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EU-China Cooperation in the Case of Greenhouse Gas Emissions Trading

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1 Introduction

The European Union's (EU) external governance includes strong support for multilateral solutions but in the wake of slow progress in international climate negotiations, EU policy-makers have increasingly reverted to bilateral or unilateral means, including regulatory cooperation, political dialogues and policy promotion (Biedenkopf and Dupont 2013: 187-192). These bilateral and unilateral efforts can complement and support the multilateral process and are not understood as a substitute of multilateral negotiations by EU actors. In the case of climate policy, they could accelerate the United National Framework Convention on Climate Change (UNFCCC) process and of building support from the bottom up. The top down process of multilateral negotiations that aim at finding a global agreement on emissions reduction targets to limit global warming to 2°C are progressing at slow pace due to diverging positions as to how and how much different countries should contribute and commit themselves. Working at the bilateral level can be easier given the limited number of negotiation partners. Bilateral cooperation can help approximate countries' position and generate greater understanding of the respectively other side's situation and position. Through cooperation, dialogue and capacity building, such initiatives could support the international process. Arguably, they could however also slow down the international process by reducing the political pressure and sense of urgency in the multilateral arena. This paper focuses on bilateral EU-China cooperation on greenhouse gas (GHG) emissions trading. It is based on a research project in its early stages.

EU engagement with China is of great importance in the case of climate policy. By 2011, China was not only the largest global emitter in aggregate terms—having overtaken the United States in 2006—but its per capita emissions were already overtaking those of several industrialized countries such as Italy, Spain and France (Oliver, Janssens-Maenhout and Peters 2012: 10-18). China's primary energy consumption increased by 149% in the ten year period from 2001 to 2011, with coal accounting for 69% of energy consumption in 2011 (BP 2012). Chinese GHG emissions increased even more rapidly over the same time period, by 166%. Against a backdrop of increasingly unsustainable economic development, China's leaders have looked to develop a range of policies and measures to address these challenges, including by drawing on the experience of other countries and regions. The EU and its Member

States are the most prominent actor in engaging with Chinese policy-makers on GHG emissions trading.

Although originally an American policy innovation of the 1990s to deal with the problem of sulphur dioxide (SO_2) and nitrogen oxide (NO_X) pollution, in the 2000s the EU became the most prominent innovator and promoter of emissions trading to tackle GHGs. Emissions trading involves setting a maximum emissions limit, which corresponds to a set amount of emission allowances. Each emitter must possess allowances that match its actual emissions. Excess allowances can be sold and excess emissions must be covered by purchasing additional allowances. Emissions trading is a market-based policy instrument whose proclaimed advantages are cost-effectiveness, innovation fostering and flexibility in achieving an overall emissions reduction goal (Tietenberg 2006; van Asselt 2010: 126).

Emissions trading is the only policy instrument being deployed by the Chinese government to combat climate change and there is a possibility that emissions trading will not be part of the Chinese climate policy toolkit post-2020. It is possible that, following its current experimentation with emissions trading pilot programmes, the Chinese government could opt for a policy mix of different policy tools. Nonetheless, cooperation on emissions trading has emerged over recent years as a prominent element of EU-China engagement in the area of climate change policy, and the timing is particularly interesting since China's emissions trading experimentation coincides with a period of uncertainty for emissions trading in Europe.

This paper presents initial research on the development of EU-China cooperation to develop emissions trading in China, based predominantly on analysis of primary and secondary sources. Building on insights from the external governance and diffusion literature, this paper examines both the factors underpinning the EU's "supply" of policy lessons, and the domestic context, which explains China's "demand" for policy solutions. The paper studies the steps that China is taking to develop pilot emissions trading schemes and, building on the earlier discussion of supply and demand factors, maps out the ways in which the EU and China are cooperating in this area. Finally, remaining challenges to the establishment of GHG emissions trading schemes in China are identified.

2 The Supply and Demand of Policy Lessons and Expertise

Successful and effective policy promotion and cooperation requires two willing actors – unless coercion is involved. In the case of GHG emissions trading, no evidence for the use of coercive measures imposing the adoption of EU policy in China has been observed. EU-China cooperation is rather based on the EU's supply of policy lessons and expertise and China's receptiveness to many of these efforts. The EU can control the supply side of policy cooperation while the demand side is in the hands of the Chinese. Effective cooperation implies thus the taking into account of the respectively other partner. The supply takes place in the form of policy promotion and capacity building. The Chinese demand side must be receptive to drawing lessons from EU experiences and to accept the EU's involvement. Moreover, domestic specificities determine the way in which the EU lessons and support is transmitted and translated into the Chinese context. Domestic factors determine the need for selectivity in the type of lessons that are drawn and the adaptation of the EU experiences and policies into Chinese policy. The interplay between the supply and demand sides can explain the

process and result of EU external emissions trading governance. For effective policy promotion and capacity building, EU interest in engaging and investing in such measures (supply side) and the receptiveness of extra-EU jurisdiction to lessons from the EU and to building up its capacity in the respective policy area (demand side) are necessary.

2.1 Supply Side

The way, intensity and skilfulness with which the EU conducts its efforts are one part of the equation. While the EU in principle gives preference to multilateral solutions, so-called effective multilateralism, it also uses unilateral and bilateral efforts in its foreign policy. In the case of climate change, the EU has in recent years increasingly reverted to unilateral and bilateral efforts in addition to, not at the expense of, the multilateral UNFCCC process. This can especially be explained by the slow progress of the international negotiations. One recent prominent and controversial example of a unilateral measure is the inclusion of the aviation sector into the EU emissions trading system (ETS). All flights to and from Europe operated by EU and non-EU airline companies are included in the obligation to acquire GHG allowances according to their emissions. This is however not the same as the adoption of domestic climate policy in China. Emissions trading for air carriers is an EU measure applying to activities (taking off and landing) in the EU.[1] The focus of this paper is on the EU's efforts promoting domestic policy in China.

The EU engages in bilateral cooperation with non-EU countries in an effort to promote and enable the global spread of GHG emissions trading. EU policy promotion and capacity building are known from areas such as democracy, human rights or regional integration. Democracy promotion has been part of EU development policy for the past decades. Democracy and human rights clauses included in EU agreements with developing countries and capacity building has gained increasing importance. The EU's approach moved from prescriptive to open and constructive dialogues. The European Commission's 2009 publication on "leading global action to 2020 and beyond" dedicates one section to financial, technical and capacity-building assistance (European Commission 2009: 28-29). The EU engages in political dialogues, capacity building, and financial and technical assistance with countries such as China. EU-Chinese cooperation on climate change has intensified in the past years and dialogues between experts have increased.

Policy promotion and capacity building can increase awareness and deepen Chinese actors' knowledge of the EU experiences and the respective policy in general. These activities include formal meetings and presentations, informal ad hoc and personal contacts, and the involvement of EU experts in Chinese policy-making in an advisory role. Policy promotion through bilateral cooperation and capacity building can contribute to the proliferation of climate policies that can lead to the raising of the level and ambition of climate mitigation efforts in non-EU countries.

EU action alone is not sufficient to mitigate global climate change. Encouraging other jurisdictions to adopt stringent climate measures is important to achieve climate change mitigation effects. It can generate bottom-up support for international agreement on meaningful climate measures. As stand-alone measures, such bottom-up developments

[1] There is some controversy about the question whether the entire flight of a plane, thus also over non-EU territory can be included in the calculation of emissions.

are unlikely to achieve a sufficient level of climate policy in its ambition and geographical scope to be an alternative to international agreements. The spread of climate policy measures such as GHG emissions trading can more likely be seen as a contributing and facilitating factor of international negotiations. The adoption of similar climate policies can approximate jurisdictions' position in negotiations and generate mutual understanding of the respectively other position.

The EU also has an interest in promoting carbon markets around the globe because this increases the potential for linking these markets and therefore making the EU ETS more efficient and reducing potential competitiveness disadvantages of EU industry. Moreover, since the EU has more extensive experience with emissions trading than with other policy measures such as carbon taxes – which do not exist at EU level – it has obviously most expertise in this area that it can share. The EU could – for obvious reasons – not credibly promote a measure that it has not introduced itself. Policy promotion, capacity building and bilateral cooperation can be driven by the EU or by extra-EU jurisdictions (Schimmelfennig 2012). EU-driven efforts relate to the EU's active promotion of certain policies while demand-driven effects occur through the activities of extra-EU actors (Börzel and Risse 2012). This paper focuses on processes in which the EU is purposefully involved and engages with China.

While policy promotion and capacity building mostly aims at the adoption of policy similar to EU policy in non-EU jurisdictions, the drawing of lessons from EU mistakes and flaws of the EU ETS could be an alternative scenario. The result of such a process would be the adoption of non-EU policy that differs from the EU policy, "correcting" the EU's mistakes. Such a scenario is not necessarily undesirable from the EU's perspective because it still results in the adoption of additional climate policy in non-EU jurisdictions. As discussed in section 3 below, the EU has experimented with its ETS and revised it twice already in the light of previous experiences. This learning process could be extended beyond the EU's borders and include the drawing of lessons by Chinese policy-makers from EU experiences, including mistakes. The supply of policy lessons includes thus both how to design and how not to design GHG emissions trading systems.

2.2 Demand Side

Chinese domestic factors provide the second part of the explanation for whether and to what extent the EU ETS plays a role in Chinese emissions trading plans. These factors relate to

a) the political commitment and interest to adopt climate and emissions trading policy and political competition between domestic governmental actors,
b) prior domestic policy-making experiences and path dependencies, and
c) the institutional framework defining the regulatory options .

The political commitment and overall political context in a jurisdiction can be more or less receptive to ideas coming from the EU and its ETS. If policy-makers are generally committed to adopting climate policies, a certain degree of policy demand exists, which facilitates and fosters policy promotion and capacity building. Domestic politics and political discourses and rivalries can influence a jurisdiction's receptiveness to ideas and lessons from the EU.

Prior domestic policy experiences and existing policies can create path dependencies that make a non-EU jurisdiction more or less receptive to certain EU policies. Together with the institutional framework, these factors can be important determinants for the adjustment of EU policy to the non-EU context. Institutions include the ways in which jurisdictions and their policy-making process are organized, existing policy, and broadly-accepted norms (Gurowitz 2006: 310-311). The framework of formal policy-making procedures and informal norms can provide opportunities and constraints for policy-relevant actors to pursue certain policy options (Deutsch 1966: 147). Path dependencies from existing policies and infrastructures can require the adjustment of policies (Levi 1997: 28-29; Sedelmeier 2006: 12). The existence and framing of the climate problem can differ (Lavenex and Wichmann 2009: 98; Princen and Rhinard 2006: 1121; Tews 2005: 69-70). This can lead to different conclusions as to whether and how climate change should be addressed. The following section provides the background to the analysis by introducing the EU ETS, Chinese developments and some context.

3 European GHG Emissions Trading

The adoption of a GHG ETS in the EU preceded the Chinese efforts by approximately a decade. The EU ETS is the largest, most ambitious emissions trading system so far. Yet, the idea of emissions trading is not a European. The US pioneered in the introduction of emissions trading systems in the 1990s. Through an amendment of the Clean Air Act, a nation-wide sulphur dioxide (SO_2) and a regional[2] nitrogen oxide (NO_x) emissions trading system were introduced (Bluemel 2008: 225-226; Ellerman 2000; Schmalensee et al. 1998). President Clinton's administration strongly advocated the inclusion of GHG emissions trading in the 1997 Kyoto Protocol (Depledge 2000: 82-86). Although Clinton signed the Kyoto Protocol in 1998, the US never ratified and rather withdrew from the Kyoto Protocol (Harrison 2007; Steurer 2003; Sussman 2004). In the international negotiations of the Kyoto Protocol, the EU only reluctantly accepted the inclusion of GHG emissions trading (Damro and Luaces Méndez 2003; Harrison 2010: 80-82; van Asselt 2010: 126-127). In its implementation of the Kyoto Protocol, the EU adopted a GHG ETS in the 2000s (Bye and Bruvoll 2008; Child et al. 2008), which has become "the core climate change instrument for the EU" (Faure and Peeters 2008: 4). In the design of the EU ETS, the US experiences played an influential role. US consultants were involved in the process (Skœrseth and Wettestad 2010: 67-68).

The EU Emissions Trading Directive[3] was adopted in 2003 and trading started in January 2005. In 2009, a reformed emissions trading system[4] for the period 2013-2020 was agreed (Oberthür and Pallemaerts 2010: 35-36, 46-52). There has also been a strong external dimension to the ETS, brought about by the decision to link the internal ETS to the other two flexible mechanisms of the Kyoto Protocol, namely the Clean Development Mechanism (CDM) and Joint Implementation (JI). Under these mechanisms, industrialised countries can fund projects in developing countries and offset the resulting emissions reductions generated by CDM and JI projects against their own domestic emission reduction commitments. This was done through the Linking Directive, which thereby generated demand for credits from CDM projects.[5] In the

[2] It applied to Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware and the District of Columbia.
[3] Directive 2003/87/EC.
[4] Directive 2009/29/EC.
[5] Directive 2004/101/EC.

absence of the linking of the CDM and JI with the EU ETS, there would have been vastly lower demand for Certified Emission Reductions, the credits generated by CDM projects. The EU has been a pioneer in supranational GHG emissions trading (Ellerman and Buchner 2007: 67-69; Skœrseth and Wettestad 2009; Wurzel and Connelly 2011: 7-8). The EU ETS is the largest emissions trading scheme globally. More broadly, the EU ETS, and the promotion of market mechanisms more generally, became an increasingly central aspect of the EU's approach to international cooperation on climate change during the following years. Creating a "global carbon market" formed an important part of the EU strategy for the negotiations on a post-2012 regime (Council of the European Union 2009a; 2009b).

However, the ETS has suffered setbacks over recent years. The economic crisis reduced European economic output and therefore greenhouse gas emissions, thereby making the ETS emissions cap significantly easier to meet. Furthermore, emissions credits from the Clean Development Mechanism (CDM) proved to be far cheaper than originally expected, meaning that much of the supposed emissions reductions taking place in sectors covered by the EU-ETS actually took the form of credits purchased from CDM projects in developing countries. According to analysis by the NGO Sandbag, an unreformed ETS would not just deliver any emissions reduction—it would actually counteract the effects of other EU climate policies. While the emissions cap for Phase III of the ETS (2013-2020) anticipated a reduction of 2.7 billion tonnes of emissions, by early 2013 emissions had already fallen by as much as 3.5 billion tonnes, with firms in covered sectors being allowed to carry over credits to the post-2020 period (Sandbag 2013). Efforts to reform the ETS suffered a serious setback in January 2013 when the Industry, Research and Energy committee of the European Parliament rejected a "backloading" proposal that would have temporarily removed a quantity of permits in order to raise the price of carbon allowances (Euractive 25 January 2013). The European Parliament eventually adopted an amended legislative proposal regarding backloading emission allowances. A Council decision is pending.

One of the supply side conditions, namely the existence of a policy to promote and spread externally, is thus given. The EU has gained much experience with the design and implementation of GHG emissions trading and it has a number of incentives as outline in the previous section. In 2009, EU policy-makers engaged in a significant overhaul of the ETS based on earlier experiences. The lessons that the EU learned from its own experience and consequently changed in the revision of its own system can be beneficial also for non-EU policy-makers when designing and implementing their emissions trading systems. Even current difficulties facing the ETS could serve as a basis for lesson drawing by Chinese policy-makers.

While the EU ETS was the first regional, mandatory GHG emissions trading scheme, emissions trading has also been adopted by a number of other jurisdictions over the past decade. For example, a number of US states as well as Canadian provinces began filling the US federal regulatory void in climate policy. Three subnational regional GHG emissions trading systems were initiated in the course of the 2000s – the Regional Greenhouse Gas Initiative (RGGI), the Western Climate Initiative (WCI) and the Midwest Greenhouse Gas Reduction Accord (MGGRA) – though the latter never was implemented (Biedenkopf 2012). California introduced a state-wide ETS on 1 January 2013. Initially covering large electric power plants and large industrial plants, it will be extended in scope to include fuel distributors (including distributors of heating and

transportation fuels) in 2015, at which point the scheme will cover an estimated 85% of total GHGs in California (C2ES 2013).

In 2011, Australia enacted the Clean Energy Act, which introduced a set carbon price for the period 2012-15 (which will rise by 2.5% per year during the period), which will then be replaced by an ETS. The carbon price and subsequent ETS apply to facilities or corporations emitting more than 25,000 tonnes of CO_2e. In July 2012, Australia and the EU agreed to link their respective ETS schemes no later than 1 July 2018 (Globe International 2013). South Korea has also enacted legislation that will create an emissions trading system commencing in 2015 (Reuters 2 May 2012).

4 Chinese Experimentation with GHG Emissions Trading

Although no emissions trading schemes with mandatory participation have yet commenced in China, a number of cities and provinces have been experimenting by creating exchanges for voluntary carbon trading for several years. Three such exchanges existed in 2008: the Shanghai Environment Energy Exchange, the Beijing Environment Exchange and the Tianjin Climate Exchange. Zhejiang, Yunnan, Hubei and Guangdong provinces have since established exchanges, and other provinces are planning to do likewise (Li, Zhang and Cai 2012). Nonetheless, these exchanges have so far been largely symbolic. Their total trades accounts for less than 1% of the global voluntary carbon market in terms of total traded volume, and the total volume traded on the Beijing Exchange in its first three years was less than the European Climate Exchange's trade volume in a single day (Huang 2013; Ma 10 February 2012).

These exchanges involve private actors such as carbon assets management companies, NGOs, forest carbon-sink institutions, institutional sellers and buyers, and individual buyers, but most of them are state-controlled or –owned enterprises. Only a few provinces and cities have obtained national-level support for implementing carbon trading experiments, but the proliferation of local exchanges was not banned by national legislation. Indeed, the establishment of local exchanges can be seen as local-level policy entrepreneurship in anticipation of the prospect of central government action to create emissions trading pilots. Once it became apparent that the central government was interested in pursuing carbon emissions trading, some provincial and municipal governments rushed to declare their own carbon trading platforms (Huang 2013; Ma 10 February 2012).

The first official mention of the central government's intention to introduce carbon emissions trading came in October 2010, when the Communist Party of China (CPC) Central Committee approved the proposals for formulating the development plan for 2011-2015 which included a statement that China "will gradually establish a carbon emissions trading market" (The Climate Group 2010). One year later, in November 2011, the National Development and Reform Commission (NDRC) officially approved the list of pilot emissions trading schemes, which are to be established in five cities (Beijing, Tianjin, Shanghai, Chongqing and Shenzhen) and two provinces (Guangdong and Hubei). These seven pilots account for 27.4% of China's GDP and 18.4% of its population, and have been selected to represent some of China's regional diversity, including both the prosperous cities of Beijing and Shanghai and the relatively poor province of Hubei. The pilots are also being set up with deliberately different coverage and rules, such as the Beijing scheme's focus on large public buildings, heating companies and manufacturing compared to Guangdong's coverage of the main sources of manufacturing emissions such as ceramics, electricity and concrete (Lo 2013). In

June 2013, the city of Hangzhou announced plans to establish an ETS covering "major energy consumers", making it the eighth ETS pilot—though it is unclear as yet when it will be launched (Point Carbon 26 June 2013). The city of Jining is also reported to be considering launching an ETS (Point Carbon 15 August 2013).

On 17 June 2013, Shenzhen became the first of the pilots to launch. Covering more than 600 companies and 38 per cent of the city's emissions, the scheme aims to reduce Shenzhen's emissions by 21 per cent between 2010 and 2015 (Levitt 18 June 2013). Among the other pilots, the two most advanced are those of Guangdong and Beijing. Guangdong province released a detailed plan in September 2012. The ETS will cover nine industries: power, cement, steel, ceramics, petrochemicals, textiles, nonferrous metals, plastics and paper making. Participation will be mandatory for companies that emit more than 20,000 tonnes of CO2 per year, though they will receive free allocations of permits. The scheme will cover 827 companies accounting for 42% of power consumption in the province, and 277 million tonnes of CO2 emissions by 2015 (Wang 2013). Three phases are scheduled: a testing phase from 2012 to 2015, an improvement phase from 2016 to 2020, with full trading thereafter (Hook 12 September 2012). In September 2012, the first trade took place in Guangdong, with four cement companies buying 1.3bn permits (Scotney et al. 2012).

The Beijing municipal government released draft rules for its pilot scheme in March 2012. These rules stipulate mandatory participation for firms emitting on average more than 10,000 tonnes per year from 2009 to 2011, and installations in the following sectors were asked to provide emissions data by mid-August 2013: thermal electricity providers, heating sector, manufacturers and major public buildings (Yu and Elsworth 2012).

The stated aim of the central government is that the seven pilot schemes will pave the way for a national ETS from 2016 onwards, as part of the 13th Five-Year Plan (Global Times 6 December 2012). However, recent reports suggest that it may be sometime after 2016 that a national ETS commences (Parnell 21 March 2013). Moreover, a number of recent analyses have concluded that the 2016 deadline is highly ambitious (Han et al. 2012; Yu and Elsworth 2012). As sections 3 and 4 show, the EU as the supply side has a number of lessons to share and promote. In China, there are developments that hint at a demand. The following section describes the receptiveness of the overall political context in China and then moves to a discussion of EU-China cooperation.

5 The Demand Side: Chinese Climate Policy

The political context and commitment to climate policy shows some receptiveness to lessons from and collaboration with the EU on climate policy and GHG emissions trading. Over recent years, China has taken significant steps to design climate policies and to develop low-carbon growth sectors of its economy. These changes must, of course, be set against continuing unsustainable trends in China's economic development pathway, and the political and institutional constraints on radical transformation (Andrews-Speed 2012). Nonetheless, China's achievements in the low-carbon sphere have been significant. This transition has been driven principally by three of factors.

The first of these was the increasing energy intensity—and therefore increasing energy demand—of the Chinese economy. From 1990 to 2002, China's energy intensity had dropped by 54% (Heggelund and Buan 2009: 303). However, this trend was reversed

during the period 2002 to 2006, during which China's total commercial energy consumption grew by more than 50%, increasing more rapidly than GDP. This was driven by a combination of central government policy at the time which favoured construction and heavy industry, and a surge in trade and investment arising from China's admission to the World Trade Organization in December 2001 (Meidan, Andrews-Speed and Xin-Ma 2009: 608). As a result, blackouts were common across China, with the exception of the largest cities, which brought the issue of energy security to the forefront of the government agenda (Godement 2007: 392). In 2004, the central government announced that sustainable use of energy was a key priority for the whole country (Meidan, Andrews-Speed and Xin-Ma 2009: 610).

Second, alongside the shift in thinking on energy policy, there was a growing awareness among the Chinese leadership of China's ecological vulnerability and ever-worsening local environmental pollution. This is closely related to the issue of energy policy, since China is heavily reliant on coal for energy generation. In 2006, coal constituted 69.4% of overall energy consumption, and nearly 90% of all new power generation was coal. Moreover, since China has 114 billion tonnes of proven coal reserves—coal is bound to remain the dominant fuel for power generation in the near future, and is expected to constitute 53% of total energy consumption in 2030 (Heggelund 2007: 162).

China's rapid economic growth, particularly the more recent, energy intensive phase, has resulted in extensive environmental degradation across a range of indicators. In 2007, China had 16 of the world's top 20 polluted cities. 90% of Chinese water is polluted, some of it almost completely, while the pace of desertification has doubled since the 1970s (cited in Brown 2007: 36). Moreover, these local environmental stresses have been recognized publicly by the Chinese Government. In an unusually frank interview with Der Spiegel in 2005, Pan Yue, Vice Minister in the State Environmental Protection Administration, acknowledged the severity of air and water pollution, and suggested that China was losing between 8 and 15% of GDP per annum due to air and water pollution, and highlighted the future prospect of 150 million "environmental refugees" in China (Der Spiegel 3 July 2005). Such local environmental problems have led to increasing public unrest. According to surveys conducted by the Chinese Academy for Environmental Planning in 2007, 56% of the public are worried about the safety of drinking water, and almost 95% are worried about the state of the environment (Brown 2007: 41).

China's 11th Five Year Plan (FYP), announced in 2005 and covering the period 2006-2010, has been described as "the beginning of a new era of sustainable development in China" (Ng and Mabey 2011: 8) and as "China's turning point for environmental protection" (O'Gorman and Zhu 2007: 17). It set a 20% energy intensity target to be achieved by 2010, and a less concrete 15% renewable energy target to be achieved by 2020. In June 2007, the Chinese Government published its first National Climate Change Programme and established a National Leading Group for Climate Change, chaired by the serving Premier, demonstrating that climate change had become an issue of importance for the highest levels of the Chinese Government. Prior to the Copenhagen climate change summit in 2009, the State Council announced a target of reducing carbon intensity—that is, emissions per unit of economic output—by 40 to 45% by 2020 relative to 2005 levels (Xinhua 26 November 2009). The 12th Five Year Plan, announced in early 2011, set a compulsory carbon intensity target of 17% reduction by 2015 relative to 2010 levels, and an energy intensity target of 16% (Li and Wang 2012). Furthermore, the government has announced its intention to draft a

comprehensive climate change law, which is expected to be enacted by 2015 (Globe International 2013: 104).

A second driver of Chinese demand for cooperation with the EU on emissions trading stems from China's past policy-making experiences and path dependencies. There has also been an increasing recognition among the Chinese leadership that there are limits to existing methods of policy-making and implementation, including the dominance of the command-and-control model of regulation. In particular, the model of state-led planning has emphasised setting periodic targets but has been less successful at delivering reform (Andrews-Speed 2012: 129-130). One prominent example of this failure was the efforts by local governments in China to achieve their energy efficiency targets under the 11th FYP. It was widely reported that, in the final months of 2010, local governments in China took steps such cutting off electricity to homes, hospitals and factories in order to meet the energy efficiency targets they had been set (Oster 10 September 2010). Such difficulties have prompted China's leaders to move away from command-and-control regulation and towards experimentation with more flexible instruments, including market mechanisms (Han et al. 2012; Yu and Elsworth 2012).

China's unsuccessful past experiences with emissions trading for SO_2 is also likely to have contributed to demand for European expertise in the area. Beginning in the late 1980s and early 1990s, a number of Chinese provinces and cities have piloted emissions trading schemes for SO_2 and other pollutants. In the early 1990s, the State Environmental Protection Administration (SEPA) implemented a pilot programme to promote the usage of pollution permits, covering 16 large cities and allowing the polluters in 6 cities to trade pollution permits among themselves (Chang and Wang 2010). A second phase in China's experimentation with emissions trading for SO_2 was strongly facilitated by external actors, including the US Environmental Protection Agency, prominent US NGOs and some of the multilateral development institutions. This led over the following years to SO_2 emissions trading mechanisms being established in four provinces (Shangdong, Shanxi, Suzhou and Henan), three cities (Shanghai, Tianjin and Niuzhou), and one power production company (Hua Neng Group). These schemes aimed at meeting targets for SO_2 reduction under the 10th FYP (2001-2005), and experimented with respect to trading formats, allocation methods, and pricing mechanisms (Chang and Wang 2010; Shin 2012; Tao and Mah 2009).

However, despite government support and the assistance of external actors, these various pilots were unsuccessful. By the end of 2005, Chinese SO_2 emissions had increased by 27%, primarily because of the 64% expansion in coal fired generation capacity during 10th FYP period. That emissions trading was deemed unsuccessful can be seen in the fact that, from 2005 onwards, SEPA and NDRC began to set up a series of new SO_2 policies which included a subsidisation plan to support major power plants to install new equipment and the shut-down of small and inefficient power plants. In March 2011, China announced that 11th FYP targets for SO_2 reduction had been reached without emissions trading (Shin 2012). China's previous failures with SO_2 emissions trading are likely to have generated interest on the part of Chinese policy-makers in tapping into European experience setting up CO_2 emissions trading.

6 6. EU-China Cooperation on Emissions Trading

EU-China cooperation on GHG emissions trading takes two routes. One is through China's participation in the CDM and the other, more explicitely focused on policy promotion and capacity building, is cooperation through meetings and information

exchange. The EU played a role in fostering understanding of carbon markets in China by allowing European firms use so-called Certified Emission Reductions (CER) generated by CDM projects to offset their domestic emissions. The CDM has been particularly significant in the case of China. As well as enabling European companies to purchase Chinese CERs through the linking of the CDM and EU-ETS, the EU and member states have also participated directly in the CDM through government purchases of CERs, and through provision of capacity building for the CDM in China. One of the most prominent such initiatives is the EU-China Clean Development Mechanism Facilitation Project, launched in April 2007 under the framework of the Partnership on Climate Change, with EUR 2.4 million funding provided by the European Commission. This project aimed to increase domestic institutional capacity in China in relation to the CDM, to introduce European and international standards in quality management of the CDM development process, and to increase awareness of CDM opportunities in China.

EU-China cooperation on emissions trading has taken place against the backdrop of the broader development of EU-China engagement on climate change which, in turn, built upon the progressive deepening of the broader EU-China relationship in the early 2000s (Murphy and Islam 2004; Shambaugh 2004: 243). EU-China cooperation on climate change has taken the form of the EU-China Partnership on Climate Change, agreed at the EU-China Summit in September 2005, under which both sides committed to strengthening dialogue on climate change policies and to practical cooperation on the development, deployment and transfer of low carbon technology. Cooperation has taken the form of institutionalized dialogue through a bilateral consultation mechanism which meets once or twice per year at senior official level, as well as practical cooperation in a range of areas such as carbon capture and storage, renewable energy and capacity-building support for province-level climate policy-making and implementation in China.

Not only the EU, in particular the European Commission, but also some individual EU Member States and Norway equally as the World Bank engage in cooperation with different Chinese actors and regions on emissions trading. These activities are complimentary and focus on different pilot projects or the national level. The EU and European countries coordinate their activities. For example, in April 2013, there will be a coordination meeting between all the European players and the Chinese actors involved.

A three-year EU-China project focusing on cooperation on emissions trading was launched in summer 2013. The aim of this project is to provide expertise and to engage in capacity building. The consortium is a mix of European and Chinese experts since the European Commission acknowledged the need for international expertise as well as local knowledge for implementing a successful project. The funding however comes entirely from the EU and amounts to €5 million. It is part of a 2012 agreement between China and the EU to invest €25 million over 4 years, on a EU-China low carbon and environmental sustainability programme (European Commission 20 September 2012). Since the funding, despite being significant, would not be sufficient for engaging in all seven Chinese pilot projects, the project consortium will prioritise and share work with the other European and international actors involved. For this reason, there are attempts to develop a coordinated approach between the different European actors.

The main additional European actors involved in capacity building on GHG emissions trading in China are Germany, the United Kingdom and Norway. Germany, more precisely its international cooperation agency GIZ, funds with €4 million a cooperation project on specific issues in some of the pilot projects over the period of July 2012 – July 2016. The aim of this project is to train technical experts and decision-makers on ETS design and implementation, to contribute to in-depth knowledge building of a legal and institutional emissions trading framework and to enhance the dialogue between political decision-makers and the private sector (International Partnership on Mitigation and MRV 2012). The UK is active with capacity building measures in one of the pilot projects, Guangdong, which is one of the most developed pilots. The region has a similar GDP to Germany and the same range of industrial sectors as many EU countries. For this reason, this particular pilot project seems very interesting for Europeans to get involved and share their experiences. Norway is the third important player. It funds a $5 million project targeted at the national level. The country works with the NDRC on basic issues such as the establishment of a registry and on measurement, reporting and verification (MRV). In addition to these European efforts, some other countries such as Australia are active on capacity building in China but to a lesser degree than the European. Subnational entities are also cooperating with Chinese counterparts. In June 2013, relevant authorities from California and Shenzhen announced an agreement to cooperate on ETS design and implementation (Point Carbon 26 August 2013). One international actor, namely the World Bank, is another important player in the development of Chinese emissions trading programmes. It will fund a $8 million project for supporting the development of a national system in the period of 2014-2016.

Beside the above-mentioned project, the European Commission engages with actors from a number of the pilot projects and from the national government. A European Commission representative visited three of the pilot project regions, namely Guangdong, Hubei and Beijing, where workshops on emissions trading were organised. In addition, Chinese delegations visited Europe to meet with EU and Member State experts (mainly from Germany and the UK) on emissions trading. These delegations came from the pilot projects of Shanghai, Beijing and Guangdong. These delegation visits were organised on the request of the Chinese visitors. The British Consulate financed the Guangdong delegation. The Shanghai delegation was financed by the German agency on international cooperation GIZ and the Beijing delegation was self-financed.

Examples of EU engagement with Chinese actors on emissions trading are a 2009 workshop held in Beijing, co-hosted by the European Commission and the NDRC. This followed on a first workshop earlier in the same year co-hosted by the NGO The Climate Group and the European Commission where European representatives shared Europe's experience with the EU ETS (The Climate Group 2010). In May 2011, the Economic Forecast Department of the Chines State Information Centre (SIC) sent a delegation to Germany and France with the aim to study the establishment of emission trading systems in Europe. In July 2011, the French think tank IDDRI engaged in the organisation of an international forum in Beijing to draw the lessons from the EU ETS experience. This resulted in the drafting of ten key policy recommendations for the establishment of an ETS in China (Li, Zhang and Cai 2012).

7 Areas for Cooperation and Challenges

The Chinese efforts to introduce the pilot projects and as a second step a national emissions trading system can equally been seen as the areas with the greatest need and

scope for EU-China cooperation. Establishing a credible system requires the design, implementation and enforcement of a reliable measurement, reporting and verification (MRV) system. GHG emissions from industrial site need to be measured and reported reliably for an ETS to work. One of the most important tasks for China is thus ensuring the collection and analysis of data. Currently, the Chinese statistics show some inconsistencies. The GHG statistics from the National Bureau of Statistics of China and the added data from the 30 provincial statistics bureaus do not match (Liu and Xu 9 August 2012; Wang 2013). The EU has extensive experience with MRV regulation and has already identified this as an area for its capacity building measures.

A challenge and at the same time a factor that might require some adjustment from the EU system is the fact that the Chinese state is heavily involved in the system and most companies potentially covered by the ETS are state-owned. Power prices are under political control meaning that Chinese power generation companies cannot pass ETS-driven cost increases on to consumers. This was one of the problems that the Chinese SO_2 emissions trading systems encountered and contributed to their failure (Tao and Mah 2009). The implementation of a market-based system in a non-liberal economy differs from the EU experience and explains why not all EU lessons are fully transferrable to China.

A further challenge is that China has not set an emissions cap. This marks a difference between China and the EU. It is not clear whether and when China will set a cap and whether this will be an absolute or an intensity cap, though recent reports suggest that one may be introduced during the 13th Five Year Plan period (Hook and Clark 27 May 2013). The absence of an emissions cap is not necessarily a barrier to the establishment of an ETS. It is technically feasible to design an ETS with an intensity target rather than an absolute emissions cap, but such an ETS would look considerably different to the EU-ETS. Moreover, China is also working on the introduction of a carbon tax. The integration of a tax and an emissions trading system is unclear and an area in which the EU does not have extensive experience.

The timelines for establishing the pilot projects as well as the 2016 deadline for a national system seem very ambitious (Liu and Xu 9 August 2012; Yu and Elsworth 2012). European involvement and assistance could help China in its ambitious endeavour.

8 Conclusion

This paper is a first draft of an analysis of the EU-China cooperation on GHG emissions trading. It largely is based on academic and media articles. More in-depth empirical investigation will be conducted in the upcoming months. The paper demonstrates however that the involvement of EU actors with China on emissions trading is significant; most likely the most intensive EU cooperation effort with another country on GHG emissions trading. The domestic context in China explains, on the one hand, a certain degree of receptiveness for lessons from the EU ETS experience and for EU capacity building efforts. On the other hand, the Chinese domestic context differs on some significant aspects from the EU, explaining why the eventual Chinese ETS will most likely not be a copy of the EU ETS. Based on the supply and demand framework outlined in this paper, the future empirical study will be based on a qualitative process tracing approach. The main actors involved on the EU side were or will be interviewed followed by a study of the Chinese pilot projects and national discussions.

This paper indicates that the EU's external governance depends on the EU's commitment, which is given in the case of Chinese GHG emissions trading system(s) but it equally depends on the domestic context in China. This makes it difficult to assess whether the EU-China bilateral efforts can complement and support the multilateral UNFCCC process. As discussed, some aspects of the Chinese economy and institutional system differ significantly from the EU. They delineate the limits of the EU ETS as a model. Yet, on some aspects such as MRV, EU capacity building efforts cold support and provide an impetus for changes in the Chinese system so as to help ensuring the design and adoption of an efficient system. Some other domestic factors, for example the great extent of state-control of the economy, seem more difficult challenges that are not likely to be altered based on EU lessons and capacity building. On these aspects, a Chinese ETS will have its own characteristics and differ from the EU. This leaves the question open if the EU and the Chinese emissions trading systems could be linked and to what extent this bottom up climate policy-making can make a significant contribution to achieving global climate change mitigation goals.

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