities, from industry associations like the China Chain-Store & Franchise Association and China Textile Industry Federation (Xie, 2018; Xin, 2018).

COMPARING SUBNATIONAL AND NON-STATE TRAJECTORY WITH NATIONAL TRAJECTORY

The assessment includes 27 cities, representing more than 191 million people, and 2 regions, representing a population of over 90 million, that have made quantifiable commitments to reduce GHG emissions.[1] It also includes more than 550 companies, controlling over $410 billion USD in revenue[2] – and including 14 of the world's largest companies[3] – that have made quantifiable climate commitments, most frequently in the electrical and electronic equipment and powered machinery sectors.

Together, these cities, regions, and companies represent 1,400 $MtCO_2$/year in 2015, accounting for overlap between actors. Individual city, region, and company commitments could have a moderate impact on national GHG emissions. If fully implemented and if such efforts do not decrease efforts elsewhere, they would reduce emissions in 2030 by up to 50 $MtCO_2e$/year, beyond the projected emissions under current national policies – an amount roughly equivalent to less than 0.5% of China's current GHG emissions (Figure 1, top panel).

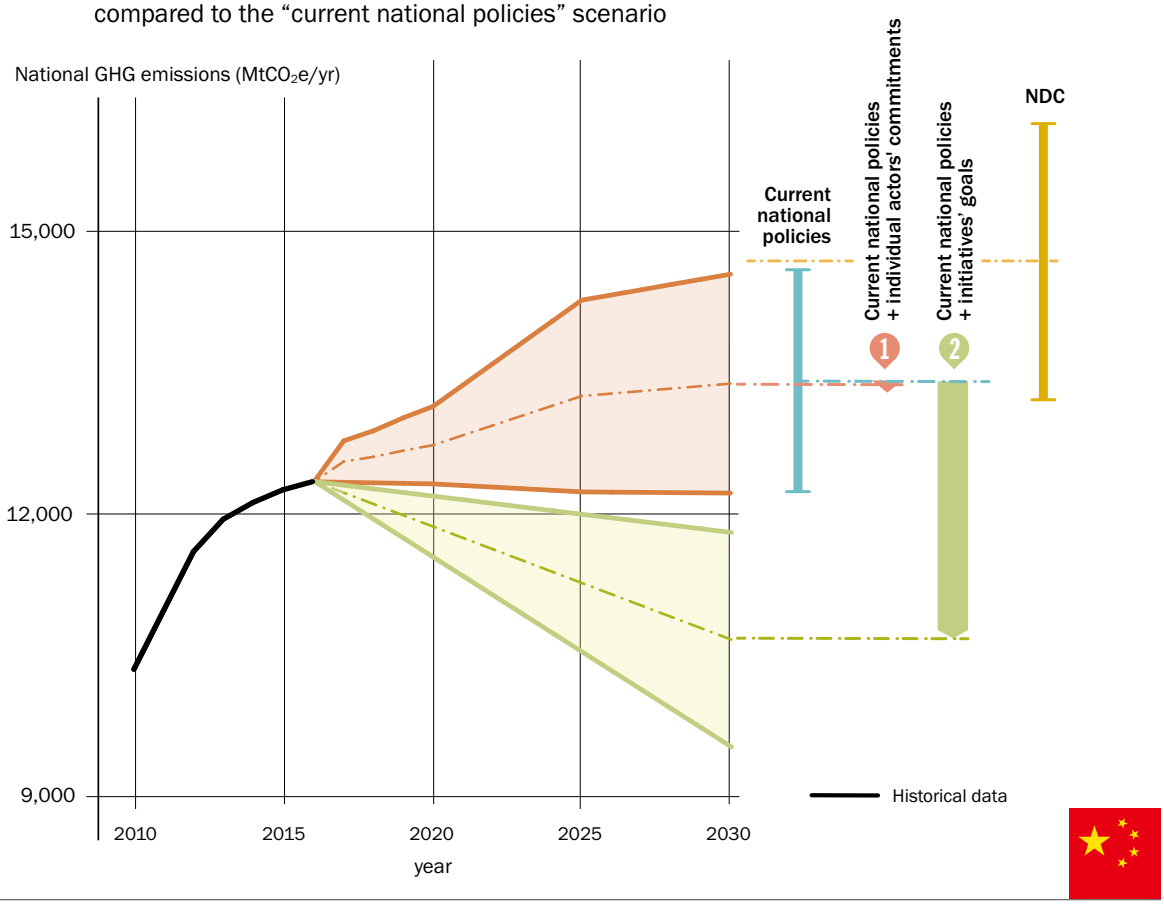
By contrast, international cooperative initiatives (ICIs) – networks of cities, regions, companies, investors, civil society, and, in some cases, countries, pursuing common climate action – could have a significantly larger impact. Assuming full realisation of the pledges, they could reduce emissions in 2030 by 2,700 to 2,800 $MtCO_2e$/year or 19% to 22% below the projected emissions under current national policies. Initiatives focused on cities and regions are by far the largest contributors to this estimated mitigation potential, followed by initiatives addressing non-CO_2 GHGs and energy efficiency (Figure 1, bottom-right panel). These initiatives' success could enable China to achieve more than what it has promised in its NDC.

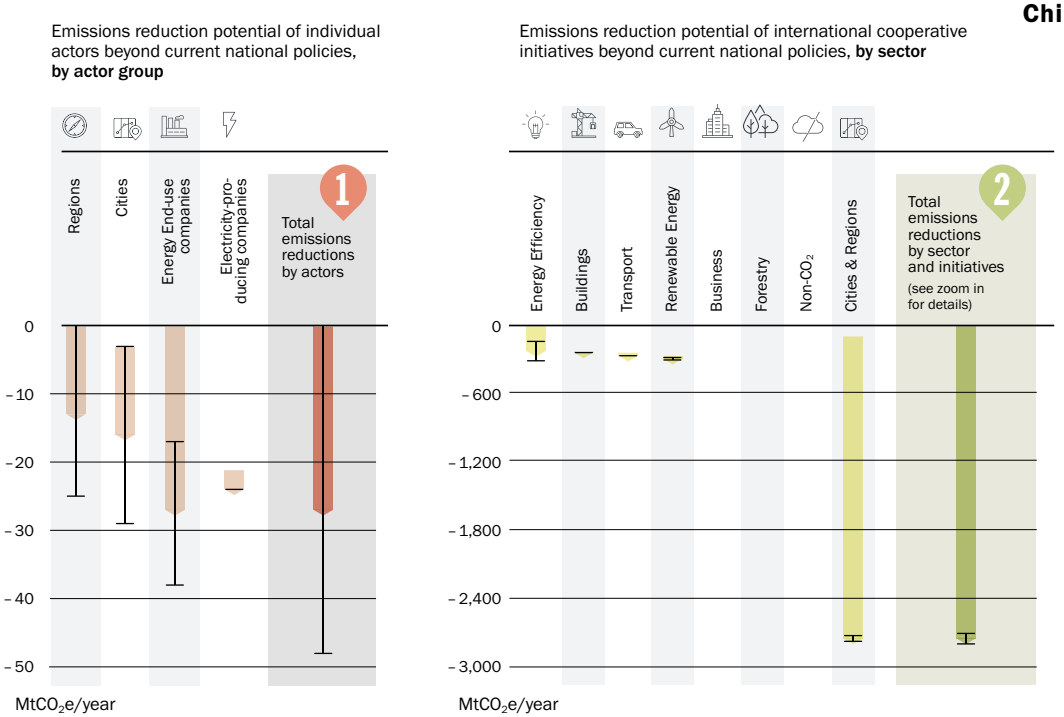
1 Quantifiable commitments to reduce GHG emissions typically include a specific emissions reduction goal, target year, baseline year, and baseline year emissions. See Technical Annex I for more details.

2 Companies' combined revenue reflects companies making quantifiable commitments to reduce GHG emissions, whose headquarters are in China, and whose revenue data is publicly available. See Technical Annex I for more details.

3 The world's largest companies are defined in terms of their inclusion in the 2019 Forbes 2000 and Global Fortune 500 lists.

Figure 1. Potential greenhouse gas (GHG) emissions reductions in China resulting from the full implementation of individual subnational and non-state actor commitments and the full implementation of international cooperative initiatives (ICIs)' goals compared to the "current national policies" scenario





The „current national policies" scenario (Kuramochi et al., 2018) includes land use, land-use change and forestry. Top panel: historical GHG emissions up to 2016 (with authors' own estimates for years between the last inventory data year and 2016) and scenario emissions pathways up to 2030, alongside the NDC target emissions range (indicative target level for 2030). Emissions reduction target trajectories from individual actors' commitments and initiatives' goals are assumed to be achieved linearly from the latest historical data year and are presented here for illustrative purposes. Bottom-left panel: the breakdown of potential GHG emissions reductions from individual subnational and non-state actor commitments in 2030 by actor group. Bottom-right panel: the breakdown of potential GHG emissions reductions from ICIs in 2030 by sector." The results for "Current national policies plus initiatives' goals" scenario do not include the potential emissions reductions from Science Based Targets, RE100 and Collaborative Climate Action Across the Air Transport World (CAATW); they are only quantified at a global level.

ABOUT THIS FACT SHEET

The **Global Climate Action from Cities, Regions, and Businesses** country fact sheet series takes a close look at the potential impact of subnational and non-state climate change mitigation action for ten high-emitting economies.

In each fact sheet, we: (1) provide general information on the country's greenhouse (GHG) emissions and its energy and climate policies (the country context); (2) describe the interactions between the national government and subnational and non-state actors on climate action; (3) identify and map the type of GHG emissions reduction commitments made individually by cities, regions and companies within that country, as well as the actors making them; and (4) quantify the potential GHG emissions reduction impact that city, region and company commitments, as well as those of international cooperative initiatives (ICIs), could have on that country's emissions trajectory. The analytical steps follow those described in an earlier 2018 report (Data-Driven Yale, NewClimate Institute and PBL, 2018) and adopts the methodological recommendations made in Hsu et al. (2019). Detailed descriptions of this can be found in the main report and its Technical Annexes I and II, all of which can be downloaded from the NewClimate Institute website (https://newclimate.org/publications). A full list of references can also be found in the main report (Section 5).

Regarding the emissions data presented in this section, total national GHG emissions include land use, land use change and forestry (LULUCF) unless otherwise stated. The historical GHG emissions data are plotted up to 2016; for a number of UNFCCC non-Annex I countries, the values between the last inventory year and 2016 were estimated based on current policies scenario projections by NewClimate Institute, PBL and IIASA (Kuramochi et al., 2018). All GHG emissions figures presented are aggregated with 100-year global warming potential (GWP) values of the IPCC Fourth Assessment Report. For the NDC target emission levels, we used LULUCF sector emission levels projected under the current policies scenario when a country's NDC: (i) excludes LULUCF emissions, (ii) is not clear about the LULUCF accounting or (iii) considers LULUCF credits. For these countries, the NDC target emission levels may not match the official values reported by the national governments.

ACKNOWLEDGEMENTS

This work was funded by ClimateWorks Foundation (grant no.19-1383). Part of the project was supported through the "Strengthening non-state climate action in the Global South" project (ClimateSouth) which is generously supported by the Europe and Global Challenges Fund, a joint initiative of the Volkswagen Foundation, the Sveriges Riksbank, and the Wellcome Trust. The project received additional support from German Development Institute/Deutsches Institut für Entwicklungspolitik's "Klimalog" project, generously funded by the German Federal Ministry of Economic Cooperation and Development (BMZ). CDP provided support on data preparation and the pre-analysis of the company-level actions.

SUGGESTED CITATION

NewClimate Institute, Data-Driven Lab, PBL Netherlands Environmental Assessment Agency, German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE), Blavatnik School of Government, University of Oxford. Global climate action from cities, regions and businesses: Impact of individual actors and cooperative initiatives on global and national emissions. 2019 edition. Research report prepared by the team of: Takeshi Kuramochi, Swithin Lui, Niklas Höhne, Sybrig Smit, Maria Jose de Villafranca Casas, Frederic Hans, Leonardo Nascimento, Paola Tanguy, Angel Hsu, Amy Weinfurter, Zhi Yi Yeo, Yunsoo Kim, Mia Raghavan, Claire Inciong Krummenacher, Yihao Xie, Mark Roelfsema, Sander Chan, Thomas Hale.

September 2019