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Keywords:
International climate negotiations; Copenhagen accord; Paris agreement; China

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Abstract

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1. Introduction

There is increasingly scientific evidence confirming man-made climate change and its resulting negative effects. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change, the most comprehensive assessment of the science relating to climate change, reported with 95% certainty that the major cause of global warming was increasing concentrations of greenhouse gas (GHGs) produced by human activity (IPCC, 2014). Continued GHG emissions will cause further warming and have the potential to seriously damage the natural environment and affect the global economy, making it the most pressing long-term global threat to future prosperity and security.

Along with these advances in climate change science and impacts, governments around the world have been intensifying their efforts to reach an agreement for the post-2020 era establishing absolute, quantitative commitments for all the major economies. In this context, China has been facing intense pressure at and outside of international climate negotiations to be more ambitious in combating global climate change given that it is the world's largest energy consumer and carbon emitter and that its energy use and carbon dioxide (CO_2) emissions continue to rise rapidly as it swiftly moves toward becoming the largest economy in one or two decades.

This article aims to highlight China's contributions to reaching the Paris Agreement and its potential of affecting the outcomes of post Paris subsequent negotiations by examining China's stance and role in international climate change negotiations from a historical perspective. Sections 2 and 3 discuss the evolution of international climate negotiations and China's stance in the lead-up to and at the Paris conference. Section 4 discusses post-Paris agreement. As the key contributions of the article, these discussion pays special attention to whether China's climate commitments are sufficiently ambitious. They not only indicate whether China will actually achieve goals set in its intended nationally determined contributions, but also affect the outcomes of post Paris subsequent climate change negotiations.

2. Evolution of international climate negotiations and China's stance prior to the Paris conference

The three major milestones in international climate negotiations are the United Nations-sponsored climate change conferences in Kyoto in December 1997, in

Copenhagen in December 2009, and the 21st session of the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in December 2015. The UN climate summit in Kyoto established the first legally binding climate change agreement-the Kyoto Protocol, Copenhagen aimed to succeed the Kyoto agreement, and the Paris conference hopes to reach an agreement for the post-2020 era establishing absolute, quantitative commitments for all the major economies.

The Kyoto Protocol to the UNFCCC imposed limits on GHG emissions for Annex 1 countries (i.e., the Organisation for Economic Co-operation and Development countries and countries with economies in transition). These countries were to collectively reduce their emissions of six greenhouse gases 5.2% below 1990 levels during the commitment period of 2008–12. Developing countries, including China and India, were not required to take on legally binding GHG emissions targets under the principle of common but differentiated responsibilities (CBDR).

The Kyoto Protocol drew a clear line between developed and developing countries. Developed countries had specific obligations to control their GHGs, but developing countries did not. This is a distinction that China, India, and the majority of the developing countries have fought hard to sustain since Kyoto, but it has led to significant tensions between emerging economies like China and India on the one hand and the developed economies like the European Union and the United States on the other because of the rapid increase in emissions from the emerging economies offsetting emissions reductions by the developed countries. This tension was particularly evident at the Copenhagen climate change conference, where for the first time China was blamed for dragging out international climate negotiations, while such blame previously had always been leveled at the United States (*Economist*, 2009; Miliband, 2009; Watts, 2009; Zhang, 2010a).

The 2009 Copenhagen Accord at the least blurred the once-clear distinction between developed and developing countries. For the first time, all the major economies pledged to take on specific individual responsibilities. While falling far short of a legally binding global agreement, the accord reflected a political consensus on the main elements of a future framework among the major emitters and representatives of the main negotiating groups. Two years later in Durban, the parties to the UNFCCC agreed to establish the Ad Hoc Working Group on the Durban Platform for Enhanced Action and to launch a process to develop a protocol, another

legal instrument, or an agreed outcome with legal force under the UNFCCC applicable to all parties for their post-2020 climate commitments (UNFCCC, 2011).

The 2014 UN climate conference in Lima was a crucial point along the road to COP21 in Paris. At the heart of the Lima Call for Climate Action (UNFCCC, 2014) is that all parties agreed to submit their Intended Nationally Determined Contributions (INDCs). The INDCs are voluntary in nature and should point to advancement beyond the current undertakings of the individual parties. All nations were requested to submit their INDCs well in advance of the Paris conference. The Lima Call amounts to two significant shifts in international climate negotiations. One is a shift from the original UNFCCC emphasis on developed country leadership to a fully global process, and the other is from the Kyoto-style, quantity-based, legally binding "commitments" toward voluntary and broad "contributions" (as in the INDCs) to defuse major points of contention, such as sovereignty issues as well as the potentially historic dimension of COP21. This approach stands in contrast to the desire of the European Union and numerous climate activists for a legally binding treaty and is more in line with the vision of the soft global governance preferred by the United States and China.

The UNFCCC Secretariat was required to publish a synthesis aggregating the anticipated effect of the INDCs submitted by 1 October. There is, however, no formal review process or a formal agreement to aggregate these commitments for comparison against the global goal.[1] Detailed specifications for contributions, review processes, and potential mechanisms to increase ambitions over time are of paramount importance to a post-2020 climate agreement. At COP21, as in Lima, these details was difficult to agree on.

China's stance toward international climate negotiations has been evolving concurrent with changes in domestic and international contexts. While China has been very active in participating international climate negotiations and formulating and undertaking domestic climate mitigation and adaptation measures since the early days of climate talks, there is a discrepancy between its domestic actions and its simultaneous reticence to act at the international level. China is only now beginning to

[1] In Lima, the parties had been unable to agree on a proposed formal peer-review process by which parties would be invited to review one another's pledges and subsequently revise their own. The Lima Call for Climate Action does provide the conditions for such a process to take place informally outside the UNFCCC.

be widely seen as playing a long-awaited, increasingly positive role in this complex process.

Zhang (2000a, 2000b) envisioned that China could make a voluntary commitment to total greenhouse gas emissions per unit of GDP at some point around 2020 and that a combination of a targeted carbon intensity level with an emissions cap at the sector level would be the most stringent commitment that it could make around or beyond 2020. It was only just prior to the Copenhagen summit that China pledged to cut its carbon intensity by 40–45% by 2020 relative to its 2005 levels. In its 12th five-year economic plan (2011–15), the carbon intensity target was incorporated for the first time as a domestic commitment, with energy intensity required to be cut by 16% nationwide (10–18% across provinces) and carbon intensity by 17% nationwide (10–19.5% across provinces) relative to their 2010 levels.

In the lead-up to and at Copenhagen, China took the initiative to ally with India and other major developing countries, took full advantage of being the world's largest carbon emitter, and attempted to secure a deal to its advantage. It is widely reported that China walked away "happy," but doing so came at a high price. Although China was officially backed by allies like India and Brazil, their representatives admitted in private that the negotiations had primarily been China's battle (Graham-Harrison, 2009).[2]

China never publically admitted any wrongdoings in dragging on international climate negotiations at Copenhagen or having taken a different stance or strategy that might have contributed to a better outcome there. What has been observed since is that in line with changes in the domestic and international landscapes, China has been recalibrating its position by setting even more stringent mitigation goals than those it had agreed to, adopting new policies and measures while strengthening existing ones, leading South-South cooperation, providing support for technology, financing, and capacity building for climate mitigation and adaptation among other developing countries to the extent possible, and playing a larger role in international climate negotiations.

This is clearly reflected in its commitments to cap its carbon emissions by 2030 under the joint China-US climate statement in November 2014. According to their statement, China committed to capping its carbon emissions around 2030, and to

[2] See Zhang (2010a) for reflections of China's stance and responses at Copenhagen.

trying to peak early, and increasing the share of non-fossil fuel use to around 20% by 2030 (White House, 2014). These commitments were officially incorporated into China's INDC submission. In addition, China pledged to reduce the carbon intensity of its economy by 60–65% by 2030 compared to 2005 levels (NDRC, 2015).

For quite some time, the United States and China had pointed at the other as the culprit blocking the negotiation process (Zhang, 2007). Thus, Sino-US cooperation on climate change in general and hard commitments to absolute emissions caps specifically have been viewed positively around the world. In particular, because this is the first time that China has moved to cap its total emissions, it has sent a clear signal encouraging the remaining major economies to follow suit and thus help increase the prospects for COP21. In addition to Sino-US statement, prior to the Paris conference, China had signed a series of bilateral statements on climate change with India, Brazil, the EU, France and others to push for a global climate pact to be reached in Paris.

3. COP21 in Paris

The so-called COP21 aimed to deliver a new universal climate change agreement that holds the average rise in global temperature below 2°C above pre-industrial levels. With six years lost since the failure at Copenhagen, the stake was so high at COP21, because no country can bear another failure. Over 150 heads of countries attended and addressed at the opening ceremony, instead of arriving at the very late stage in previous negotiations. The Chinese President for the first time attended the opening ceremony since Rio, and held a telephone conversation with US President Barack Obama in the very end of the Paris conference to ensure that the historic conference would result in an accord as scheduled. Even if all these were unprecedented, negotiations had not been easy. With two-week-long hard work and concerted efforts of all the parties involved, a landmark Paris deal was reached, charting a clear course for global cooperation on fighting climate change from 2020.

Taking a retrospective perspective, during the course of the negotiations, the major points of contention between developed and developing countries had revolved around the distinction between developed countries and developing countries, the principle of CBDR and the scope of its guidance, finance support and technology transfer for helping mitigation and adaptation in developing countries, the long-term ambition and periodic updating of contributions. These issues had been difficult to

agree on at Paris, and whether a consensus on these outstanding issues can be reached determined the outcomes of COP21.

In this process, China continued to coordinate its position with the other BRICS countries - Brazil, Russia, India, and South Africa - and, as usual, fought hard that an agreement at Paris needs to reflect equity and the principle of CBDR and respective capabilities. The Paris agreement retains the basic principle, but to accommodate the US demand, it adds “in the light of different national circumstances” to allow for a dynamic interpretation of this differentiation principle. For the sake of other developing countries and the solidarity of the G77 and China as a group, China proposed and insisted on “a concrete roadmap” to scale up the level of pre-2020 financial support by developed countries to achieve the goal of jointly providing US$100 billion annually by 2020 for mitigation and adaptation, which was eventually incorporated into the Paris deal (Li, 2015). China also insisted on “making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”. All these core principles and elements have eventually been incorporated into the Paris Agreement (UNFCCC, 2015b). In return, China had made several significant concessions to enable reach a deal in Paris.

The most significant compromise is on the long-term ambition of mitigation. Starting the second week of the Paris negotiation, the European Union and the US joined with 79 countries from Africa, the Caribbean and the Pacific to form the so-called “high ambition coalition”. This coalition comprising well over 100 countries from the rich and developing world strongly pushed for the 1.5-degree target to be recognized in the eventual agreement (McGrath, 2015). The shifts of the US and other industrialized countries in their position in favor of 1.5 °C were motivated by negotiation tactics to separate the poorer developing countries from the large emerging economies (Obergassel et al., 2016). China was widely reported to initially oppose the inclusion of keeping global average temperature rises to 1.5 degrees centigrade. While contentious at first, international climate negotiations since Copenhagen have targeted to limit average global temperature increase below 2 °C as political operationalization of helping to prevent dangerous anthropogenic interference with the climate system, the ultimate objective of the UNFCCC according to its Article 2. All negotiations, model calculations and options all surround a 2-degree goal (Lan, 2015; Teng, 2015). There is a significant research gap on the nature, benefits and feasibility of a 1.5 degree world, as well as a huge policy

challenge. In China's view, there is lack of clarity on how the 1.5 °C limit was going to be met regarding the responsibility of the industrialized countries for their own reductions and support to developing countries. China also views that it does not make much sense to commit to the 1.5-degree target given that there is a massive commitment gap between the 2-degree target and the emissions reductions pledges in the INDCs (UNFCCC, 2015a, 2016). This gap is clearly shown in Figure 1, drawn based on the 189 INDCs submitted to the UNFCCC by 4 April 2016[3] (UNFCCC, 2016).

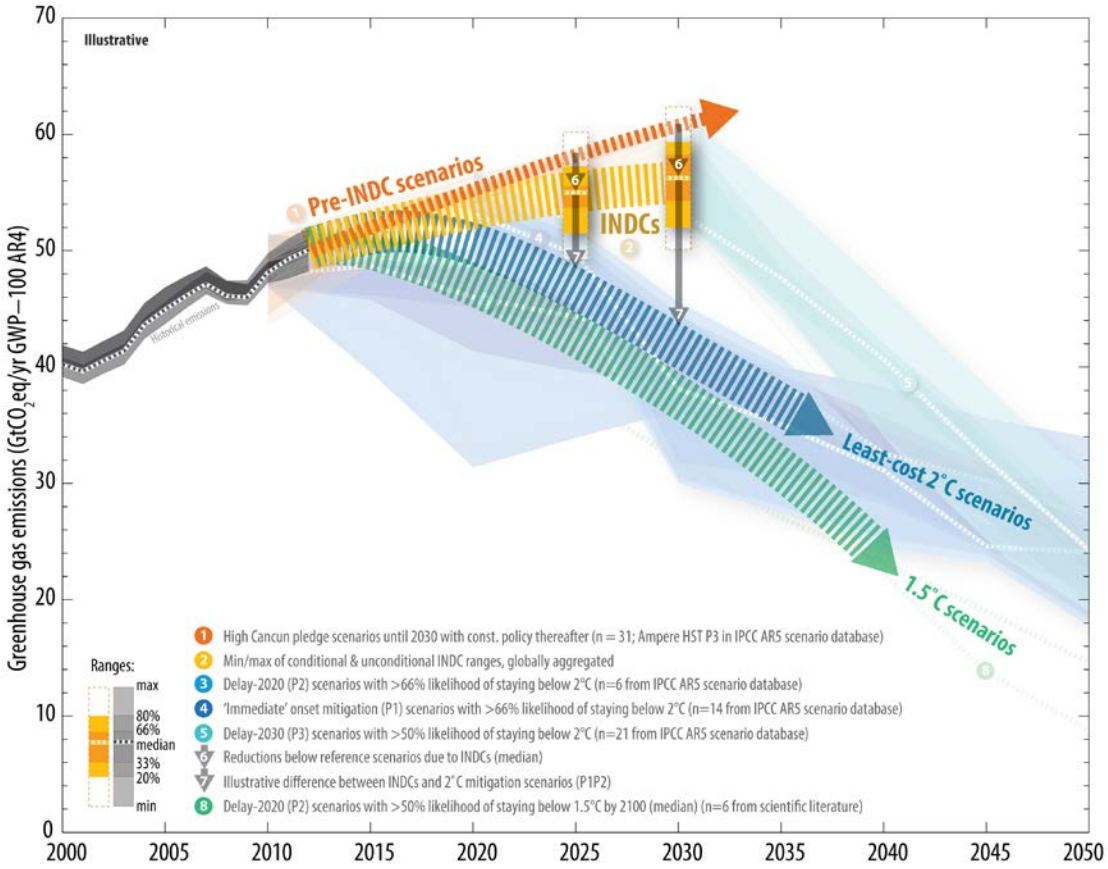

Figure 1 Comparison of global emission levels in 2025 and 2030 resulting from the implementation of the INDCs and under other scenarios

Source: (UNFCCC, 2016).

Related to China, as discussed in the next section, peaking carbon in 2030 means that China would need to bring its current target forward at least a decade. However, this commitment would not be enough to avoid a global surface temperature rise of

[3] For full details of these and subsequent submissions, see "INDCs as communicated by parties," http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx.

two degrees by the end of 2100. Meeting the 2-degree target would require a peak in 2020–25, and China's emissions must decrease very quickly. So even if China were to peak in 2030, the necessary emissions reductions afterward are unlikely to be achieved. Being the world's largest carbon emitter and responsible for a growing share of future global emissions, furthering strengthening the target by going beyond the 2-degree target would require China to do even more cut, and this poses a daunting challenge for China. However, China eventually showed flexibility in accommodating most vulnerable countries' concern about having reference made to 1.5 degrees in the final deal. As a result, for the first time, an international climate agreement critically specifies the long-term ambition as "holding the increase in the global average temperature to well below 2° above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°" (UNFCCC, 2015b). This is a significant strengthening compared to the earlier 2-degree target that was initially included in the Copenhagen Accord.

Another significant compromise related to transparency on the implementation of countries' contributions. At Copenhagen, China compromised to agree to open emission data to international consultation and analysis. As Zhang (2010a) argued, as long as China's commitments are in the form of carbon intensity, establishing a robust and transparent emissions and performance accounting framework is helpful, but not enough to remove international concern about the reliability of China's commitments because GDP figures are even more crucial to the impacts on the energy or carbon intensity than are energy and emissions data. Prior to the Paris conference, it had been proposed to launch a process in Paris of regular, periodic updating of contributions, for example, every five years, with parties expected to progress in the levels of ambition in each round in line with their national circumstances (Moosa and Dovland, 2015; Yamin et al., 2015). In November 2015, China signed a joint statement with France supporting stocktaking review of countries' pledges every five years. In Paris, however, China was accused of trying to water down efforts to create a common system for the way countries report on their carbon dioxide emissions and climate change plans. China and other developing countries view that a new system with increased requirements for developing countries, which had been agreed in Cancun, had not yet been made operational, and that therefore this system should first be implemented before moving to a new common system (Obergassel et al., 2016). China was also reported to support a general stocktaking review of countries' pledges

every five years but wanted any updating of the CO_2 emissions reduction targets contained in these plans to be voluntary (Clark, 2015). Given that China is already the world's largest emitter and its share in global emissions continues to grow, it is really a legitimate concern about having inventories, reporting and review of emissions updated regularly on China's side. China eventually compromised on this issue. The Paris Agreement for the first time establishes a universal transparency system. This new system substantially increases the transparency requirements for mitigation actions by developing countries, and at the same time, meets the developing countries' demand for including adaptation and increasing transparency on developed countries' provision of support.

4. Post Paris focuses

While the dust has settled on the Paris Agreement, everything is not finished yet. Details of the Paris Agreement still need to be worked out. This includes finance support from developed countries, one area of great concern to developing countries. Developing countries consider the finance part of the agreement too weak, which does not contain any compulsory language to scale up climate finance, and demand it to be strengthened in the subsequent negotiations.

While the Paris Agreement establishes legally binding obligations of conduct, it does not establish a legally binding obligation for countries to actually achieve their contributions (Obergassel et al., 2016). Thus, the implementation holds the key to actually achieving desired outcomes. For governments around the world, the urgent task of implementing the details of the agreement is to prepare plans and actions in line with their national priorities to achieve the goals set in their INDCs.

Indeed, concerns about a range of environmental stresses and climate change impacts have sparked China's determination to improve energy efficiency and cut both conventional pollutants and greenhouse gas emissions and to increase the use of clean energy to aide its transition to a low-carbon, green economy (Zhang, 2010b, 2011a, 2014, 2015a, 2016). More specifically, the Chinese government sets absolute limit for energy consumption of 5 billion tons of standard coal equivalent by 2020 (The State Council, 2016), and is attempting to cap coal consumption to let it peak in the 13th five-year plan period (2016-20), cut coal consumption in absolute terms in severely polluted regions, take unprecedented steps to keep energy consumption and

carbon emissions under control in key energy-consuming industries and cities in the context of government decentralization and unprecedented urbanization, strengthen and expand flagship programs and initiatives and supportive economic policies, and increase the widespread use of renewable energy. Moreover, given the many environmental issues of a cross-border nature, neighboring regions - such as the Beijing-Tianjin-Hebei region and the Yangtze River Delta and Pearl River Delta - now increasingly act collectively rather than independently. These coordinated efforts significantly increase their effectiveness in combating pollution (CCCCPPRP, 2014; NDRC, 2013, 2015; Wang et al., 2013; Zhang, 2010b, 2011a, 2014 2015a, 2016).

In this course, China is increasingly use market-based instruments to complement currently dominated use of administrative measures. Clearly, the imposition of environmental taxes or carbon pricing can internalize externality costs into the market prices. This is also a feasible means of passing through carbon cost to consumers without consumption-based accounting of CO_2 emissions, which is more data-intensive and complex than production-based accounting of CO_2 emissions (Zhang, 2012a). The introduction of environmental taxes to replace current charges for SO_2 emissions and discharged chemical oxygen demand has been discussed in both academic and policy circles in China for quite some time. Draft tax law on environmental protection was released in June 2015 for public comments (Legislative Affairs Office of the State Council, 2015), but the timing of its revision and eventual passage of Chinese legislature as a law is unknown and accordingly its exact implementation date has not been set yet; the sooner environmental taxes are imposed in the 13th FYP, the better, but it should not be later than 2020. Moreover, environmental taxes should be shared taxes, with at least 80% of the revenue going to local governments (Tian and Xu, 2012; Zhang, 2016). However, in terms of timing, given that China has not levied environmental taxes yet, it is better to introduce environmental taxes first in the 13th FYP, not least because such a distinction will enable to disentangle China's additional efforts towards carbon abatement from those broad energy-saving and pollution-cutting ones. In October 2011, the Chinese government approved seven pilot carbon trading schemes (NDRC, 2011). While these pilots have experienced ups and downs, their performance is generally good because of built-in incentives and mechanisms and a variety of measures and policies in place to enhance their compliance. Their positive start and performance provides useful lessons for improving their operation and compliance in coming years and developing

and launching national emissions trading scheme by 2017 (Zhang, 2015b, 2015c). Given that the European Union has been the frontrunner in carbon emissions trading from the beginning, it has provided useful advice and lessons for developing China's own trading schemes through the on-going EU-China emissions trading capacity-building project. Bilateral cooperation on carbon markets is expected to be further enhanced in the years ahead (Ministry of Foreign Affairs, 2015).

Governments also need to review the climate ambition. By 4 April 2016, 189 countries had submitted their national pledges. Together, they cover about 99% of global greenhouse gas emissions (UNFCCC, 2016), compared to currently covering only 15% under the Kyoto Protocol. Their pledges, if fully implemented, make us on the track towards the average rise in global temperature of 2.7°C above pre-industrial levels, better than the estimations of a rise of 3.6°C without these commitments (Climate Action Tracker, 2015). But they are not sufficient to hold the average rise in global temperature to below 2°C, not to mention the aspirational goal of limiting the temperature increase to 1.5°. To limit temperature rises to the relatively safe level raises the issue of increasing ambitions over time. This is of paramount importance to a post-2020 climate agreement.

Is China's commitment to cap carbon emissions around 2030 ambitious? All the integrated assessment models examined by the European Commission-funded LIMITS (Low climate IMpact scenarios and the Implications of required Tight emission control Strategies) project foresee that China's carbon emissions under the baseline scenario would peak in the second half of this century, with 2080 as the median year across models (Tavoni et al., 2015). A joint Tsinghua-MIT study suggests that in the so-called continued effort scenario under which China will maintain its Copenhagen pledge momentum and achieve a carbon intensity reduction rate of approximately 3% per year from 2016 through 2050, China's carbon emissions would not peak until 2040, while its carbon emissions under the baseline scenario would not peak until 2050 (Zhang et al., 2014). This means that China will now bring its peak year forward to 2030, at least ten years earlier than under the so-called continued effort scenario, under which it commits to cap its carbon emissions around 2030. Therefore, from this perspective, the commitment of peak carbon by 2030 is ambitious.

The question then is whether China's commitment is sufficiently ambitious. One way is to examine whether emissions peak in 2030 is consistent with the 2°C target.

The LIMITS models project that China's emissions should peak in 2020, under 450 parts per million (ppm) and 500 ppm scenarios, to achieve the 2°C target by the end of 2100 (Tavoni et al., 2015). The results under the Energy Modeling Forum scenario and the SSP (Shared Socio-ecosystem Pathways) scenario suggest that China's emissions should peak during 2020–25 to achieve the same 2°C target. Clearly, China's commitment to let GHG emissions peak in 2030 does not seem to be consistent with the 2°C target in any of the three scenarios. Moreover, China's GHG emissions must quickly decrease for the 2°C target to be achievable. This suggests that even if China were successful in reaching this target, it would be unlikely to achieve the necessary emissions reductions after the peak year (Carraro, 2015).

There are two ways to increase China's ambition. One is to indicate peaking level. Just like estimates of peaking time differ, estimates of peaking level also differ significantly across studies. An optimistic estimate puts the peaking level at 8.5 gigatons (Gt) CO_2 under the enhanced low-carbon scenario (Jiang et al., 2013), assuming widespread adoption of more advanced low- or zero-carbon technologies without factoring in adoption costs and behavioral changes. Teng and Jotzo (2014) suggest China's carbon emissions peaking during the 2020s and returning to below the 2020 level by 2030 and then to around current levels by 2040. The two studies funded by the Chinese Ministry of Science and Technology suggest that China should aim to peak carbon emissions below a level of 11 Gt CO_2 over the period 2025-30 (Chen, 2014; Energy Research Institute, 2016). The aforementioned Tsinghua-MIT study suggests that China's carbon emissions will peak at 12.1 Gt CO_2 around 2040 in the so-called continued effort scenario and at 10.2 Gt CO_2 around 2030 in the so-called accelerated effort scenario (Zhang et al., 2014). Taking these estimates together, my educated estimate is that China is most unlikely to reveal its peaking emissions level in 2030, and if so, it would not be lower than 10 Gt CO_2[4] unless non-fossil fuel use can contribute to at least 25% of total energy use by 2030.

Another way to show ambition would be to set emissions targets for 2025. The current levels of ambition for China and the rest of the world under the 2030 time frame is not consistent with limiting the global average temperature increase below 2°C. There is still a significant emissions gap in meeting this goal. If China sets

[4] Indeed, China did not reveal its carbon-peaking emissions level for 2030 in its submitted INDCs.

stringent emissions targets for 2025, and parties in post Paris agree on emissions targets for 2025, that would help avoid the risk of locking in insufficient actions and an inadequate emissions pathway for fifteen years. If that can be agreed upon, then binding goals for 2030 could be set by 2020.

5. Conclusions

In international climate change negotiations, China's role is an issue of perennial concern. In particular, the lack of quantitative, absolute emissions commitments from China has been the focus. In line with changing domestic and international contexts, China is recalibrating its stance and strategy. Its participation in international climate change negotiations has evolved from playing a peripheral role to gradually moving to central stage.

China's long-awaited commitments to cap its carbon emissions by 2030 are ambitious, and encourage other major parties to follow suit. While China insists on some core principles and elements that need to be incorporated into any agreement in Paris, China had shown great flexibility in making several significant concessions to enable reach a deal in Paris. All these clearly show that China is certainly doing its part to have helped reach a legally binding agreement in Paris.

How China's carbon emissions are likely to develop or at what level they will peak is still an open question. This, however, is what determines whether China's commitments are sufficiently ambitious and could be among the contentious issues affecting the outcomes of post Paris subsequent negotiations.

This also depends on the extent to which China is going to implement policies and measures to honor its commitments incorporated in its submitted INDCs. The Chinese parliament approved the 13th FYP, and the absolute limit for energy consumption is incorporated as a domestic commitment for the first time in China's five-year economic planning. Meeting the 2020 domestic goal and the 2030 hard commitments will require effective cooperation from local governments. However, the past three decades of Chinese economic reforms witnessed a shift in control over resources and decision making to local governments. This devolution placed environmental stewardship in the hands of local officials and polluting enterprises more concerned with economic growth and profits than the environment. The central government has had great difficulty getting effective cooperation from local governments in meeting energy-saving and pollution-cutting goals (Zhang, 2012b).

From this perspective, having had a legally binding international agreement, under which China has hard commitments, allows the central government to pressure local governments and enterprises to meet their energy and environmental goals in the name of fulfilling national commitments to the international agreement. Meeting the 2020 and 2030 commitments will also require significant economic restructuring and technology upgrading. Both are conducive to carbon mitigation, and mitigation provides a variety of ancillary benefits, such as reductions in conventional air pollutants and health risks, so this creates a new impetus for structural economic reforms to maximize synergies between climate change mitigation efforts and structural economic reforms. This synergy could be further enhanced by capping nationwide coal consumption to let it peak in the 13th FYP and carbon emissions to peak during 2025–30.

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