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EU-China Climate Relations: The Role of the CDM in the Development of Renewable Energy in China

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Abstract

EU-China Climate Relations: The Role of the CDM in the Development of Renewable Energy in China seeks to investigate to what extent EU-China climate relations contribute to the development of climate change mitigation technology in China. More specifically, it evaluates the role of the EU and EU companies in Clean Development Mechanism projects in the wind energy sector in China. The relationship between the European Union and China on climate mitigation is a significant one, since both the EU and China are key players in global climate governance. The European Union is by far the largest economic bloc engaged in the Kyoto Protocol in the developed world and responsible for the largest share of historical emissions world-wide, while China is the largest political and economic power among developing countries and the largest source of greenhouse gas (GHG) emissions at present. The Clean Development Mechanism (CDM) plays an important role in these relations, certainly with regard to technology transfer and development.

Key Words

EU, China, Renewable Energy, CDM, Climate Change, Wind Energy

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INTRODUCTION

This paper seeks to investigate to what extent EU-China climate relations contribute to the development of climate change mitigation technology in China. More specifically, it evaluates the role of the EU and EU companies in Clean Development Mechanism projects in the renewable energy sector in China. The relationship between the European Union and China on climate mitigation is a significant one, since both the EU and China are key players in global climate governance. The European Union is by far the largest economic bloc engaged in the Kyoto Protocol in the developed world (Jordan et al. 2010) and responsible for the largest share of historical emissions world-wide, while China is the largest political and economic power among developing countries and the largest source of greenhouse gas emissions at present and for the foreseeable future (Netherlands Environmental Assessment Agency 2007). The Clean Development Mechanism (CDM) plays an important role in these relations, certainly with regard to technology transfer and development (EU-China CDM Facilitation Project 2010).

Part one presents the relevant regulatory frameworks governing EU-China CDM cooperation and explains the reasons to look at the CDM in the context of renewable energy development in China. There are two major frameworks involved: the international regulatory framework of the CDM, and the rules and regulations governing the CDM in China, framed in its domestic climate and renewable energy policies. Internationally, the CDM constitutes an important element of the UN framework to combat climate change, allowing Annex I Parties (developed countries) and non-Annex I Parties (developing countries), as defined by the UNFCCC and its Kyoto Protocol, to undertake activities that reduce emissions in non-Annex I Parties and contribute to sustainable development (United Nations 1992; United Nations 1997). Annex I Parties can use Certified Emission Reductions (CERs) resulting from CDM projects to meet their reduction targets. CERs are bought and sold on the global carbon market, based on the procedures of the Kyoto Protocol's International Emissions Trading mechanism (Yamin 2005). An important reason to look at the market for CDM emission reduction certificates, lies in the fact that the EU and China host the largest sources of CER demand and supply respectively. The European Union's Emission Trading System (EU ETS) is the single largest

source of demand for CERs resulting from CDM projects, while Chinese projects currently supply the biggest amount of CERs world-wide (UNFCCC 2010; Point Carbon 2010). The second set of regulations pertain to the integration and role of the CDM in China's climate and renewable energy policies. The key document here is the 2005 Renewable Energy Law (REL), establishing national renewable energy targets and stimulating international cooperation and foreign direct investment through mechanisms such as the CDM.

In part two, this paper looks at the wind power sector to examine the development and transfer of renewable energy technology in China. The analysis aims to estimate the relevance of the CDM and describes the (lack of) different initiatives, investments and/or agreements leading to technology transfer and development in the sector. The different factors leading to (un)succesful CDM cooperation are examined and evaluated. Wind power projects are selected because they exemplify succesful cooperation leading to an actual contribution to renewable energy development in China (Lewis 2010; Li 2010), while also highlighting existing challenges and barriers that restrain renewable energy promotion through the CDM.

THE REGULATORY FRAMEWORKS OF EU-CHINA CDM COOPERATION

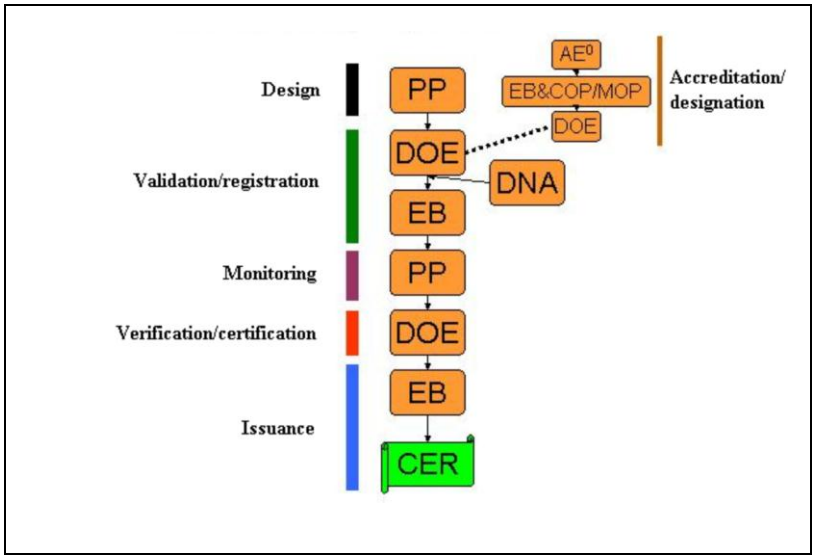
The following sections introduce the two main regulatory frameworks that define EU-China CDM cooperation. Section one presents the relevant institutions, procedures and regulations that govern the CDM internationally. Section two introduces the Chinese domestic regulatory framework covering the CDM and related renewable energy policies. A specific bilateral EU-China CDM framework does not exist.

THE CLEAN DEVELOPMENT MECHANISM

With 2362 registered projects (September 2010), 431 million issued CERs (equivalent to 431 million tonnes of CO_2 reductions), and more than 1,82 billion expected CERs from registered projects by the end of 2012, the CDM exceeds initial expectations both with regard to the amount of projects as well as issued emission certificates (UNFCCC 2010).

The Kyoto Protocol (1997) defines the CDM in a rather flexible way. Article 12.2 and 12.3 of the Protocol allow for both unilateral, bilateral as well as multilateral (or portfolio) approaches to CDM projects. The *bilateral approach* involves entities from both Annex I and non-Annex I Parties cooperating in partnership, the *unilateral approach* consists of entities from non-Annex I Parties that undertake CDM activities without foreign partners, and the *multilateral/portfolio approach* refers to the case where an intermediary constructs a range of complementary CDM activities on behalf of others (Yamin 2005:30). This is a key feature to bear in mind when looking at technology development or transfer through the CDM. Strictly speaking, technology transfer can only take place in bilateral and multilateral projects, although the development of specific technologies can be stimulated in unilateral projects as well, through cash flows from (future) CER revenues. The establishment of CER sales agreements during the design of a project can to a certain extent ensure this cash flow before the actual issuance of CERs.

Figure 1. The CDM Project Cycle



Source: UNFCCC 2010.

The most important actors, terms and processes involved in the mechanism can be concisely summarized by explaining the CDM Project Cycle (see figure 1). The latter can be divided in five steps: (i) project design, (ii) validation and registration, (iii) monitoring, (iv) verification and certification and (v) CER issuance.

The Project Design Document (PDD) is the key document involved in the first two steps of the Project Cycle. The PDD, written by the Project Participants (PPs), describes all the relevant details of the project, including the baseline (or

"business-as-usual scenario") against which the additionality of the targeted emission reductions is established. An independent third party (a "Designated Operational Entity" or DOE) validates the project after the PDD has been approved by the Designated National Authority (DNA) of the host country (e.g. China). The CDM Executive Board (EB), the international body that supervises the CDM, officially registers the project when validation is completed. Monitoring of emission reductions is performed by the PPs themselves, according to the procedures mentioned in the PDD. A second DOE performs verification and certification of the monitoring results, leading to the issuance of CERs by the EB. Issued CERs are forwarded to the accounts of the relevant entities in the CDM registry, held by the UNFCCC Secretariat, from which a link is established to the International Emissions Trading mechanism (IET), commonly referred to as the 'global carbon market' (CDM Rulebook 2010).

The EU Emissions Trading System (EU ETS), a European company-level system linked to the international trading mechanism since 2008, provides the single largest share of CER demand in the global carbon market (Point Carbon 2010). A maximum of 1.4 billion CERs is estimated to enter the EU ETS during the first commitment period (2008-2012), while the UNFCCC expects the issuance of 1.82 billion CERs until 2012 from registered projects so far, and another 1.055 billion from projects awaiting validation (Chevallier 2010; UNFCCC 2010). Total CER demand from the EU is, moreover, driven by both EU ETS and non-EU ETS sources. The latter refers mainly to individual member states that need reduction certificates to comply to their Kyoto targets. An additional 0,7-1 billion CERs could potentially enter the European carbon market in this way (Chevallier 2010).

Table 1. Host country ranking (September 2010)

Host Country	Issued CERs	Registered Projects	Global Share
China	215,517,064	939	49.92 %
India	79,271,061	532	18.36 %
Republic of Korea	56,069,468	44	12.99 %
Brazil	42,513,346	178	9.85 %
Mexico	6,836,481	123	1.58 %

Source: UNFCCC 2010.

China, on the other hand, provides the single largest share of CER supply world-wide. It hosts 939 registered CDM projects as of September 2010, with another 1254 projects at the validation phase (UNFCCC 2010; UNEP Risoe Centre 2010). Table 1 shows that China is currently the most important host country in the world, both in terms of issued CERs as well as registered projects. The CDM registry issued 431 million CERs so far, of which China produced 215 million or 49,92%.

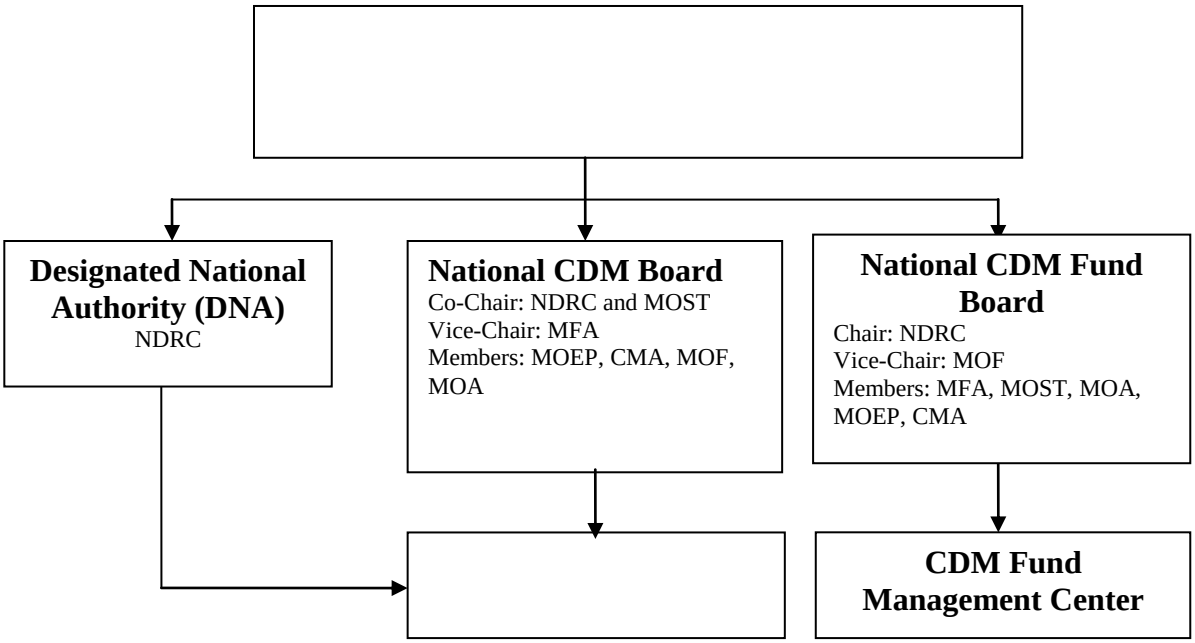
It is concluded that the European Union and China are by far the most important blocs involved in CER trading, the former on the demand and the latter on the supply side of the global CDM market.

THE CDM AND CHINA'S RENEWABLE ENERGY POLICIES

CDM Rules and Regulations in China

This section explains the regulatory framework of the CDM in China and the role of the CDM in China's renewable energy policies. On 12 October 2005, the Chinese government issued the *Measures for Operation and Management of Clean Development Mechanism Projects* (the "CDM Rules"). The latter is the only legal document on the CDM in China and is mainly concerned with the management institutions and domestic approval procedures for CDM projects (NDRC & WB 2009:27).

Figure 2. CDM Management Institutions in China



Source: EU-China CDM Facilitation Project 2010:21.

The major institutional actors of CDM management in China are the *National Leading Group on Climate Change (NLGCC)*, the *Designated National Authority (DNA)*, the *National CDM Board* and the *National CDM Fund Board* (figure 2). The NLGCC holds the ultimate authority over the CDM in China, coordinating important CDM policies and approving members of the National CDM Board. The group was established in 2007 and consists of the premier and members of 18 state ministries. The National CDM Board functions as an advisory body for the NLGCC and is involved in CDM approval procedures. The NDRC, one of China's most influential and powerful ministries, acts as China's DNA. It is in charge of the acceptance of applications and the issuance of letters of approval (LoAs), the basic requirement to enter step 2 (validation) of the CDM Project Cycle. The National CDM Fund Board governs the CDM Fund, set up to promote sustainable development, climate adaptation and mitigation in China. The *CDM Project Management Center (CDM PMC)* and the *CDM Fund Management Center* provide operational and administrative assistance to the DNA, the NLGCC, the National CDM Board and the National CDM Fund Board.

The CDM Rules favor projects that promote "energy efficiency, *renewable energy development* and methane recovery and utilization through *transferring*

environmental sound technology" (CDM Rules, Art. 4, emphasis added). CDM projects in these three priority areas are encouraged by the government and pass approval procedures more easily. Other major elements of China's generally very efficient CDM Rules include:

(i) *Eligibility requirements*: only Chinese companies or Chinese holding companies are eligible for CDM projects (CDM Rules, Art. 24). A Chinese holding company refers to a joint venture where the Chinese entity controls a minimum of 51% of the shares. This rule limits the access of foreign companies to CDM development in China and is thus an important element in the discussion on technology transfer.

(ii) *CER price guidance*: The DNA performs a CER price review before issuing the letter of approval, *de facto* establishing a CER price floor.

(iii) *Tax levies:* The Chinese government levies a tax of 2% of the CER transfer price from priority area projects, 30 % from N_2O projects and 65% from HFC and PFC projects. Tax revenues are collected in the CDM Fund, governed by the National CDM Fund Board.

These rules, particularly the tax levies based on the three priority areas, indicate the Chinese government's urge to promote technology transfer and the development of renewable energy (RE) technology in China through the CDM.

Renewable Energy and Climate Policies in China

This section presents the major legal documents that make up the current regulatory framework governing China's renewable energy (RE) and climate policies. In 2005, the central government adopted two key documents in that regard: the Renewable Energy Law (REL) and the 11th Five Year Plan (2006-2010). These policies were followed by the 2007 China's National Climate Change Program (CNCCP) and the Mid- and Long-Term Renewable Energy Development Plan. In 2008, a separate Five Year Plan (2006-2010) for Renewable Energy Development was agreed upon. In Appendix II of the Copenhagen Accord, finally, China pledged its most recent RE and climate targets to date.

The most important contribution of the 2005 *Renewable Energy Law* (REL) is the confirmation of the strategic significance of RE development. The Standing Committee of the National People's Congress approved the REL on 28 February 2005, after which the law came into force in January 2006. The REL was amended in December 2009 and entered into force in his new form in April 2010. The 2009 amendment foresees the establishment of a special fund dedicated to the development of the RE sector in China.

The other major policy document drafted in 2005 was the *11th Five Year Plan (2006-2010)*. In this document, the relatively ambitious target of a reduction of 20% in energy consumption per unit of GDP by 2010 compared to the level of 2005 was endorsed, along with other major economic, social and ecological targets and guidelines for China's economic development in the second half of the decade.

China's National Climate Change Program (CNCCP), adopted in June 2007, repeated the energy efficiency target of 20% (and related CO_2 emission avoidance) and set a new target aiming for a 10% share of RE in total primary energy supply by 2010. The latter is also the mid-term target included in the *Mid- and Long-Term Renewable Energy Development Plan (MLTREP)*, issued in August 2007 as a supporting implementation plan of the REL. MLTREP's long-term target aims for a 15 % share of RE in primary energy supply by 2020. Issued in March 2008, the *11th Five Year Plan (2006-2010) for Renewable Energy Development* is a specific sectoral Five Year Plan that elaborated upon the 2010 RE target and other measures included in the MLTREP.

A final measure related to China's renewable energy and climate policies was issued just prior to the Copenhagen summit on Climate Change in 2009 and is included in *Appendix II of the Copenhagen Accord*. China pledged to cut domestic carbon intensity (CO_2 emissions per unit of GDP) by 40-45% between 2005 and 2020 and reiterated its 15% RE target. The carbon intensity target strengthens the previous promises on energy intensity, as it requires an additional 20-25% energy-saving by 2020 on top of the 2010 target (Zhang 2010:12). Table 2 summarizes China's renewable energy and climate mitigation targets.

Table 2. China's Renewable Energy and Climate Mitigation Targets			
Policy Document	**Year**	**RE share of total energy**	**Energy Efficiency / Carbon Intensity**
The 11th Five Year Plan (2006-2010)	2005	-	20% EE by 2010
China's National Climate Change Program (CNCCP)	2007	10% by 2010	20% EE by 2010
The Mid- and Long-Term Renewable Energy Development Plan	2007	10% by 2010 and 15% by 2020	-
The 11th Five Year Plan (2006-2010) for Renewable Energy Development	2008	10% by 2010	-
Copenhagen Accord, Appendix II	2009	15% by 2020	40-45% CI by 2020

The general picture that emerges from China's recent policy initiatives, shows a modest aspiration to change current energy production and consumption patterns, away from over-reliance on fossil-fuels, towards a moderate increase in the use of clean energy. The CDM is mainly perceived as a complementary vehicle to enhance technology transfer and facilitate financial flows, and is only sporadically referred to in policy documents. As both finance and technology are key issues in the development of the renewable energy sector in China, however, the CDM potentially touches upon aspects of each of abovementioned renewable energy and climate policy frameworks. In the following part we will look at the wind power sector in terms of concrete linkages between the CDM and the abovementioned energy policy aspirations of China.

EU-China CDM Cooperation: The Case of Wind Energy

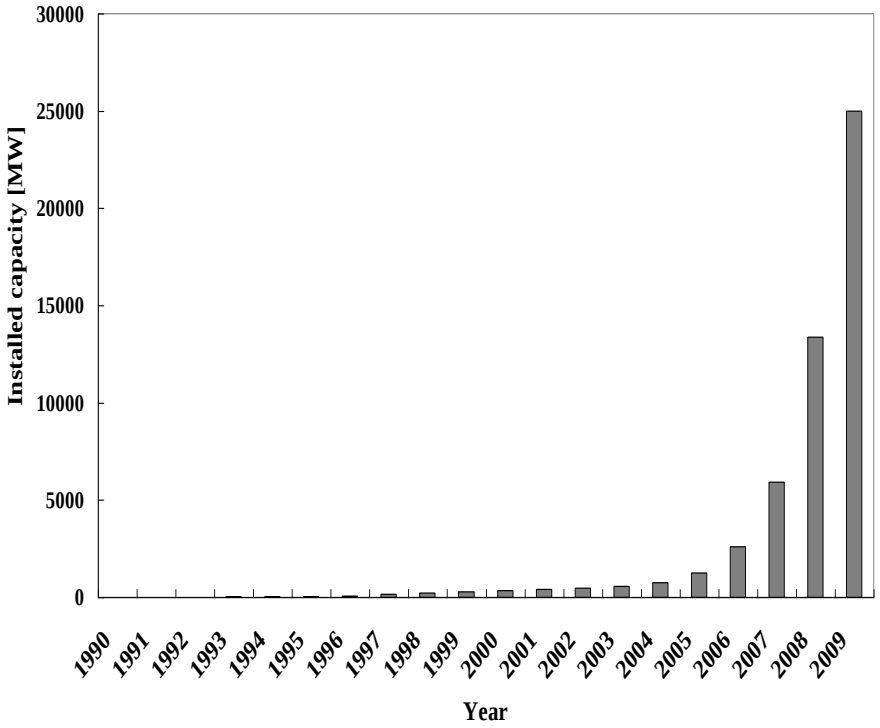
The empirical part of the paper focuses on the transfer and development of climate mitigation technology, one of the basic *reasons d'être* of the rules, agreements and institutions presented above. From a developing country's perspective, the CDM offers two major resources: finance and technology. It is widely perceived that of these two, only financial resources flow to the developing world as foreseen. [1] As a matter of fact, studies on technology transfer show that CER revenue is actually one of the main reasons why there is any technology transferred at all, by financially enabling foreign investment in equipment and know-how (Lewis 2010; Wang B. 2010; Schroeder 2009). The following sections attempt to empirically investigate CDM-induced renewable energy sector development and related technology transfer, defined by the UNFCCC as a "means to use equipment and/or knowledge not previously available in the host country by the CDM project" (UNFCCC 2008), by looking at successful examples and existing challenges regarding European involvement in the Chinese wind power sector.

Wind Energy Projects

The Renewable Energy Law is an important driving force of China's wind market expansion. Since 2005, when the REL introduced various targets and (market) mechanisms, the growth of the wind installation capacity in China is evident compared to earlier periods. After the REL took effect in January 2006, 1337 MW was added in one year and the accumulated installed capacity reached 2.6 GW. The following years witnessed an equally impressive growth rate, leading to an installed capacity of 12.8 GW in 2008 and nearly 25 GW by the end of 2009 (see figure 3).

[1] Interviews, Beijing, June 2010.

Figure 3. Wind installation capacity in China 1990-2009



Source: Adapted from NREL 2004b; Lema and Ruby 2007; Zeppezauer and Carnabuci 2009.

Financial Flows

CDM funding is a key element in making several hundreds of Chinese wind projects profitable. It facilitates thus the rapid development of China's wind power sector and enhances wind power technology transfer. Interviews with the central government, industry and academics show that without the CDM, the wind power sector would probably not have developed to the level it has reached today.[2] Since the early days of the CDM, wind projects in China have been abundant, with currently 237 out of China's 939 registered CDM projects belonging to this type (September 2010, UNFCCC 2010). The CDM clearly provides a positive financial stimulus for domestic wind power development, relying on CER sales mainly destined for the European market (cf. supra).

Without the CER revenues, the 237 CDM wind power projects would not be economically competitive, with an internal return rate (IRR) that would be lower

[2] Information in the following sections is based on interviews with business representatives, Chinese and European officials and academics.

than the benchmark price (meaning the lowest acceptable price set by the NDRC). Projects that were able to register under the CDM, however, reach an IRR larger than the benchmark, relying on the revenue transferred from the expected CO_2 emission reductions. Interviews show that, in practice, the IRR will be minus 5% for renewable energy projects that do not succeed to register under the CDM on average, while reaching 25% otherwise. The financial flow resulting from the sale of CERs is therefore the first and foremost driver of the Chinese CDM wind power market.

There are five other critical determinants that are more controversial and sometimes even pose serious barriers for CDM technology transfer/development: (i) different views on "core" technologies, (ii) eligibility conditions for CDM project developers, (iii) the Chinese concession system for wind power, (iv) issues related to grid modernization and (v) the relationship between additionality and electricity prices.

Different Views on "Core" Technologies

A central point of disagreement is the definition of technology transfer (TT). The CDM management center of the NDRC and China's central government criticize the fact that despite the CDM, key technological know-how is still controlled by European companies, mainly based in Denmark, Germany, the Netherlands and Spain, in addition to a number of US companies.

European industry, on the other hand, emphasizes the need for a balance between technology transfer and competition. If the Chinese government would ask foreign investors to give away central control systems or core technology, the latter would quickly be out of business. If foreign companies want to survive in China's wind market, a balance between transfer and competitivess is necessary.

The transfer of key technologies was further complicated by the "70% local content rule", established in 2005 but cancelled in 2009. The rule intended to stimulate technology transfer to local wind turbine manufacturers and to reduce production costs (Pan and Zhu 2006). Before 2005, the major challenge for wind power development was that most wind turbines and generators relied mainly on foreign import, which was expensive and caused investment costs to

be high. To reduce the burden on wind investors, the Chinese government decided that 70% of the components of wind turbines should be produced locally. The rule did not mean that turbines needed to be produced by Chinese companies, but obliged products to be made locally, either by domestic or foreign industries.

This rule enabled Chinese local industry to learn from European and other foreign investors on how to produce turbines and other wind technology, and was actually one of the main drivers of the sector's development boom in the past five years. The major disadvantage of the local content rule, however, was that companies used cheap materials to drive down costs, which, combined with a lack of government funding on R&D, caused severe wind turbine quality problems. Poor quality led to production losses and repair costs, which in turn led to investment losses (Nao 2006). As a result, the central government decided to abandon the rule in 2009. That decision was beneficial to EU businesses, who are now able to compete in the market with quality turbines, while also opening up more possibilities for different kinds of joint ventures with domestic partners.

Eligibility Conditions

A second barrier for European investors to participate in China's wind market is the lack of a level-playing field created by China's strict CDM eligibility conditions. Currently, China's CDM rules strongly favor Chinese companies. There is a restriction for foreign developers to apply for CDM subsidies. The rule requires that (holding) companies applying for the CDM must have 51% of their shares owned by a Chinese entity. This rule seems discriminating against foreign companies, making it more risky and less attractive to be in China. The 51% rule limits access to CDM funding and decreases thus the related technology development and transfer. Although there is some debate about the weight or influence of this rule, it is generally acknowledged to be a serious challenge for CDM-induced wind sector development in China (Schroeder 2009; Wang B. 2010). The rationale behind the rule is that emission reductions resulting from CDM projects are (national) Chinese assets, that should not be controlled by any foreign players from the outset. The rule leads to a pattern of project development wherein foreign partners are mainly CER buyers instead of Project Participants, and/or are contracted to supply key technologies on an

independent basis.

Wind Concession System

The wind concession system, initiated by the central government in 2003, creates a particular barrier for European and other foreign investors in China's wind power sector (Schroeder 2009; Wang Q. 2010). The concession system consists of two different bidding rounds for wind power development projects, *national* and *local* bidding rounds. Both bidding rounds are open to foreign investors and Chinese companies. Problems arise mainly in the national bidding rounds, which are very rarely won by European players. National biddings are based on the price per kWh and do not take into account quality factors such as turbine longevity, know-how related to optimal windmill placing and so forth. The European technology giants, champions in high-quality turbines, can simply not compete with the cheap but relatively low-quality Chinese turbines and are cut off from participation in major domestic projects as a result.

Grid Modernization

A third and major barrier is the limited ability of China's grid system to receive and transmit wind-generated electricity (Wang Q. 2010). There are severe technical problems regarding grid system stability resulting from strong fluctuations in the amount of wind power generated by wind farms. This is a major concern for state grid companies, that are reluctant to buy wind electricity. An advanced grid integration technology such as 'smart grids' and very powerful back-up energy mechanisms are necessary to ensure a maximum volume of power and stability. This is the key technological barrier China needs to tackle in order to reach the 15% RE by 2020 target promised in the 2009 Copenhagen Accord. If the problem is not solved, wind industry development, the wind-generated electricity market and by extension any related CDM activities will come to a standstill.

Efforts are underway to solve the issue, however. The Danish government, for example, initiated the 2005-2009 Sino-Danish Wind Energy Development Program, which included training programs in wind resource assessment, wind projects planning and evaluation, studies on grid integration, and maintenance

training. In addition to international cooperation, the central government also tried to establish a Power Purchase Mechanism (included in the REL) that obliges state grid companies to buy a certain percentage of wind electricity and to invest in innovative technology, but the mechanism has not been effectively implemented so far.

Electricity Prices and Additionality

A final problem is related to the unstability of the Chinese electricity pricing system. In addition to creating conflicts between local wind developers and grid/electricity companies, the issue also poses a challenge for CDM project developers to prove additionality and succesfully apply for registration at the EB. A recent dispute epitomizes the problem. In June 2009, the Chinese government performed a major wind electricity price reform by introducing fixed feed-in-tariff prices applicable to regions with rich wind capacity. The purpose of introducing fixed prices by regions is to ensure profits; but how they are effectively operated is unclear.

At the end of the year, the EB rejected 50 Chinese wind projects, based on concerns about financial additionality as wind-generated electricity prices appeared to be much lower than the previously approved ones. The Board suspected that the Chinese government intentionally allowed a very low price, and had been abusing CDM funding to cover the additional investment costs (Shanghai Financial News 2009; Xinhua 2009). In response to the decision, the NDRC stated that the main cause of the low electricity price is that the technology to produce locally made turbines had advanced, leading to lower production costs (NDRC and WB 2009; Han 2009). It is therefore supposed by some that there is a political factor involved in the EB's decision as well (interviews, Beijing, June 2010). The EB has allegedly become more critical to Chinese (and Indian) projects in order to enhance the CDM's global distribution. The rationale behind the EB's "political" decision would be that the vast majority of projects currently take place in the major developing countries, while most smaller developing countries and LDCs are only marginally involved. Hard evidence for this is lacking, however.

It is safe to say that China's wind power sector has received a positive stimulus through the CDM, mainly because of the financial revenue related to CER

sales. The transfer of technology and know-how is constrained, however, by differences in the understanding of TT, strict CDM eligibility conditions, China's uneven wind concession system, grid stability issues and additionality concerns related to unstable electricity prices.

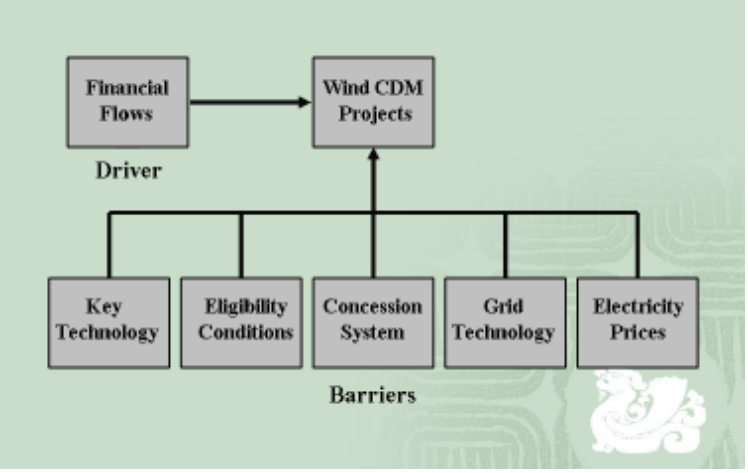
CONCLUSION

This paper examined the development of the renewable energy sector in China by looking at EU involvement in Chinese wind CDM projects. Part one introduced the two main regulatory frameworks that govern EU-China CDM relations, i.e. the international CDM rules and China's domestic CDM measures and related renewable energy and climate policies. These frameworks establish the legal boundaries within which Chinese and European businesses engage in joint or unilateral CDM projects, buy and sell CERs, and transfer advanced technology and/or know-how. Part two empirically investigated the wind power sector in China. In addition to the evolution and size of the sector and CDM projects implemented, the paper looked into the different drivers and barriers that enhance or impede further European involvement in the Chinese CDM market.

The most straightforward conclusion is that the attraction/absence of *financial flows* is the single most decisive factor impeding or enhancing CDM development in the wind power sector. CER sales to Europe and the close involvement of a variety of European wind technology producers stimulates China's wind power sector by improving both the quantity and the technological quality of wind power projects. The sector is restrained in its development by differences in the understanding of technology transfer between European investors and the Chinese government, however. The former has understandable concerns about competitiveness, while the latter would like to see more *core technology* move to China. A second barrier for foreign partners to engage fully in the CDM is the strict set of *eligibility conditions* established by China's CDM rules. Access to the Chinese CDM market is further constraint by an unequal wind project *concession system*. A fourth challenge is a more general technological problem involving *grid stability* and transmission capacity, often emphasized as the most fundamental barrier for China's wind power sector development overall. A final element concerns unstable wind-generated *electricity prices*, set by the NDRC, and related difficulties to prove

additionality for project developers. A recent dispute with the CDM Executive Board highlighted these problems. These five barriers (figure 5) only seem to restrain the sector's remarkable growth, however, as the evolution witnessed in recent years is nothing short of impressive.

Figure 5. Drivers and Barriers for EU Involvement in Chinese Wind CDM Projects



It is concluded that international and especially domestic rules, regulations and other measures play an important role in driving or impeding RE development through the CDM. It is up to all players involved to fix existing loopholes and barriers, while enabling financial flows to bring the mutual benefits envisaged by the design of the CDM: certified emission reductions that Annex I countries can use to comply to their Kyoto targets; and finance and technology provided by them to non-Annex I or developing countries. The case presented above show that in the right circumstances, these benefits can indeed be attained to a certain extent. On the other hand, issues related to additionality, access to core technologies, high production costs, transparant pricing policies, stable grid technology and other factors, can severely restrain or even impede European or other foreign participation in Chinese wind and renewable energy development in general.

List of Interviews

Beijing, May 2009 – June 2010

Affiliation	#
Business representatives	15
Academics	9
Officials	8
International Organizations	2
Total	*34*

Note: Strict anonimity rules are applied to all interviewees due to the sensitive economic and political context of the research topic. In total, 34 interviews were held between May 2009 and June 2010 in Beijing (China).

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