

# The Governance of Climate Change in China

David Held, Eva-Maria Nag & Charles Roger

Preliminary Report, LSE-AFD Climate Governance Programme



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## Acronyms and Abbreviations

AIJ	Activities Implemented Jointly
AWG-LCA	Ad hoc working group on long-term cooperative action
CAS	Chinese Academy of Sciences
CCP	Chinese Communist Party
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CMA	China Meteorological Administration
CO <sub>2</sub>	Carbon Dioxide
COP	Conference of the Parties
G77	Group of 77
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GW	Gigawatt
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MOFA	Ministry of Foreign Affairs
MOST	Ministry of Science and Technology
NCCCC	National Coordination Committee on Climate Change
NCCCLSG	National Climate Change Coordinating Leading Small Group
NDRC	National Development and Reform Commission
NEA	National Energy Administration
NEC	National Energy Commission
NELG	National Energy Leading Group
NEPA	National Environmental Protection Agency
NGO	Non-Governmental Organization
NLCCC	National Leading Committee on Climate Change
PPP	Purchasing Power Parity
PV	Photovoltaic
R&D	Research and Development
SEO	State Energy Office
SMA	State Meteorological Administration
SSTC	State Science and Technology Commission
TCE	Total Carbon Equivalent
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States of America
VER	Voluntary Emissions Reduction

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**David Held, Eva-Maria Nag and Charles Roger**

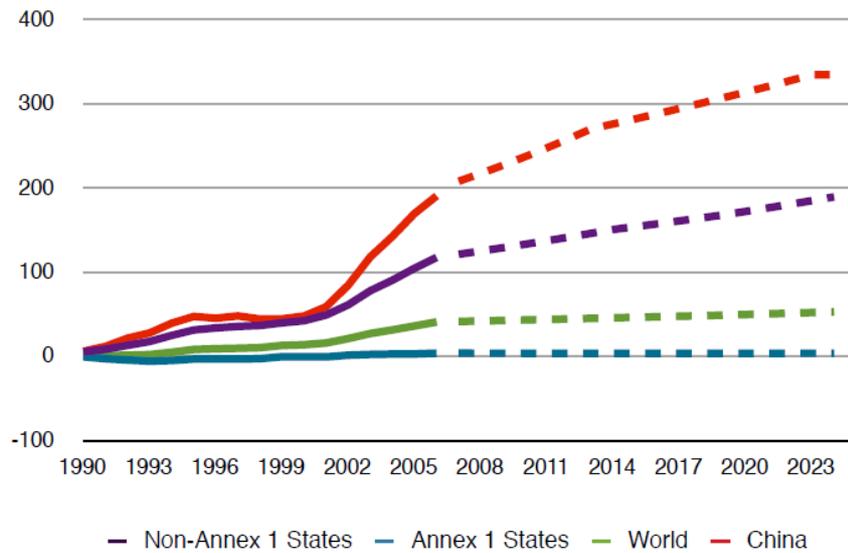
## **Abstract**

This paper aims to map China's evolving interests, institutions and activities related to the governance of climate change. In doing so, it makes a special effort to consider not only China's position in the UNFCCC but its domestic governance initiatives and the evolving participation of a variety of Chinese firms, NGOs and sub-national governmental units in transnational climate governance as well. Cumulatively, the mapping produces a more nuanced account of China's role in the governance of climate change than its international reputation as a climate 'laggard' suggests. In particular, it reveals a notable disjuncture between China's considerable 'voluntary' efforts to govern its rapidly growing emissions and energy use and its reluctance to commit to legally binding emissions commitments.

## **Introduction**

China is one of the key countries in considerations of climate change. Producing over 6,000 megatonnes of carbon dioxide (CO<sub>2</sub>) on a yearly basis, it is the world's largest emitter of greenhouse gases (GHGs) in absolute terms, accounting for nearly 22 percent of all emissions and just under half of all the emissions of the non-Annex 1 states. Its emissions have now also surpassed the global per capita average, having grown by nearly 200 percent between 1990 and 2007 (See Figure 1). Assuming its economy continues to expand at or near its historical rate, and with it China's burgeoning appetite for mainly fossil fuel-based sources of energy, China's business-as-usual emissions are expected to increase by between 57 and 75 percent by 2025, depending on which projection is used.<sup>1</sup> The policies China adopts to govern climate change, its domestic capacity for effective governance of its emissions and energy use, and any future international emissions reduction commitments that it makes, are therefore of critical importance far beyond its own borders.

**Figure 1. Average CO2 Emissions, Actual and Projected, Percentage Growth 1990-2025**



Source: World Resources Institute. <http://cait.wri.org/>; Projections are from IEA (2009) World Energy Outlook 2009.

Indeed, as multilateral negotiations have turned towards the design of a global climate regime to govern efforts beyond 2012, China has received growing attention. As a developing country - the world's largest - with a population of over 1.3 billion, China has steadfastly resisted any suggestion in the UNFCCC negotiations that it should adopt binding commitments to reduce emissions. Motivated by a mix of political, economic and equity-based concerns, its policymakers have consistently argued that it is currently industrialized countries who must take the lead on climate change, accepting the main burden of mitigation. And, among developed countries, and especially in the mainstream media, China has often been labeled a climate 'laggard' or 'hard-liner' as a result. Following Copenhagen, for example, Mark Lynas, negotiator for the Maldives, contended that China had 'wrecked' efforts to reach a 'global deal', while Ed Miliband, former UK Secretary of State for Energy and Climate Change, accused China and other developing countries of 'holding the world ransom'.<sup>2</sup>

But as China's impact upon global emissions has grown, so too have its own concerns about the environment, energy security, and its vulnerability to climate change. As these concerns have achieved greater prominence within China, Chinese policymakers have undertaken considerable domestic efforts to govern climate change. Recognizing the need to improve governance in key sectors related to climate change, especially its energy sector, Chinese policymakers have engaged in a substantial, if incomplete, institutional reform effort. The growing capacity of its domestic governance institutions that has resulted has enhanced its ability to enact a number of ambitious policies and programmes for increasing energy efficiency and conservation, encouraging the use of renewable energy and reducing emissions. China has also adjusted its position on a number of key issues in the UNFCCC negotiations - on flexibility mechanisms, finance and technology transfer, and even the nature of its commitments. Furthermore, in response to repeated setbacks in the UNFCCC negotiations a growing number of subnational governmental units, such as municipal governments, and private actors, such as firms and non-governmental organizations (NGOs), have participated in and initiated numerous voluntary transnational governance arrangements, attempting to take action on climate change in the absence of a multilateral treaty

To provide an account of these changes, this paper aims to map China's evolving interests, institutions and activities related to the governance of climate change. Part I provides a survey of the major Chinese interests and normative concerns related to climate change. While China's overarching political, economic and foreign policy concerns have been relatively stable over the course of the negotiations, these have been considerably reshaped and attenuated by growing worries related to the environment, energy security, China's vulnerability to climate change and its international image. The shifts in Chinese policymaking, policies and approach

to global governance that have resulted are then documented in Part II. These include the changes in climate and energy policymaking that have modestly increased China's capacity for governing climate change and its energy use; domestic efforts to improve energy efficiency, restrain energy demand, increase renewable energy production and reduce emissions; as well as its evolving participation in the UNFCCC and forms of transnational governance. Part III then provides a summary and concludes by looking forward, suggesting potential avenues for further engagement.

## **Part I. China's Concerns**

The governance of climate change in China has been powerfully shaped by a number of critical considerations. Chinese policymakers and businesses are, first, motivated by political and economic issues. Concerned about maintaining their position in Chinese society, China's leaders are determined to improve the standard of living of the average Chinese citizen. Second, they are concerned about China's energy security, including its access to adequate, affordable and reliable supplies of energy and the efficiency of the Chinese economy more generally. Third, policymakers, businesses and the mass public are increasingly concerned about China's vulnerability to the negative effects of climate change, especially insofar as these may adversely affect its economy and society. Finally, they are motivated by international factors, especially concerns about sovereignty, equity and China's international image among both developed and developing countries. Each of these considerations pull China's policies in different directions, but together have resulted in some significant changes in policymaking, policies and governance in a number of areas over time.

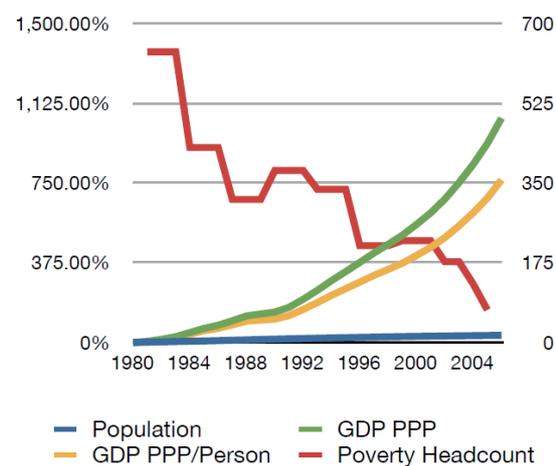
### **1.1 Political, Economic and Environmental Concerns**

Above all, Chinese policymakers are motivated by political and economic considerations. At each level of government, from the municipal and prefectural to the provincial and national, maintaining social stability and the position of the Chinese Communist Party (CCP) at the apex of Chinese society are the overarching priorities guiding policymaking in China.

Politically, China is governed by a single party whose legitimacy and authority rests on the consent of several key constituencies, the bureaucracies, the military and the mass public.

Having abandoned many traditional elements of communist ideology by embracing market forces, the CCP derives its legitimacy primarily by successfully addressing the key political, economic and social challenges faced by these groups. Mainly, this has been achieved by maintaining domestic security and an economic growth rate above 7-8 percent per year, keeping inflation low, and reducing poverty. Since 1980, China's economic output (Gross Domestic Product, or GDP) has grown by nearly 1100 percent in Purchasing Power Parity (PPP) terms, recently overtaking Japan's position as the second largest economy in the world; due to slow population growth, its GDP (PPP) per capita has also increased by roughly 800 percent; and the number living in extreme poverty has been reduced by as much as 500 million (See Figure 2). Barring any major disruption of these trends, these improvements are expected to continue, and China has the potential to become the main engine of the world economy in the decades ahead.

**Figure 2. Chinese Population and Income (percent growth) and Poverty Headcount (millions), 1980-2006.**



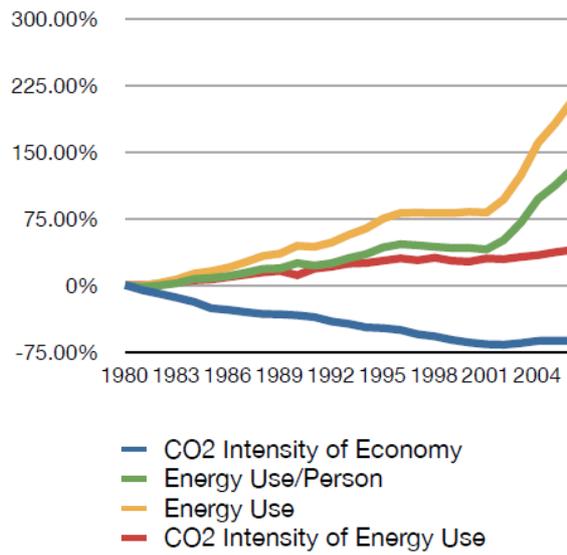
Source: Income and population figures (on the left Y axis) are from the World Resources Institute's CAIT database, <http://cait.wri.org/>. Poverty figures (on the right Y axis) are from Chen & Ravallion (2008). The poverty headcount shows the number in millions consuming below US\$1.08 1993 PPP per day.

However, while the tremendous growth of China's economy has brought great material benefits, it has come at considerable cost to the environment. Demand for water, energy and land has skyrocketed; forests have been depleted, resulting in desertification and flooding; water pollution has increased dramatically; and, of course, air quality has diminished as emissions from dirty fossil fuels have risen, increasing particulates in the local atmosphere. As the economic costs – estimated by the World Bank to be between 8 and 12 percent of annual GDP – of environmental degradation and resource depletion have become more apparent, and as their affects on public health have resulted in growing unease, China's leaders have become more concerned about environmental threats.<sup>3</sup> As a result, although they remain subordinate to economic development, protection of the environment and the sustainable use of resources have slowly moved onto the government's list of priorities.

## **1.2 Energy Concerns**

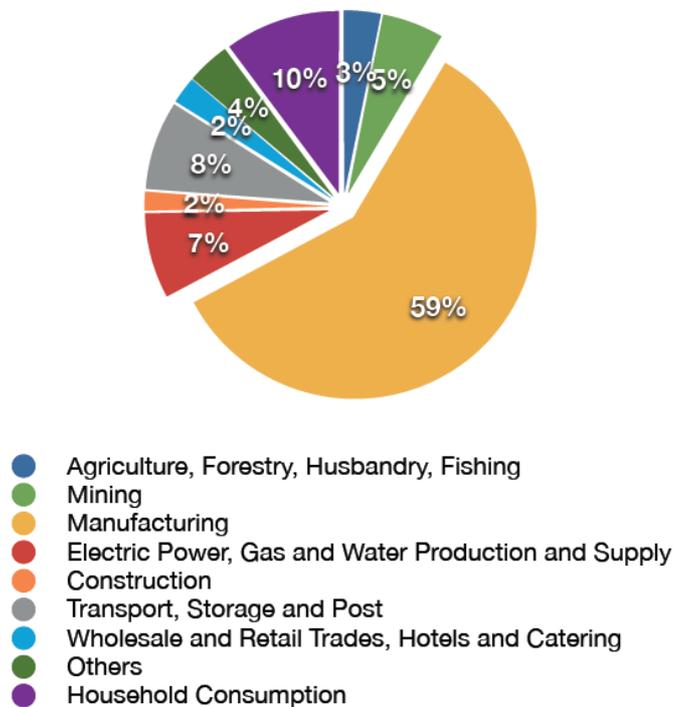
China's rapid growth since 1980 has been highly dependent on energy. As its economy has expanded, energy use has increased by over 200 percent and by nearly 150 percent per capita, with over half of this growth occurring in the years since 2001 (see Figure 3). China is now the world's second largest producer and consumer of energy, behind only the United States, with manufactures – China's primary export and a major component of its GDP – accounting for nearly 60 percent of total energy consumption (see Figure 4). This tight connection between growing energy use and economic development means that energy policy is a central concern of the government.

**Figure 3. China, 1990-2006, Percent Growth Since 1990**



Source: World Resources Institute. <http://cait.wri.org/>

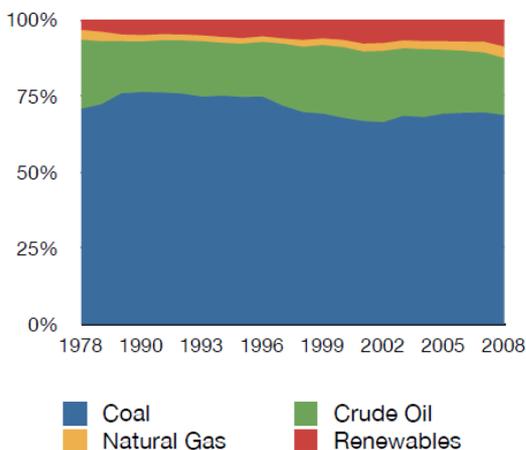
**Figure 4. Sectoral Energy Consumption**



Source: China Statistical Yearbook 2009.  
<http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm>

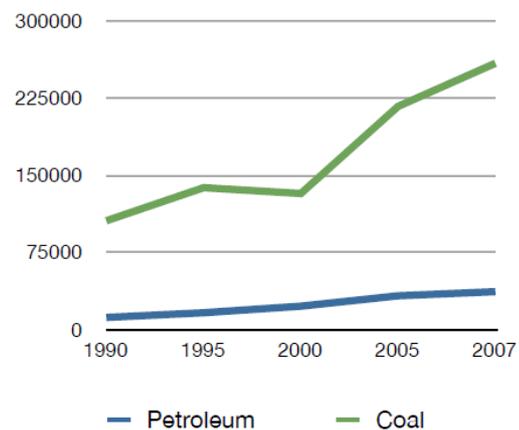
With nearly 177 billion tonnes of proven coal reserves within its borders - approximately 14 percent of the world total - China's energy mix is heavily skewed towards the use of coal, the most emissions-intensive fuel.<sup>4</sup> Indeed, it currently relies upon coal for as much as 68 percent of its energy needs (see Figure 5), making China one of the most CO<sub>2</sub> intensive energy consumers in the world. As energy use has increased, annual coal consumption has more than doubled, from roughly 1.1 billion tonnes in 1990 to 2.7 billion tonnes in 2008, 43 percent of the world total (see Figure 6). Oil, used primarily in industrial applications and as fuel for China's stock of 180 million vehicles, is the next largest component of China's energy mix, representing around 19 percent of all energy consumed.<sup>5</sup> Finally, natural gas accounts for only 3.77 percent of all energy consumed, though its share is expanding, while all other sources currently meet about 9 percent.

Figure 5. Composition of Energy Production 1978-2008



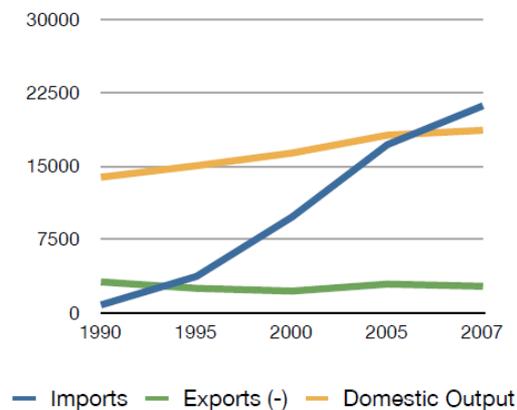
Source: China Statistical Yearbook 2009.  
<http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm>

Figure 6. Consumption of Petroleum and Coal, 1990-2007, Units: 10,000 Tonnes



Source: China Statistical Yearbook 2009.  
<http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm>

**Figure 7. Oil Imports, Exports and Output**  
Units: 10,000 Tonnes



Source: China Statistical Yearbook 2009.  
<http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm>

China's large domestic reserves of coal have allowed it to meet most of its burgeoning energy needs using domestic sources. However, since 1993, China has become increasingly dependent upon foreign sources of oil, and now imports roughly half of all the oil it uses (see Figure 7). This state of affairs has resulted in rising concerns amongst Chinese policymakers about the country's ability to acquire adequate, affordable and reliable supplies.<sup>6</sup> China's leaders are particularly concerned about securing the oil requirements needed to meet the CCP's core objectives and adverse affects on China's economy as a result of the volatility of international prices. Dependence upon the Strait of Malacca for around 80 percent of China's oil imports and reliance upon the United States Navy for ensuring the safety of the major sea lanes of communication has also resulted in significant strategic discomfort. But the domestic determinants of China's energy security have been a growing worry as well. Most of China's coal supplies are located far from the coastal areas where energy demand from the rapidly expanding manufacturing industry has been rising the fastest, making these areas highly vulnerable to China's weak energy infrastructure and more reliant upon foreign sources of coal

and oil.<sup>7</sup> A number of severe energy shortages, bottlenecks and blackouts (in 2002-2003, 2003-2004, 2005 and 2008) have resulted from massive geographic imbalances in supply and demand.

Chinese anxiety about energy security has pulled state policy in opposing directions. On the one hand, in order to expand energy supplies to meet demand, efforts have been made to help its national oil companies to secure trade and investment opportunities abroad and to acquire equity in foreign oil exploration and production.<sup>8</sup> Expanding electrical generation capacity by bringing more and more coal-fired power plants online, as well as more renewable energy capacity, is another dimension of this drive. On the other hand, in order to moderate demand, significant emphasis has been placed on energy conservation and efficiency. As a result of its prodigal economic growth, its heavy reliance on low quality coal and fossil fuels, and its inadequate management of energy resources and infrastructure, China's intensity of energy use is extremely high. Per unit of GDP it consumes roughly four times as much energy as the United States; seven times as much as Japan, France, Germany, the United Kingdom and Italy; and 1.5 times as much as India.<sup>9</sup> And given that there is such significant scope for improvement, China has undertaken an ambitious effort to improve energy efficiency and conservation that will be discussed in more detail in Sections 2.1 and 2.2.

### **1.3 Vulnerability Concerns**

Until the late 1980s, China had almost no history of research on climate change and therefore no domestic capacity for assessing the potential dangers it may pose. According to one prominent academic, when policymakers first asked scientists about the potential effects of rising average temperatures and sea-level on China, they responded by saying that there was no

existing data or analysis with which to provide an answer.<sup>10</sup> However, soon after the adoption of UN Resolution 43/53 in 1988, China started coordinating a serious research undertaking, establishing an inter-agency group of officials from the State Science and Technology Commission (SSTC), the National Environmental Protection Agency (NEPA), the State Meteorological Administration (SMA) and the Ministry of Foreign Affairs (MOFA) to prepare for the UN-sponsored scientific discussions on climate change under the Intergovernmental Panel on Climate Change (IPCC).

As scientific research on climate change in China has developed in the years since, providing ever more reliable estimates of its probable effects upon a range of issue areas, from agriculture and health to forestry and the economy, policymakers have become progressively more concerned about China's vulnerability. The first comprehensive and authoritative review of climate change in China, the *National Assessment Report on Climate Change*, published in 2006 by the Ministry of Science and Technology (MOST, formerly the State Science and Technology Commission, or SSTC), the China Meteorological Administration (CMA, formerly the State Meteorological Agency, or SMA) and the Chinese Academy of Sciences (CAS), forecast a range of negative trends, and received considerable attention from policymakers.<sup>11</sup> This was then followed, in 2008, by the State Council's White Paper on *China's Policies and Actions for Addressing Climate Change*, which also adumbrated a number of negative effects, and stated that China is 'one of the countries most vulnerable to the adverse effects of climate change'.<sup>12</sup>

The sheer complexity of China's climate and ecological systems - in a territory comprising 9.6 million square kilometers, 18,000 kilometers of coastline, and stretching over both temperate

and tropical/subtropical zones - means that the dangers it faces as a result of climate change are many and varied. According to the State Council, China's agriculture and livestock, forests and natural ecological systems, water resources, and coastal zones have all already been adversely affected, or are expected to be in the near future, with dire consequence for the economy and society.<sup>13</sup> Indeed, the Council anticipates that climate change will 'cause huge losses to the national economy', increase 'chances of disease occurrence and spread, endangering human health', raise 'possibilities of geological and meteorological disasters and consequent threats to the security of major projects,' and augment 'threats to the safety of life and property, and to the normal order and stability of social life'.<sup>14</sup> These concerns are amplified by the fact the majority of China's GDP is located in areas along the coast that are considered to be especially vulnerable to the negative effects of climate change.<sup>15</sup>

However, elevated climate change awareness in China is not confined to policymakers alone. Many businesses and the mass (particularly urban) public, too, have become more alert as a result of significant awareness-raising campaigns by the Chinese government and media; by local and international NGOs, such as the Climate Group, the World Resources Institute, Greenpeace and the World Wide Fund; and by public intellectuals, such as Hu Angang, a prominent economist at Tsinghua University who has been a vocal advocate of the 'green revolution'.<sup>16</sup> According to a survey conducted by the World Bank in 2009, 71 percent of Chinese respondents believe that climate change has already seriously harmed people in China; 78 percent agree strongly or agree somewhat with the claim that the climate change should be a priority even if it causes slower economic growth and job loss; and 65 percent believe it will be necessary to increase the costs of energy in order to encourage firms and individuals to conserve more.<sup>17</sup> In general, there has also been much less skepticism about the science of

climate change among the mass public, policymakers and academics than has been the case in the West.<sup>18</sup>

#### **1.4 International/Foreign Policy Concerns**

Many of the international concerns that inform China's foreign policy are the result of longstanding political or historically-rooted factors as well as normative values that influence China's behaviour across a range of issue areas. The three international concerns that are discussed here - sovereignty, equity and image - have shaped China's policies on trade, finance, nuclear non-proliferation and international institutions more broadly, in addition to climate change.<sup>19</sup> As with other motivating factors, its interests related to the international political sphere often pull policy in opposite directions.

First of all, Chinese negotiators have expressed an enduring concern for the preservation of sovereignty.<sup>20</sup> Defined in terms of territorial integrity, foreign and domestic policymaking autonomy, and especially the maintenance of the CCP's hegemony and privileged position in Chinese society, sovereignty is a value deeply rooted in China's modern history.<sup>21</sup> Observing the destabilising effects of imperialism and repeated foreign interventions in China's domestic and external affairs, which ultimately contributed to the downfall of the Qing dynasty, the CCP is wary of any external influences on its policymaking that might be interpreted as a lack of authority. China's historical experience with so-called 'unequal treaties' - widely understood to be hallmarks of the Qing dynasty's weakness - has resulted, for example, in substantial distrust of multilateral treaties more generally. In the years after the Second World War, this suspicion was then reaffirmed as a result of China's exclusion from many multilateral regimes, particularly the United Nations, where its seat and membership in the Security Council was

occupied by the Republic of China (Taiwan) until 1971. Since then, of course, this suspicion has tempered as China has become enmeshed in a growing number of multilateral regimes and signed numerous international agreements.<sup>22</sup> However, sovereignty remains an special foreign policy value that has been repeatedly emphasized by China in international negotiations on a range of issues. Above all, China does not want to be seen to be giving in to bullying by the dominant global powers.

China also voices concerns about equity in the international sphere, consistently arguing in favour of differentiated responsibilities among developed and developing countries in recognition of their substantially different contributions to climate change and varying capabilities for reducing emissions. From a historical perspective, its negotiators have regularly argued that China has been a small contributor (the 89th largest) when one takes into account its large population.<sup>23</sup> And though its yearly absolute emissions are the largest in the world, China remains a minor emitter in per capita terms, ranking only 67th worldwide.<sup>24</sup> Developed countries, by contrast, emit large amounts of CO<sub>2</sub> relative to the size of their populations. While the average person in China produces only 4.7 metric tonnes of CO<sub>2</sub> each year, an average European produces 8.7 and a North American 19.<sup>25</sup> Moreover, Chinese officials claim that over 30 percent of China's emissions arise from the production of goods exported to developed states and that many of the most environmentally harmful industrial processes have been 'outsourced' to China.<sup>26</sup> On the basis of equity, therefore, it is not clear why China should be obliged to reduce its emissions. As now-developed countries were able to produce emissions during their period of industrialisation, China should have an equal right to produce emissions in pursuit of its development. Its unequal capacity for reducing emissions reinforces this conclusion. China's current emissions are, it is argued, 'survival' emissions - necessary for

economic development and the reduction of poverty - while those of developed countries are 'luxury' emissions – a result of long showers and Sport Utility Vehicles.<sup>27</sup> China also has a comparatively diminished domestic capability for developing and adopting technologies for mitigating its impact on the climate. It is therefore not only immoral for its to accept stringent obligations, but unrealistic as well.

Finally, China has been concerned about its image among foreign publics and policymakers. On the one hand, China wants to allay the worries of the many westerners who believe that China is a threat to a stable international order and the effective governance of transnational issues. Confronted with massive domestic problems, China's leaders want to avoid any foreign entanglements that may handicap their ability to continuously improve living standards and hopes to be seen as a cooperative partner and responsible upholder of multilateralism. To reassure foreign publics that China intends to maintain its 'peaceful rise' policy it has embedded itself within an ever-widening array of international institutions. China's compliance with the environmental agreements that it has signed has generally been viewed to be quite good, signaling that it takes these commitments very seriously. On the other hand, China remains wary of agreeing to any binding commitments that it does not believe it can meet, risking potentially damaging economic or diplomatic retaliation from other countries in response.<sup>28</sup> It also wants to be seen as a leader of the G77 and of the developing world more generally to boost its prestige and bolster its stance in the UNFCCC negotiations. To this end it has used its power to mobilize a common position amongst developing countries through the G77/China, positioning itself as a supporter of the developing world's cause, even in certain cases when this puts it in the awkward position of supporting policies that are not directly in its own interests.<sup>29</sup>

## **Part II. Policymaking, Policies and Global Governance**

Shifting concerns related to climate change and energy in the Chinese government, the CCP, and among non-state or civil society actors have resulted in a number of remarkable changes in China. Domestically, China's climate and energy policymaking structures have evolved from relatively powerless entities into more substantial bureaucratic machines influencing decision-making at many levels of government. The major institutional reforms that have taken place, discussed in Section 2.1, can be understood as attempts to increase the governance capacity necessary for implementing effective policies in these areas as the underlying issues have attained greater domestic and international prominence. These structures continue to face considerable challenges to their authority and governance capacity. However, the greater authority and capacity that they have achieved has permitted them to set and enact a range of ambitious policies for reducing emissions, increasing energy efficiency and conservation and encouraging the use of renewable energy sources. These are outlined in Section 2.2

Internationally, the picture is more nuanced, as is shown in Section 2.3. By comparison to the more significant shifts in China's domestic policies and policymaking structures, its position in the UNFCCC has been relatively less proactive. China has, thus far, continued to resist any suggestion that it should accept binding emissions targets. However, at the intergovernmental level, there have nonetheless been some notable shifts. In particular, China has adjusted its position on flexibility mechanisms, leading to its embrace of the Clean Development Mechanism, and on finance and technology transfer. Furthermore, beyond the international negotiations, a growing number of subnational and non-state actors in China have engaged in

innovative forms of transnational governance, attempting to take action on climate change in the absence of a 'global deal'.

## **2.1 The Evolution of Climate and Energy Policymaking**

Coordination of Chinese climate policy began in 1990 with the creation of the National Climate Change Coordinating Leading Small Group (NCCCLSG), which was originally stationed in and chaired by the SMA. The SMA was a key player in the coordination of China's early climate change research, its participation in the IPCC and other international scientific programmes, and had been responsible for the implementation of China's UNFCCC commitments after it was ratified in 1992. However, as an agency, it was a low ranking government body, and was increasingly sidelined by the more powerful National Development and Reform Commission (NDRC) and Ministry of Foreign Affairs (MOFA) in the actual climate policymaking process until the NCCCLSG was at last moved to the NDRC in 1998, signaling a significant change in policy.<sup>30</sup> The NDRC, by contrast, is universally considered to be the most powerful comprehensive commission (the highest ranking administrative unit in China) under the State Council, with overall responsibility for studying, developing and setting policies related to economic and social development, including the Five-Year Plans, and the coordination and regulation of energy prices and other areas related to the promotion of sustainable development. Therefore, officially shifting responsibility for climate change to the NDRC meant that climate change was no longer being treated as a purely scientific question, but as a highly sensitive political and economic issue.

After China's approval of the Kyoto Protocol in 2002, the NCCCLSG became known the National Coordination Committee on Climate Change (NCCCC). Established under the

auspices of the State Council in 2003, it continued to be stationed in and chaired by the NDRC. However, as a coordination group chaired by a vice-premier, its status and independent policymaking authority remained limited. With the increasing salience of the climate change issue both domestically and internationally, as the design of a post-2012 regime became the focus of the UNFCCC negotiations at COP-13 in Bali, Indonesia, the governance of climate change in China received a significant boost as the NCCCC was replaced by the National Leading Committee on Climate Change (NLCCC). Headed by Premier Wen Jiabao, the role of the NLCCC, which coordinates twenty-seven different government agencies, is much like that of its predecessors: to make major decisions and to coordinate national actions on climate change. Yet it has considerably strengthened capacity and decision-making power compared to previous incarnations.

The greater strength and authority of the NLCCC is largely due to the fact that its establishment was paralleled by the creation of similar leading groups and task-forces designed to plan and coordinate action on climate change in local governments.<sup>31</sup> Between June 2007 and March 2008, eight provinces, province-level municipalities and autonomous regions established Leading Groups on Climate Change, Energy Saving and Pollution Reduction based on the central government's model, including Fujian, Gansu, Hainan, Hubei, Ningxia, Qinghai, Sichuan and Zhejiang, as well as similar groups at the prefectural and county levels. Eighteen other provinces established Energy Saving and Pollution Reduction groups that did not have 'climate change' in their titles, but nevertheless included clear mandates to generate strategies and policies and to organize action on climate change. Overall, such groups are often the most influential governance units in China, and are ultimately responsible for implementing the central government's decisions. Many of these, including Xinjiang, Hubei, Fujian, Beijing,

Liaoning, Shandong and Jianxi, have developed their own mitigation and adaptation plans, while others have launched their own climate change research programmes.<sup>32</sup>

Thus, within a short time the entire structure of climate change governance in China changed. With the exception of several local governments involved in the Clean Development Mechanism, none had previously been interested in or even aware of climate change issues. But, after the creation of the NLCCC signaled the importance of climate issues to the central government, and as pressure was placed on local governments, significant institutional developments followed that increased the central government's capacity for implementing measures that can reduce emissions across China.

A parallel, if less robust, trend can be seen in the structures governing energy policy. For a period of nearly 10 years following the failure of the Ministry of Energy in 1993 there had been no overarching governance structure in the energy sector. Coordination of planning and investment among the major ministries, such as the Ministry of Petroleum Industry, the Ministry of Coal Industry, the Ministry of Nuclear Industry, and the Ministry of Water Resources and Electric Power, along with the major national energy companies, was all but absent. However, as a result of a series of severe energy shortages and blackouts that began in 2002, coupled with the growing concerns about China's oil and coal supply mentioned in Section 1.2, the Chinese government was shocked into an effort to improve governance capacity.

As with previous efforts, however, centralization of authority faced heavy resistance from the entrenched interests within the energy industry. The Energy Bureau which was ultimately

established in 2003 under the NDRC and given a broad mandate to manage the energy sector, was a compromise solution between the proponents of a centralized energy authority; the NDRC, which wished to preserve its influence by preventing the emergence of an institution with a competing mandate; and the national energy companies, who wished to prevent the creation of a body that had real authority over their actions.<sup>33</sup> As a result, the Bureau suffered from a lack of manpower, financial resources, autonomy and authority, which compromised its ability to coordinate energy policy.<sup>34</sup> Crucially, since its administrative rank was lower than the ministry or vice-ministry-level agencies and the national oil companies that it was supposed to coordinate, it was unable to reconcile the multiple conflicts among the most important stakeholders.

China's energy crisis of 2003-2004 again highlighted the need for institutional reform to both the NDRC and the top leadership. Again, trying to centralize energy policymaking, a National Energy Leading Group (NELG), headed by Premier Wen Jiabao, was created in 2005, along with a State Energy Office (SEO). The NELG, which would comprise many of the same officials as the NCCCC, acted as a high-level discussion and coordination body under the auspices of the State Council, while the SEO was subordinate to it, executed its decisions and managed its daily affairs. However, while the creation of the NELG and SEO improved governance of the energy section at the margin, many of the persistent problems that had hindered effective governance, including bureaucratic fragmentation and unclear or overlapping authorities, remained in place.<sup>35</sup> In most respects, the major administrative tasks continued to be managed by separate ministries, leading to poor coordination and resistance from influential constituencies. The most recent attempt, in 2008, to overcome the energy governance deficit by further centralizing energy policymaking in China involved the creation

of a National Energy Commission (NEC) to replace the NELG and a National Energy Administration (NEA), which absorbed the Energy Bureau, a number of offices in the NDRC, the SEO and the Nuclear Power Administration of the Commission of Science, Technology and Industry for National Defense (COSTIND). Acting on the behalf of the NEC, the NEA is tasked with managing the energy industry, drafting energy plans and policies, negotiating with international energy agencies and approving foreign energy investments.

Both the NEC and NEA continue to suffer from insufficient authority, autonomy and resources, which is problematic for any coordinated effort to moderate energy demand and to introduce energy efficiency policies.<sup>36</sup> Energy pricing policy, for example, remains the responsibility of the NDRC's Pricing Department. However, while far from ideal, the NEC's and NEA's capabilities in each of the areas covered by their mandate are greater than those possessed by their predecessor, the Energy Bureau. The current energy governance structure, for example, benefits from the same proliferation of leading groups and task-forces in provincial and local governments that assist climate policymaking, which reinforces its ability to set targets and implement policies and programmes for meeting them.<sup>37</sup> Indeed, to meet the stringent energy efficiency targets set by the central government (discussed below), some local authorities have initiated ruthless energy rationing programmes, cutting electricity to homes, factories and public buildings for much of the day on a regular basis.<sup>38</sup> Chinese officials have also ordered the closure of more than 2000 outdated and inefficient steel mills, cement works and other energy-intensive factories as part of this energy-efficiency and emissions reduction drive, with unknown effects upon employment.<sup>39</sup> These actions testify to both the improved capacity for energy governance in China and the determination with which the goal of energy efficiency is being pursued, although clearly substantial challenges persist.

## **2.2 Climate Change, Energy Efficiency and Renewable Energy Policy**

While the structures of climate and energy governance in China continue to evolve, and remain troubled in a number of respects, the institutions that now exist nonetheless represent an improvement over previous incarnations. The increased authority and governance capacity they have achieved has permitted a number of new climate and energy-focused programmes, policies and targets to be established, which taken together amount to a nearly unparalleled effort to control GHG emissions, improve energy efficiency and conservation, and encourage the use of renewable energy.

Of these, China's pledge to reduce its carbon emissions per unit of GDP by 40-45 percent from 2005 levels by 2020 is no doubt the most widely known. Announced prior to Copenhagen and included as part of its Copenhagen Accord commitment, this carbon intensity target, which is expected to be reaffirmed in the 12<sup>th</sup> Five Year Plan (2011-2015), represents a new phase in China's efforts to take action on global climate change. While estimates vary, depending on a variety of assumptions and projections, many studies suggest that meeting the target presents a substantial challenge to China, requiring a host of new energy efficiency and low-carbon technology policies and programmes at the national, provincial and local levels, and can result in a substantial limitation of emissions, if implemented successfully.<sup>40</sup> Some, such as Fatih Birol, chief economist of the International Energy Agency (IEA), have estimated that China's commitment may reduce projected emissions by as much as 1 Gigatonne or 25 percent of the total world reduction needed to stabilize average global temperatures at 2 degrees Celsius.<sup>41</sup> But, at this stage, an exact quantification of its effect is virtually impossible. Critics of China's target argue that its commitment represents nothing more than the continuation of current energy efficiency and conservation policies and measures. But, even if this is the case, this

argument fails to underline that, in many respects, China's current and already proposed efforts in these areas have been tremendous.

China's first major step on the path to a low-carbon economy was its target of reducing energy consumption per unit of GDP by 20 percent or 4 percent annually, announced in the 11<sup>th</sup> Five Year Plan (2006-2010). In order to meet this target, as well as others for the reduction of sulfur dioxide (SO<sub>2</sub>) and chemical oxygen demand (COD) emissions by 10 percent, China launched a comprehensive economy-wide energy conservation programme. The Five-Year Plan set energy conservation and emissions reduction targets for each region and sector, and for individual businesses noted for their high energy intensity levels and consumption. As part of this effort, a revised Energy Conservation Law was approved in 2007, which created a legal framework for promoting energy efficiency and conservation activities. Among other things, the Law made local governments accountable for implementing their share of the national targets by including officials' adherence to their target as a key criteria in their performance evaluations.

The Chinese government has adopted a variety of specific policies and initiatives intended to meet its goals. These new policies include higher taxes on petroleum, coal and natural gas to encourage buyers to reduce consumption of, and diversify away from, such fuels; differentiated energy pricing, which raises the cost of energy on businesses that do not meet the government's energy-efficiency standards; and financial rewards for businesses that make distinguished efforts to save energy.<sup>42</sup> New energy conservation and efficiency initiatives include projects focusing on public transport, alternative fuels, combined heat-and-power, surplus heat utilization, green lighting, high performance appliances and energy saving buildings; energy efficiency benchmarking in key sectors, such as construction and transportation; and the Top-

1000 Enterprises Energy Conservation Programme, which encourages key energy-consuming businesses to engage in energy auditing, to report their usage and to put forward energy conservation plans.<sup>43</sup>

Renewable energy policies have seen a similar efflorescence as China has attempted to diversify its energy supplies away from the use of fossil fuels, particularly coal and oil. Sensing also the major economic opportunities at hand in the production of renewable energy products, as well as the benefits to be had in terms of reduced pollution and lower emissions, it has in a short period of time become both a major producer and market for renewable energy products. China has, since the early 1980s, designated renewable energy technology as an area of potential growth, investing large amounts of money in research and development (R&D) over time. Though the production of renewable energy products began to take off in the 1990s, it was not until 2004 that China approved a Renewable Energy Law, which established a legal framework for enacting economy-wide renewable energy policies, and included regulations, targets, development plans, fiscal and subsidy policies and national standards. This was then supplemented by the Medium and Long-term Development Plan for Renewable Energy, in 2007.

Together, these aimed to increase the use of non-fossil fuel energy sources in China's total final energy consumption to 10 percent by 2010 and 15 percent by 2020, delegating responsibility to local authorities and making the achievement of each target legally mandatory. As Table 1 shows, specific targets were also set for each renewable energy source. By 2020, China currently aims to have a total of 300GW of installed hydro capacity, 30GW of wind capacity, 1.8GW of solar PV capacity and 30GW of biomass-based sources of energy production.

Policies that were established by the Law and Plan to promote the development and use of renewables include rules requiring the operators of power grids to buy energy from renewable energy producers; feed-in tariffs, discounted lending and the creation of a national fund to foster renewable energy development; guidelines for renewable energy industries, setting technical standards for renewable energy electrical power, technology, and products; and rules designed to encourage the construction of renewable power generation facilities, efficient buildings, and rural electrification.<sup>44</sup> This legislative effort has been supplemented by financial support from MOST for R&D on key renewable energy technologies, and by a host of policies, regulations, targets, subsidies and plans formulated and set by local governments, many of whom have also created low-carbon development zones which focus on producing clean energy technology.<sup>45</sup> Finally, in 2009, a system of fixed tariffs and a special subsidy initiative, known as the 'Golden Sun' programme, was launched for encouraging solar photovoltaic (PV) installation, which has thus far lagged behind most other renewable technologies.<sup>46</sup>

China's efforts to promote the use and production of renewable energy and to encourage energy conservation and efficiency have both proven to be significant. Over the past 10 years, hydro, wind, biomass and solar PV energy use has increased across the board, and China is now both a global market leader and the largest user of renewable energy.<sup>47</sup> Wind energy, thus far, has led the way. Boasting installed capacity of nearly 26 Gigawatts (GW) by the end of 2009, China's wind energy capacity has doubled every year for the past five years.<sup>48</sup> It is now the largest market for wind turbines, having surpassed the United States in 2009. And after nearly reaching its 2020 target (set in 2007) of 30GW of installed capacity almost 10 years ahead of schedule, the NDRC has recently proposed revised targets of 35GW for 2011 and 150GW for 2020 – the latter nearly equal to the world's entire installed wind capacity of 157 GW at present. Solar PV

capacity, by contrast, amounted to only 0.32GW in 2009 – an amount less than Belgium – but is now being targeted to grow to 20GW by 2020. Production of renewable energy technology has improved as well. Wind, solar PV, solar heating, biomass, geothermal and ocean energy technologies have all seen significant gains. China is now the third largest manufacturer of solar PV technology, for example, producing over 40 percent of the world total, with around 98 percent exported, mainly to Germany, Spain, and California.<sup>49</sup>

**Table 1. Current and Targeted Renewable Energy Production in China**

Energy Source	2006 (actual)	2009 (actual)	2020 (current target)	2020 (proposed target)
Hydro Power	130GW	197 GW	300 GW	300 GW
Wind Power	2.6 GW	25.8 GW	30 GW	150 GW
Biomass Power	2.6 GW	3.2 GW	30 GW	30 GW
Solar Power	0.08 GW	0.4 GW	1.8 GW	20 GW
Renewable Energy Share of Final Energy Consumption		9 %	15 %	

Source: Martinot 2010; Wang et al 2010; Martinot & Li 2007.

With respect to energy efficiency, China’s actions have again resulted in considerable achievements. China has made progress in industry - the largest consumer of energy - closing obsolete power generation, iron production, and steel production, and gradually improving the efficiency of its most energy-intensive products; in buildings, where the deployment of energy-efficient technologies and materials has led to more efficient heating; and in transportation, where the fuel economy of cars has improved and massive investments in transit systems have taken place.<sup>50</sup> Overall, while its GDP increased by over 10 percent annually, as a result of its policies, targets and technological changes China’s energy intensity declined by nearly 18

percent between 2005 and 2009. Indeed, almost all the country's provinces, regions and municipalities have recorded improvements in the efficiency of energy use relative to GDP, which is reckoned to have saved 290 million tce of energy and reduced GHG emissions by 670-750 million tonnes.<sup>51</sup>

In sum, while China has accumulated a number of worrisome titles - becoming the world's largest emitter of GHGs, the world's largest consumer of coal, and world's second largest producer and consumer of energy - these have been matched by a number of very positive ones: the world's largest market for wind energy, the most installed renewable electricity capacity, the third largest producer of solar PV. Its effort to increase energy efficiency and conservation, the Worldwatch Institute has aptly remarked, 'has few equals in other countries, developed or developing'.<sup>52</sup> Despite these notable accomplishments, however, China has struggled to burnish its image as a leader in the fight against climate change; its considerable domestic efforts to reduce its GHG emissions, increase energy efficiency and conservation and promote the use of renewable energy having frequently been overshadowed by its reputation as a 'laggard' or 'hard-liner' in the UNFCCC negotiations.

### **2.3 China and the Global Governance of Climate Change**

As both a developing country and the largest emitter of GHGs, China presents a considerable challenge to the global governance of climate change. Reducing its emissions is absolutely necessary for limiting global GHGs to sustainable levels, but it has so far refused to agree to a legally-binding multilateral treaty. As a result, it is often viewed by the international community, particularly by developed countries, as inflexible and obstructive.

The various concerns that inform its position in the international climate change negotiations have indeed led to a fairly consistent negotiation strategy. But it is unfair to say that there has been no change in China's approach in the negotiations, nor, if we are to fully assess the role China has played in the governance of climate change, is it fair to only look at its behaviour in the UNFCCC. As has been seen, China has made a considerable domestic effort to take action on climate change. But China has also engaged with foreign governments and actors in a number of other ways, including through intergovernmental networks and through various forms of transnational governance by or involving sub-national and non-state actors.

### *The Evolution of China's Position in the UNFCCC*

China's position in the UNFCCC negotiations has naturally attracted widespread attention. With the greatest population and the second largest economy, China is widely considered to be an emerging 'great power'.<sup>53</sup> However, as the world's largest emitter of GHGs and second largest producer and consumer of energy, it can already arguably be considered an 'environmental power'.<sup>54</sup> Possessing the potential to undermine any emissions reductions made by other countries, its cooperation is perceived to be essential to limiting global GHG emissions. Without strong action from China any efforts by others to control global warming would be futile, making China a linchpin for achieving global cooperation.

In many respects, China's stance seems to have changed little since it first coordinated a negotiating strategy and became heavily involved in the climate talks of the early 1990s. At Copenhagen, in 2009, its position may have appeared to many to be all but indistinguishable from its stance in Rio, 1992, or Berlin, 1995. China remained wedded to the principle of 'common but differentiated responsibilities and capabilities', highlighted its low per capita and

historic emissions and appeared to be hostile to any binding reductions. These have each been enduring features of China's position in the UN negotiations. However, China's approach has, in fact, evolved and become more flexible over the course of the UNFCCC negotiations. Its position on so-called 'flexibility mechanisms', for example, has changed quite dramatically. On other issues, such as finance and technology transfer, China's position has been more consistent, but its strategic approach to them has been transformed in important ways. Its general negotiation style, several scholars have noted, has become more amicable and constructive. Even China's stance on the nature of its commitments, where China's position appears to be least flexible, turns out to be less consistent than many suppose.

China's volte-face on the issue of flexibility mechanisms is one of the clearest ways in which its position has changed over the course of the negotiations. In the early talks leading to the Rio, joint implementation (JI) had been particularly contentious issue for China, especially insofar as the concept was extended to include developing countries. JI would, in theory, allow developed countries to earn credits for emissions-reducing projects in other countries that could count towards their own emissions targets or could be sold to others. This would give them a degree of flexibility in how they would meet their emission reduction limitation targets. However, at this early stage, China argued that JI was an unfair practice which would allow developed countries to shirk their responsibilities, and would involve a violation of sovereignty due to the invasive monitoring and verification measures that would be needed.<sup>55</sup> Ultimately, against China's initial objections, provisions for JI were included in the UNFCCC; but only as a pilot phase without the possibility of credits – what became known as Activities Implemented Jointly (AIJ).

Again, in the subsequent negotiations leading to Kyoto, the so-called 'Kyoto Flexibility Mechanisms' proved to be a key issue for China - the Clean Development Mechanism (CDM) in particular. The CDM was designed to allow emission reduction projects in developing countries to earn certified emission reduction (CER) credits, which could be traded and sold, and used by industrialized countries to meet a part of their emissions reduction targets under the Kyoto Protocol. In contrast to its generally negative position on JI in earlier negotiations, however, key Chinese officials in the NDRC came to see the CDM as a potential conduit for technologies and investments that coincided with China's evolving economic, energy and climate related concerns.<sup>56</sup> Participating in the CDM would also allow China to demonstrate its commitment to action on climate change, while remaining free of any binding obligations to specific emissions reduction targets.

China still expressed significant reservations about the CDM's institutions. It worried that the mechanism would primarily serve the interests of developed countries and would make it more difficult for developing countries to reduce emissions cheaply if and when they assumed some reduction commitments.<sup>57</sup> China also objected to a US proposal suggesting that the resulting credits should be tradable in secondary markets, and preferred CDM projects to be arranged primarily through bilateral project-based institutional arrangements, rather than fund-based multilateral financing.<sup>58</sup> But it became clear that China no longer objected to the CDM concept *tout court* as it had JI. At COP-6, China called the CDM a 'win-win' mechanism for both developed and developing countries, and, at COP-7, in Marrakech, China bolstered efforts to accelerate its launch.<sup>59</sup>

Since its introduction, China has been a notable supporter of the CDM. As of November 2010, Chinese authorities have approved 2785 projects.<sup>60</sup> Of these, 1079 are officially registered with the CDM executive board, amounting to 41.64 percent of all registered projects.<sup>61</sup> In total, China has issued 252,324,614 Certified Emission Reduction (CER) credits, amounting to 52.92 percent of all CER credits, which are each equivalent to a reduction of one tonne of CO<sub>2</sub>, in theory.<sup>62</sup> Projects focusing on renewables have been estimated to account for 45.84 percent of all the CO<sub>2</sub> reductions resulting from CDM projects in China, followed by chemical pollutant reductions (especially of HFC-23) (16.72 percent), energy saving and efficiency improvement (16.44 percent) and methane recovery and utilization (10.62 percent).<sup>63</sup> The true value of the CERs issued by China in terms of reduced emissions has, of course, been subject to considerable criticism. David Victor and Michael Wara have argued that many CDM-supported projects would have happened anyway, violating the rule of ‘additionality’, and that between one and two-thirds of the offsets do not represent real emissions reductions.<sup>64</sup> Nevertheless, this does not negate the fact that the CDM is now one of the key avenues through which China engages the world on the issue of climate change. Suitably reformed, the CDM offers a valuable conduit for supporting its domestic energy efficiency, conservation and renewable energy projects.

China’s position on other issues, such as finance and technology transfer, has been more consistent over the years, but its approach or strategy has been transformed in important ways. China has, since the early 1990s, regarded finance and technology transfer as a crucial dimension of the governance of climate change.<sup>65</sup> At an early stage, on the issue of finance, it argued that developed countries should provide funds for implementing any agreements involving developing states and as compensation for damages and lost output that may result

from climate change. Moreover, Chinese officials argued, these funds should be new and additional to existing development assistance. Developed countries, China also suggested, should find suitable mechanisms for providing technology to assist with adaptation and any voluntary mitigation efforts by developing countries. In particular, developed states should buy sustainable and environmentally-friendly technologies from companies and sell it to developing states at below market prices.

With respect to both technology and finance, therefore, China's emphasis in the UN negotiations was on the actions and obligations of developed countries. However, in recent years, China has changed its strategy and the way in which it has framed its demands on these issues. With respect to technology transfer, for example, it has come to emphasize a 'win-win' approach, proposing 'reciprocal technology cooperation' with industrialized countries that is both consistent with the 'law of the market' and 'oriented towards climate change and sustainable development'.<sup>66</sup> China, of course, remains at the forefront of developing countries and as such continues to make strident demands for mechanisms to transfer funds and technology. At Copenhagen, it demanded that developed countries contribute between 0.5 and 1 percent of their GDP to mitigation and adaptation activities in developing countries. But, as a number of observers have noted, Chinese negotiators have taken a less aggressive, rhetorical approach and have been more willing to engage in constructive dialogue on these issues.<sup>67</sup>

China's position on emissions reduction commitments for itself and for developing countries as a group has, by contrast, been the most consistent dimension of its climate change foreign policy over the years. Despite quite remarkable changes in China's domestic policies, Chinese negotiators have regularly argued that developing countries have made a negligible

contribution to global emissions in per capita and historic terms, should be allowed to increase their emissions as they develop, and have no obligation to make any commitments, voluntary or otherwise. Their largely unswerving dedication to this policy can be attributed to the strength of the political, economic and international equity-based concerns that inform it. Having staked their legitimacy on the ability to grow the Chinese economy by 7-8 percent annually, China's political leaders are wary of binding the country into any agreement that may undermine their control over domestic economic policymaking. China's historic experience with unequal treaties, which contributed to domestic unrest during the Qing Dynasty, also contributes to a general suspicion of such international agreements, as noted in Section 1.4.

But, even with respect to China's approach to international commitments, it is unfair to say that its position has seen no change. In 1998, China's stance was characterized by Benjamin Gilman, chairman of the US House of Representatives' Committee on International Relations, as a policy of "'Three Nos': no obligations on China, no voluntary commitments by China and no future negotiations to bind China".<sup>68</sup> And, in the early negotiations, Gilman's characterization could be said to offer a reasonable appraisal of China's position. Holding fast to this foreign policy, China, along with the G77, successfully influenced the structure of the UNFCCC in a number of ways. Most importantly, they were able to include the principle of 'common but differentiated responsibilities and respective capabilities', according to which developed countries assumed the primary responsibility for reducing emissions.

However, while China has continued to avoid any binding obligations, two of Gilman's 'Three Nos' – 'no negotiations on future commitments' and 'no voluntary commitments' - no longer reflect its stance. The first of these was decisively altered at COP-13 in Bali, Indonesia, in

2007. The most significant issue discussed at Bali was the question of post-2012 actions, including the structure of the negotiation process moving forward. China could easily have been expected to continue its long-time refusal to take part in any negotiations that might lead to specific actions by developing countries. But in a remarkable departure, China supported the establishment of an ad hoc working group on long-term cooperative action (AWG-LCA), which would explicitly consider ‘Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner’.<sup>69</sup> For the first time, China and the G77 appeared to have accepted the idea that they should discuss taking measurable steps toward mitigation. Of course, China has continued to resist any binding commitments in AWG-LCA negotiations. However, simply agreeing to such negotiations nonetheless represented a considerable shift in the positions of China, the G77 and other developing countries.

The second ‘no’ – no voluntary commitments – was decisively altered at COP-15 in Copenhagen, 2009. Throughout the Copenhagen negotiations China seemed to hold to its long-time position, underlining the historical responsibility of developed countries, the rights of developing countries and their lower capabilities for reducing emissions. It supported the G77’s rejection of attempts to shift responsibility onto developing countries, and emphasized that binding mitigation commitments in the AWG-LCA negotiations should only apply to developed countries that were not parties to Kyoto (meaning the US).<sup>70</sup> However, in the end, China signed the Copenhagen Accord, making its specific, voluntary public commitment to reduce its carbon emissions intensity by 40-45 percent from 2005 levels by 2020. Although this was not a legally-binding commitment and had been proposed prior to Copenhagen, it still

represented a step away from its own ‘no commitment’ or ‘no voluntary commitment’ position, as expressed in earlier negotiations, towards a ‘minimal commitment’ position.<sup>71</sup>

In sum, China’s deeply entrenched political, economic and international concerns contribute to its continuing resistance to put forward binding targets. Moreover, as a developing country with a large population, China does not think it has any moral obligation to take the lead in reducing emissions and to make any commitments beyond what it is willing to do voluntarily. According to China, since developed countries are the primary contributors to the problem and have already had over 150 years to develop economically, the main responsibility for mitigation should fall on them. However, China’s growing sense of vulnerability, its desire to bolster its international image as an upholder of multilateralism, and its desire to attain international support for its substantial domestic energy and climate change programmes has resulted in changes in its position on specific issues, its negotiation strategy and, in some respects, its approach to international commitments in the UNFCCC negotiations. But as these shifts have taken place, China has also increasingly engaged in climate governance activities outside of the UN process.

### *China’s Participation in Transnational Climate Governance*

A multilateral agreement or ‘global deal’ has traditionally been viewed as the main mechanism for governing climate change by both scholars and practitioners.<sup>72</sup> But as a result of the lack of progress in the international negotiations, heightened concern about vulnerability to climate change and frequently motivated by opportunities for profit, networks of sub-state and non-state actors have increasingly sought their own solutions to climate change.<sup>73</sup> Refusing to leave the impetus for action up to international negotiators and national governments, such actors

have developed their own information sharing and lobbying networks; private and public regulations, commitments and standards; and operated financing and monitoring mechanisms, such as voluntary or mandatory carbon reporting programmes, for taking action on climate change on their own.<sup>74</sup> Collectively, these efforts constitute an emerging layer of ‘transnational’ climate governance which compliments and can potentially overcome certain obstacles faced by traditional intergovernmental governance mechanisms by convening networks to try to authoritatively steer public and private actors towards the global public goal of reducing emissions.<sup>75</sup>

Recent years have seen a remarkable growth in experimentation with transnational climate governance initiatives and transnational governance more generally.<sup>76</sup> A recently developed database identifies at least 60 such initiatives active across the world (though the real number is certainly much higher), 90 percent of which appeared in the years since 1997 and nearly 38 percent after the ratification of the Kyoto Protocol in 2005.<sup>77</sup> Their rapid proliferation over the past 20 years means that we are increasingly unable to judge the efforts made by countries simply based upon the positions and activities of their national governments. Indeed, we must also look at the myriad ways in which sub-state and non-state actors have attempted to govern climate change both internationally and domestically. Consider several examples. In China, for instance, Beijing, Shanghai and Hong Kong each participate in the C40, a network of 40 of the world’s largest cities who have each committed to reduce carbon emissions and increase energy efficiency. Originally called the Large Cities Climate Leadership Group, the C40 was first founded in 2005 when representatives from 18 of the world’s largest cities convened in London to discuss the possibility of joining forces to limit their GHG emissions.<sup>78</sup> Sensing an urgent need for action and cooperation on climate change that was not forthcoming at the

intergovernmental level and recognizing the crucial role that cities play – accounting for nearly 70-80 percent of global CO<sub>2</sub> emissions - they pledged to work together to reduce their impact on the climate.<sup>79</sup> Since then, cities within the C40 network have adopted and shared climate action plans, which often include specific targets and timetables for reducing their emissions. To achieve these goals, the C40 created a number of initiatives, often in partnership with the Clinton Climate Initiative (CCI) and other organizations. These include the CCI Cities Programmes, which provide a range of services to support emissions reducing and sustainable energy projects; the Carbon Financing and Capacity Building programme, which helps existing and emerging megacities to make use of the carbon finance opportunities of the UN Kyoto Protocol; and the Climate Positive Development Program, which supports the development of large-scale low- and zero-CO<sub>2</sub> urban projects.<sup>80</sup> Although the C40 is in an early stage of implementation, making it difficult to evaluate its performance and impact, it nonetheless represents a notable attempt to achieve cooperation outside of the UN process.

China has also participated in forms of transnational governance such as the Gold Standard, a carbon credit certification scheme. Developed by a group of NGOs in consultation with governments and private sector firms between 2001 and 2003, the Gold Standard registers projects that reduce GHG emissions while contributing to sustainable development and certifies their carbon credits for sale on both voluntary and compliance (CDM and JI) carbon offset markets.<sup>81</sup> Firms or organizations that want to demonstrate the superior quality of their carbon credits are able to register their projects with the Gold Standard by following the same steps for the CDM but with additional requirements at each stage. The projects that satisfy these requirements are then able to sell their credits under the Gold Standard label. Given China's high

level of participation in the CDM it is not surprising that many Chinese businesses have made use of the Gold Standard. Around 5 percent of the companies that are Gold Standard registered account holders are located in China, while 16 percent of all the voluntary emissions reductions (VER) projects and half of the CER issuing projects that have been certified by the Gold Standard are located in China.<sup>82</sup> As many as 17 similar standards have appeared in recent years, including the Voluntary Carbon Standard, the Climate Action Reserve Protocol, the CarbonFix Standard and the Social Carbon Standard.<sup>83</sup> And, in response to nascent demand for VER credits from businesses and individuals willing to take actions to voluntarily reduce emissions and the Chinese government's gradual embrace of carbon markets, which may feature in the forthcoming 12<sup>th</sup> Five Year Plan, a comparable mechanism, the Panda Standard, has also been developed in China. The first standard for the certification of domestic carbon projects, the Panda Standard aims to provide transparency and accountability in the evolving Chinese markets for carbon credits such as the Tianjin Green Exchange and the China Beijing Environment Exchange.<sup>84</sup>

The Energy and Climate Registry is another example of an innovative transnational governance mechanism. Based upon the successful Climate Registry, the California Climate Action Registry and the Greenhouse Gas Protocol, and supported by the NDRC and several other NGOs, the Energy and Climate Registry is a voluntary, user-friendly emissions and energy-use reporting system designed specifically for China by the Innovation Center for Energy and Transportation (*iCET*), an NGO based in Beijing.<sup>85</sup> The Registry, which was launched in 2009, enables multinational corporations, state-owned enterprises, private or state-owned supply clusters, municipal governments, schools and hospitals to quantify and track their emissions

and energy use according to consistent, registry-approved standards; receive third party verification; and build datasets for publication and management. By providing a cost-free facility for measuring emissions and energy use, and encouraging actors to promote or showcase their green image, the Registry was designed with the aim of assisting China's energy-efficiency and emissions reduction targets and providing a resource for monitoring, reporting and verification of Chinese emissions according to internationally-accepted standards, something that the Chinese government has so far resisted. Of course, the Registry faces a number of challenges that are unique to China and its reporting and monitoring services have been adapted from the original Climate Registry model in order to take account of the unique Chinese context, including special mechanisms for measuring intensity targets and a multi-tiered membership scheme, for example.<sup>86</sup> However, like the C40, it appears to be too early to evaluate its success.

Many other transnational governance initiatives are active in China. Some have originated out of entirely private efforts. The China Carbon Forum, for example, is a non-profit organization set up to provide networking, information-sharing and lobbying opportunities for international businesses and NGOs in China. Established in 2007, it aims to facilitate the sharing of knowledge and expertise among individuals and organizations in China's carbon and energy sectors and provide a neutral platform for businesses and NGOs to engage in high-level dialogues with leading practitioners and decision-makers in the Chinese government.<sup>87</sup> To do so, the China Carbon Forum organizes regular networking and speaking events to develop professional communities around key issue areas, to share and disseminate new information on important themes and to discuss challenges faced by foreign and local companies with Chinese

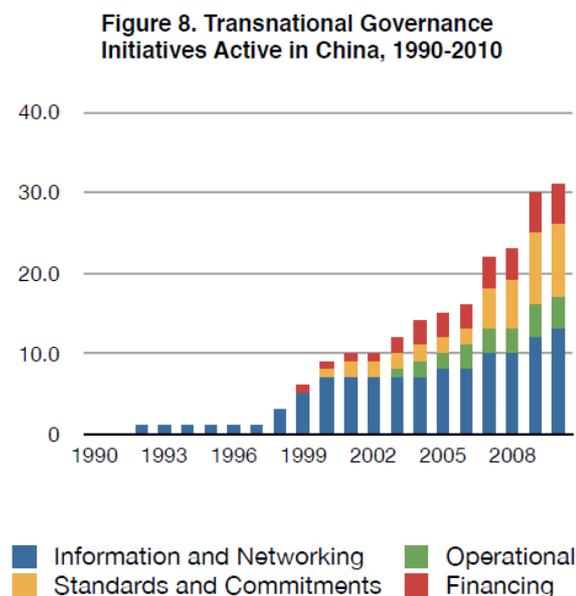
regulators. Others transnational initiatives are, on the other hand, the result of intergovernmental cooperation and seek to develop partnerships between public and private actors to achieve shared goals. The Methane to Markets Partnership, an international public-private initiative created by 14 countries in 2004, attempts to bring together expertise to support cost-effective methane recovery and promote its use as a clean energy source.<sup>88</sup> By developing tools and resources, providing training and capacity building, demonstrating technologies and directly supporting projects, the Partnership aims to reduce the informational, institutional and market-based obstacles to investments that can reduce methane emissions. The Asia-Pacific Partnership on Clean Development and Climate, established in 2005, which seeks to reduce carbon intensity by facilitating voluntary technology-sharing partnerships, and the Major Economies Forum on Energy and Climate, launched in 2009, which provides a forum for candid dialogue amongst major energy users and GHG emitters and to develop political leadership on climate change, also offer innovative new channels for engaging China and promoting international cooperation on climate change between developed and developing countries.<sup>89</sup>

Overall, as Figure 8 indicates, the total number of transnational governance initiatives active in China has increased from only 1 in 1992 to over 30 by 2010, where ‘active’ means that at least one business, group, or project involved is located in China (a list of all the governance initiatives included in this figure is provided in the Appendix).<sup>1</sup> In part, this figure simply reflects the growth of transnational governance initiatives in general, but it equally shows that China has fully participated in this trend. The database of initiatives upon which this figure is

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<sup>1</sup> It should be noted that Figure 8 is only indicative, as is noted in Abbott (2010). The real number of initiatives is certainly much higher. The dates in which these became active in China may also be subject to some error.

based includes around 60 transnational governance schemes, meaning that China currently participates in over half of the total.<sup>2</sup> Figure 10 also shows that the majority of the transnational governance initiatives active in China are involved in forms of networking, information sharing and lobbying. Until 2000, in fact, information and networking initiatives were the only governance schemes active in China. However, since 2000 the total number of initiatives engaged in other activities has grown considerably. Currently, 30 percent of the active governance initiatives are engaged in promoting voluntary standards and commitments, 13 percent in operational activities and 7 percent in financing.



**Adapted from Abbott 2010.**

Of course, the effectiveness of many of these initiatives is open to question. Some may have little effect at all. It is also clear that actors from China participate in some initiatives less than their counterparts in other countries. The ICLEI – Local Governments for Sustainability

<sup>2</sup> Several governance schemes have been appended to this original list, such as the Energy and Climate Registry, while others have been removed. Furthermore, several initiatives on the master list are entirely domestic and it is questionable whether these count as instances of transnational governance. The share of ‘true’ transnational schemes that are active in China is therefore likely to be higher.

initiative, for example, a transnational network of local governments that have made commitments to sustainable development, involves over 24 municipalities in Brazil, 127 in Australia, and only 1 from mainland China (Shenyang). It is also an open question as to whether these governance mechanisms have actually changed the behaviour of firms and organizations in China; that is, whether or not they have facilitated behaviour that would not have happened otherwise. In many cases, as well, it is difficult to assess the impact of certain information sharing, networking and lobbying groups. While it is likely that networks such as the China Carbon Forum have had a tangible benefit on the development of robust climate regulations and produced partnerships that would not have occurred had it not existed, it is difficult to measure their success. Finally, given that many of the transnational initiatives active in China and throughout the world are so new, it is frequently too early to adequately evaluate their performance. Nevertheless, the thickening layer of transnational climate governance that has developed over the past 20 years constitutes an important new development in the overall global governance of climate change. And compared to its hesitant movements towards a robust intergovernmental governance system in the UNFCCC negotiations, China has been a very active participant in the evolving transnational regime complex.<sup>90</sup>

### **Part III. Summary and Conclusion**

Among foreign publics and policymakers, China's position in international climate negotiations has been a natural focal point. Intergovernmental governance constitutes one of the most important dimensions of the governance of climate change. But it is not at the international level where policies are implemented, nor is international cooperation the only form of global governance. In its attempt to map China's approach to the governance of climate change, this paper has made a special effort to look not only at China's position in the UNFCCC but to consider both its domestic governance initiatives and the evolving participation of a variety of Chinese firms, NGOs and subnational governmental units in transnational climate governance as well. Cumulatively, the mapping produces a more nuanced account of China's role in the governance of climate change than its international reputation as a climate 'laggard' suggests. Indeed, it reveals a notable disjuncture between China's 'voluntary' efforts to govern climate change and energy use and its ongoing obstinacy in the UNFCCC negotiations.

As the second largest producer and consumer of energy and the greatest emitter of GHGs in absolute terms, China occupies a critical position in the governance of climate change. Significant efforts to limit its rising emissions over the upcoming years are essential for limiting GHG concentrations to sustainable levels, but as a developing country China has been hesitant to embrace any binding emissions targets in UNFCCC negotiations. This hesitance is ultimately a result of powerful political, economic and international equity-based interests and normative concerns that have fundamentally shaped the decisions of Chinese policymakers at all levels of government. Above all, the privileged political position and legitimacy of the CCP rests on its ability to deliver high rates of economic growth and improve the living standards of

average Chinese citizens, making stringent emissions reductions commitments that could seriously circumscribe the economic policymaking autonomy of the CCP politically unpalatable. China also does not wish to appear weak in international negotiations, is often ambivalent about making serious international commitments due to concerns about its international image and potential foreign entanglements, and makes strong equity-based arguments against obligations for mitigating emissions among developing countries.

However, as the costly side-effects of China's growth have reached its economy and society, compromising the health and living standards of ordinary Chinese citizens, China has also come to view the environment as an important concern. Its vulnerability to the effects of climate change, which threaten economically crucial population centres, has become an especially worrisome source of weakness, as has China's growing energy use and dependence on foreign sources of petroleum. As a result, China's approach to climate change and energy, both connected to one another to a considerable extent, has shifted in important respects over the past 10-20 years. The Chinese government has made a significant, if incomplete, effort to reform the institutions governing these issue areas, increasing the power of central decision-making structures and establishing similar leading groups at all levels of government. These new governance structures have enhanced China's capacity to implement a range of ambitious policies for taking action on climate change and energy security; most notably, China's 2010 energy intensity target, its carbon intensity and renewable energy targets for 2020, and the wide range of specific policies and operational programmes for reaching them. Crucially, the government has made fulfilling its countrywide environmental and energy targets legally mandatory and an important dimension of the performance evaluations of local government officials.

This revolution in China's domestic governance structures and climate policies has been paralleled by several changes in its approach to international governance. Although less comprehensive than the changes that have taken place domestically as a result of the considerable constraints facing Chinese negotiators, these reflect China's growing desire to gain the support of foreign actors on climate and energy issues. Within the UNFCCC negotiations, the transformation of its position on flexibility mechanisms has been the most dramatic, with China becoming the most significant user of the CDM in the years since its launch. Participation in the CDM offered a low-cost opportunity to demonstrate China's commitment to multilateral climate governance while also receiving substantial foreign support for its domestic reform effort. By contrast, China's resistance to binding commitments at the international level has persisted, contributing to the breakdown of negotiations and the negative image of China among foreign publics. This breakdown has, however, also been associated with growing experimentation with transnational climate governance initiatives across the world, a trend which Chinese firms, NGOs and local governments have participated in to a considerable extent.

China's domestic and international approach to the governance of climate change is, therefore, in a state of transition. Domestically, Chinese policymakers have shown great determination in their efforts to tackle climate change and China's burgeoning energy use, reforming institutions at impressive rate and enacting new policies and programmes on a scale nearly unparalleled elsewhere. Of course, many of these have yet to prove their mettle. China continues to face immense challenges to its governance capacity as a result of both deeply entrenched commercial, bureaucratic and political interests and the current structure of its economy, which

will remain highly dependent on fossil-fuels (especially coal) for the foreseeable future. Whether China's policymakers are able to match their goals with adequate political, economic and technological capabilities remains to be seen, and will for some time remain a key question in considerations of China's potential contribution to global emissions reductions. The track record so far is uneven, marked by both successes and setbacks.

Internationally, Chinese policymakers have also shown that they are keen to engage positively with other major GHG emitters through a number of innovative channels. But this engagement has so far been limited to initiatives that can contribute to China's major domestic goals, a trend which may be expected to continue. China still regards itself as a developing country with few obligations for making binding commitments to reduce its emissions, particularly so long as comparably stringent actions on the part of developed countries, especially the US, are not forthcoming. But while the political willingness that is evident domestically has not been fully translated to the international level, the rapidly growing participation of local governments and Chinese civil society in innovative forms sub-national and transnational governance represents a promising development. If scaled up, these offer opportunities for directly engaging with the actors in China who are actually responsible for implementing the government's climate and energy goals, building their capacity and providing incentives for successful policies. It is at this level, most of all, where many productive gains can be sought.

With its economy growing at an unprecedented rate, the rising affluence of its population and its burgeoning demand for energy means that China's GHG emissions are bound to increase, creating an immense challenge for both China and the world. However, the significant, if uneven, developments in China that are mapped in this paper suggest a more subtly optimistic

assessment than the dire picture found in the media and among foreign publics and practitioners. Effective intergovernmental cooperation has indeed faced obstacles as a result of deeply ingrained domestic concerns in China, as elsewhere. But, domestically, China sees itself as a leader in the fight against climate change. It has demonstrated considerable initiative for taking action on its own and a willingness to engage actors beyond its borders through a number of alternative channels in the absence of a multilateral treaty. These positive developments must ultimately be set against the view of China as obstinate climate laggard.

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## Appendix: Transnational Governance Initiatives

NAME	Type
HSBC Climate Partnership	Financing
William J. Clinton Foundation Climate Initiative	Financing
BioCarbon Fund	Financing
Community Development Carbon Fund	Financing
Prototype Carbon Fund	Financing
Renewable Energy and Energy Efficiency Partnership	Financing
C40 cities	Information and Networking
ICLEI - Local Governments for Sustainability	Information and Networking
Major Economies Forum on Energy and Climate	Information and Networking
Asia-Pacific Emissions Trading Forum	Information and Networking
International Emissions Trading Association	Information and Networking
Point Carbon	Information and Networking
World Business Council for Sustainable Development	Information and Networking
Pew Center on Global Climate Change	Information and Networking
Red Cross/Red Crescent Climate Centre	Information and Networking
Carbon Disclosure Project	Information and Networking
Collaborative Labeling and Appliance Standards Program	Information and Networking
China Carbon Forum	Information and Networking
Carbon Sequestration Leadership Forum	Operational
Methane to Markets Partnership	Operational
Asia-Pacific Partnership on Clean Development and Climate	Operational
Climate Neutral Network	Standards and Commitments
Panda Carbon Standard	Standards and Commitments
Climate, Community and Biodiversity Alliance	Standards and Commitments
Carbon Rationing Action Groups	Standards and Commitments
SOCIALCARBON	Standards and Commitments
UN Global Compact Caring for Climate	Standards and Commitments
Greenhouse Gas Protocol	Standards and Commitments
The Energy and Climate Registry	Standards and Commitments/Operational
The Gold Standard	Standards and Commitments/Operational

**Adapted from Abbott (2010).**

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## Endnotes

- <sup>1</sup> See the World Resource Institute's CAIT database. <http://cait.wri.org/>
- <sup>2</sup> Lynas 2009; Vidal 2009.
- <sup>3</sup> Economy 2004; Murray & Cook 2002; Elliot 2002; Aden & Johnson 2006; World Bank 1997.
- <sup>4</sup> EIA 2010.
- <sup>5</sup> Worldwatch 2010.
- <sup>6</sup> Downs 2006
- <sup>7</sup> Lewis 2009.
- <sup>8</sup> Downs 2006; Elliott 2002.
- <sup>9</sup> Worldwatch 2010, p.11.
- <sup>10</sup> Confidential interview in Beijing, November 2010.
- <sup>11</sup> NCCCC 2009.
- <sup>12</sup> State Council 2008, p.7.
- <sup>13</sup> See State Council 2008, p.7-10; NDRC 2007, p.16-19.
- <sup>14</sup> State Council 2008, p.10.
- <sup>15</sup> Lewis 2009.
- <sup>16</sup> World Bank 2009; Angang 2009; Confidential interviews in Beijing, November 2010.
- <sup>17</sup> World Bank 2009.
- <sup>18</sup> World Bank 2009; Confidential interviews in Beijing, November 2010.
- <sup>19</sup> Economy 2001.
- <sup>20</sup> See Zhang 2003; Economy 2001.
- <sup>21</sup> Economy 1998 & 2001.
- <sup>22</sup> Lanteigne 2009.
- <sup>23</sup> World Resource Institute's CAIT database. <http://cait.wri.org/>
- <sup>24</sup> World Resource Institute's CAIT database. <http://cait.wri.org/>
- <sup>25</sup> World Resource Institute's CAIT database. <http://cait.wri.org/>
- <sup>26</sup> Brahic 2008. We would also like to thank Kate Meagher for raising this point.
- <sup>27</sup> Kobayashi 2003.
- <sup>28</sup> Confidential interview in Beijing, November 2010.
- <sup>29</sup> Kasa et al. 2008; Conrad 2010.
- <sup>30</sup> See Bjorkum 2005.
- <sup>31</sup> Qi et al. 2008.
- <sup>32</sup> Tsang & Kolk 2010; Koehn 2008.
- <sup>33</sup> Downs 2006.
- <sup>34</sup> Downs 2006.
- <sup>35</sup> Downs 2006.
- <sup>36</sup> Downs 2006; Downs 2008; Tsang & Kolk 2010.
- <sup>37</sup> Qi et al. 2008.
- <sup>38</sup> Li 2010.
- <sup>39</sup> BBC 2010.
- <sup>40</sup> For an introduction to China's energy intensity target see Seligsohn (2010). See Chandler & Wang (2009) and Cohen-Tanugi (2010) on the stringency of China's commitment. For a more equivocal view see China Energy Group (2009). For more pessimistic views see Carraro & Tavoni (2010) and Levi (2009).

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- <sup>41</sup> Hood 2009.
- <sup>42</sup> Worldwatch 2010.
- <sup>43</sup> Worldwatch 2010.
- <sup>44</sup> Worldwatch 2010.
- <sup>45</sup> Gordon et al. 2010; Worldwatch 2010.
- <sup>46</sup> Worldwatch 2010.
- <sup>47</sup> Gordon et al. 2010.
- <sup>48</sup> Fairley 2010.
- <sup>49</sup> Gordon et al. 2010.
- <sup>50</sup> Worldwatch 2010.
- <sup>51</sup> NDRC 2009; Zhenhua 2009.
- <sup>52</sup> Worldwatch 2010, p.11.
- <sup>53</sup> Mearsheimer 2003; Shirk 2007; Lanteigne 2006 & 2009; Bergsten et al. 2006.
- <sup>54</sup> Rowlands 2001; Carter & Mol 2006.
- <sup>55</sup> Nielsen & McElroy 1998.
- <sup>56</sup> Hatch 2003; Heggelund 2007, Heggelund 2010.
- <sup>57</sup> Hatch 2003.
- <sup>58</sup> Hatch 2003.
- <sup>59</sup> Bjorkum 2005.
- <sup>60</sup> NDRC 2010.
- <sup>61</sup> UNFCCC 2010.
- <sup>62</sup> UNFCCC 2010
- <sup>63</sup> Heggelund et al. 2010.
- <sup>64</sup> Victor & Wara 2008; Wara 2007; Vidal 2008.
- <sup>65</sup> Economy 1997.
- <sup>66</sup> Zhang 2006.
- <sup>67</sup> Heggelund 2007; Bjorkum 2005; Zhang 2006; Zhang 2003.
- <sup>68</sup> Zhang 2006. US House Committee on International Relations (1998)
- <sup>69</sup> ENB 2007, p.15.
- <sup>70</sup> ENB 2009, p.15.
- <sup>71</sup> Bjorkum 2005.
- <sup>72</sup> Falkner et al. 2010.
- <sup>73</sup> Hoffmann 2009; Andanova et al. 2009.
- <sup>74</sup> Green 2010; Bulkeley 2010; Abbott 2010; Andanova et al. 2009; Hoffmann 2009; Eileperin & Booth 2010.
- <sup>75</sup> Andanova 2009.
- <sup>76</sup> Hoffmann 2009; Green 2010; Bulkeley 2010.
- <sup>77</sup> Bulkeley 2010; Abbott 2010.
- <sup>78</sup> C40 2010a.
- <sup>79</sup> C40 2010b.
- <sup>80</sup> C40 2010c.
- <sup>81</sup> Gold Standard 2010a.
- <sup>82</sup> Gold Standard 2010b.
- <sup>83</sup> Hamilton et al. 2009; Green 2011.
- <sup>84</sup> Panda Standard 2010.
- <sup>85</sup> Green-Weiskel 2009, Cheng et al. 2010.

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<sup>86</sup> iCET 2010.

<sup>87</sup> Horn-Phathanothai 2010/2011.

<sup>88</sup> Global Methane Initiative 2010.

<sup>89</sup> Heggelund & Buan 2009.

<sup>90</sup> This phrase is from Abbott 2010.

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