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Towards an Effective Implementation of Clean Development Mechanism Projects in China

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Abstract

With the already huge and growing amount of greenhouse gas emissions and a great deal of low-cost abatement options available, China is widely expected as the world's number one host country of clean development mechanism (CDM) projects. But, making this potential a reality represents a significant challenge for China, because there has been a general lack of awareness by both the Chinese government and business communities, clear institutional structure, and implementation strategy. This has raised great concern about China's ability to compete internationally for CDM projects and exploit fully its CDM potential.

This paper aims to address how CDM projects will be effectively implemented in China by examining the major CDM capacity building projects in China with bilateral and multilateral donors, the treatment of low-cost, non-priority CDM projects, and how a system for application, approval and implementation of CDM projects is set up in China and what roles the main institutional actors are going to play in the system. We conclude that these capacity building assistances, the establishment of streamlined and transparent CDM procedures and sound governance, and the lessons learned and experience gained from the implementation of the CDM project in Inner Mongolia and the two Prototype Carbon Fund (PCF)' projects will help China to take advantage of CDM opportunities. Moreover, in order to further capitalize on its CDM potential, there is a pressing need for the Chinese government to amend its current interim CDM regulations, in particular those controversial provisions on the eligibility to participate in CDM projects in China and the distribution of the revenues derived from CDM project between the project

developer and the Chinese government. We believe that taking these capacity building projects and the recommended actions to clearly define the sustainable development objective of the CDM and disseminate CDM knowledge to local authorities and project developers as sectorally and geographically wide as possible, addressing those controversial CDM provisions with clearer guidance, and gaining experience from real practice will reduce the perceived project risks and lower the barriers to CDM project development in China. This is, in turn, likely to lead a much greater percentage of carbon credits to come from CDM projects in China over the next several years.

Keywords: Clean development mechanism; Capacity building; Charge/tax scheme; China; Price of CERs; Sustainable development

1. Introduction

The Kyoto Protocol incorporates three flexibility mechanisms. Since then, attention has been focused on the establishment of rules and modalities governing the operation of these mechanisms. One of the biggest accomplishments in the recent three Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) is that the rules and modalities have been agreed on to make the CDM fully operational. The CDM will channel private-sector investment into emissions abatement projects in developing countries. In this way, it will promote sustainable development in these countries while offering industrialized governments credits against their Kyoto targets.

Many economic modelling studies indicate that, because of a great deal of low-cost abatement opportunities available in the energy sector of China and its sheer size of population, China is expected to emerge as the world's number one host country of CDM projects. For instance, the studies of Zhang (1999, 2000, 2001, 2004a) show that about 60% of the total CDM flows in 2010 go to China. The similar findings are also founded in the World Bank-led study on the CDM market potential, the results of which suggest that China will capture about 50% of the world's CDM market in 2010 (World Bank, 2004). But a general lack of awareness by both the Chinese government and business communities may cause China to not fully exploit its potential for CDM projects. The question is then how CDM projects will be effectively implemented there.

This paper aims to address this challenging issue by examining the major CDM capacity building projects in China with bilateral and multilateral donors, the ways to deal with

low-cost, non-priority CDM projects, and how a system for application, approval and implementation of CDM projects is set up in China. Given that the National Development and Reform Commission (NDRC) and the Ministry of Science and Technology (MOST) are the two leading Chinese ministries in charge of formulating and coordinating China's climate policy and actions, including CDM-related policies, regulations and criteria, the paper also addresses what roles the main institutional actors are going to play in the system. Our discussion will show that the development of sufficient capacity to initiate and undertake CDM projects and the clear institutional setting and implementation strategy has significant influence on effective implementation of CDM projects in China. This point is of high value to the Chinese government, because it underlines the importance for China to put a clear CDM policy, institutional setting and implementation strategy in place to encourage investors to develop CDM projects and thus fully exploit the potential of hosting CDM projects. The results of the study are also of particular interest to CDM investors, because they regard an effective implementation of CDM projects in China as a cost-effective means of obtaining certified emissions reductions (CERs) to meet their domestic emissions obligations in addition to the expansion of their business opportunities in the host country China.

The paper is structured as follows. Section 2 briefly discusses major international initiatives on CDM capacity building projects in China and their focuses, while Section 3 explains why the Dutch government withdrew a CDM capacity building study project with China. Section 4 outlines two plausible ways to deal with low-cost, non-priority CDM projects in China. Section 5 describes how a system for application, approval and

implementation of CDM projects is set up in China and what roles the main institutional actors are going to play in the system. Section 6 discusses further steps needed to be taken in China to fully capitalize on its CDM potential. The paper ends with the main conclusions and policy recommendations.

2. Major international initiatives on CDM capacity building projects in China and their focuses

Asian countries including China and India have not rushed into the CDM process, as they are concerned about the quality of the CDM and the integrity of the Kyoto Protocol.² This might be the desirable strategy when they have overly optimistic expectation for CDM investment. With the US withdrawal from the Kyoto Protocol, China gradually comes to realize that the size of the CDM market is much smaller than originally projected and that the CDM market is a competitive market. The issue then becomes getting something instead of nothing. Faced with weaker demand, Latin America is making the biggest strides in the CDM: having taken the lead in the CDM market, as shown in Figure 1, the region has gained experience in actual projects and has raised awareness among local business (Zhang, 2004b). This clearly indicates whether host countries are able to create favourable conditions for CDM investors does make a difference. All this, combined with China's growing belief that CDM would play an important role in future global efforts to mitigate climate change, has led China to

² Cited in the *Report of the Asia Meeting on Efficient Clean Development Mechanism Operations*, organised by the UNDP and the World Bank, 1-3 April 2003, Kuala Lumpur, Malaysia.

gradually recognize the importance of capacity building at national, local and enterprise levels to ensure that China is well positioned to take advantage of CDM opportunities. In the meantime, a growing number of international and bilateral donors are keen to support CDM capacity building in China because they expect great potential of the CDM in China and feel the significant need for China to gain more insight into the CDM and increase its capacity to initiate and undertake CDM projects.

Figure 1 The location of project-based emissions reductions generated in 2002 – Q3 2003 (in million tons of CO₂-equivalent)
Source: Lecocq and Capoor (2003).

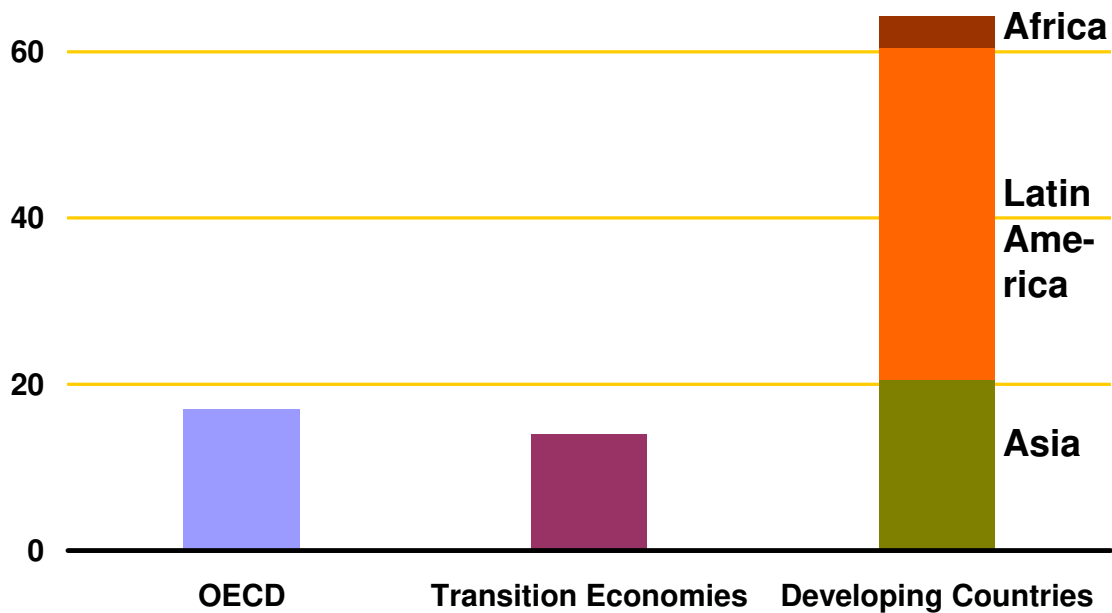


Table 1 briefly describes the major CDM capacity building projects in China. To harness potential synergies and minimize overlaps of these projects, the NDRC and the MOST have exerted strong co-ordination to ensure that each of these projects has different focus. For example, the World Bank project focuses on the methodological aspects of the CDM,

the ADB project on small-scale CDM energy projects, the C5 project on an operational model and case studies in the areas of urban transportation and renewable energy, and the UNDP project on capacity building needs of industry and three CDM pilot projects in the areas of renewable energy, energy efficiency and coal bed methane. Clearly, the Chinese government's strong co-ordination on international and bilateral donors' assistance indicates that China is attempting to make the best use of these capacity building projects to build domestic institution and capacity to initiate and undertake CDM projects. Implemented effectively, these capacity building projects could help China to get part of homework done. In the end, this will pave the way for the successful development and financing of CDM projects in China.

Table 1 Major CDM capacity building projects in China

Project title/ Donors	Project purposes/main activities	Donors' contributions	Status/Duration
China CDM Study - funded by the World Bank, the Swiss Government and the German Agency for Technical Cooperation (GTZ)	1) Address a series of methodological and technical issues for the application of the CDM in China 2) Undertake six CDM project case studies from the power sector and renewable energy field 3) Analyze China's CDM potential	US\$ 970,000	Draft final report completed November 2003 Final report June 2004
Canada-China Cooperation in Climate Change (C5) – Canada project funded by the Canadian International	1) Develop a CDM operational model 2) Undertake case studies in the areas of urban transportation – CNG buses in Beijing, and renewable energy – biomass	C\$ 5 million	June 2002 – June 2004

Project title/ Donors	Project purposes/main activities	Donors' contributions	Status/Duration
Development Agency (CIDA) ³	gasification in Guangdong Province 3) Carry out research study on carbon sinks		
Opportunities for the Clean Development Mechanism in the Energy Sector - ADB project financed by Canadian Co-operation Fund for Climate Change	1) Examine the opportunities of the CDM in the energy sector 2) Develop handbooks of small-scale CDM energy projects 3) Provide the PDDs of four small-scale CDM projects in Gansu and Guangxi provinces 4) Assess necessary institutional framework at national and provincial levels to promote CDM operation	US\$ 775,000	September 2002 – August 2003
Building Capacity for the Clean Development Mechanism in China - UNDP project funded by UN Foundation, Italian Ministry for Environment and Territory and Norwegian Agency for Development Cooperation (NORAD)	1) Strengthen government's institutions ability to implement procedures that will enable Chinese industry to gain smooth approval for suitable CDM projects 2) Provide stakeholders with the skills and knowledge to enable CDM projects to be developed in China 3) Prepare CDM pre-feasibility studies and implement three CDM pilot projects in the areas of renewable energy, energy efficiency and coal bed methane 4) Establish an improved	US\$ 1,458,000	November 2003 - November 2006

³ In addition to the CDM, the Canadian project also includes components such as Awareness and Outreach; National Communications; and Impacts and Adaptation. For further information, see the C5 project's web site at: <http://www.ec.gc.ca/etad/default.asp?lang=En&n=2E25F028-11>.

Project title/ Donors	Project purposes/main activities	Donors' contributions	Status/Duration
	CDM database and develop website for information dissemination		

Sources: ADB (2002); The Government of the PRC and UNDP (2003); Tsinghua University (2003); The Web Site of Ottawa-based Resource Futures International at: <http://www.rfigroup.com>.

3. Why did the Dutch government withdraw a CDM capacity building study project with China?

It should be pointed out that not all international capacity building initiatives have been implemented in China as planned. The Netherlands had originally signed a project with the then State Development Planning Commission (SDPC) (the current National Development and Reform Commission) in April 2001 (Li, 2001), but the project was initially shelved and eventually withdrawn. Domestic bureaucratic hurdles between the then Ministry of Foreign Trade and Economic Co-operation (MOFTEC) and the then SDPC played a part for this.⁴ The MOFTEC is the government counterpart of the UNDP and other multilateral and bilateral development aid agencies in China. The CICETE (China International Center for Economic and Technical Exchange), which is affiliated with the MOFTEC, is the coordinating authority of the Chinese government for all the UNDP and other multilateral and bilateral development aid projects in China. Logically, the partnership agreement of this kind was supposed to be signed between the MOFTEC and the Netherlands, not between the SDPC and the Netherlands. The MOFTEC as the government counterpart may well perceive to be sidelined right from the outset.

⁴ Author' interviews in Beijing, January 2004.

Regardless of this allegation, many observers (Lin et al., 2004) believe that the major reason for this was due to differences in opinion of the project focus. The Dutch side placed the main emphasis on capacity building of the enterprises and the industry associations (in the chemical, iron and steel sectors) in order to facilitate the identification of good energy projects and enable the enterprises to participate in international tenders. Therefore, the Dutch side wanted direct involvement of the Chinese experts in the industry associations. The Chinese government, however, preferred the Dutch project to work together with a Chinese university within the field of research.

This Dutch case provides valuable lessons for future capacity building projects in China. In my view, the two sides should clearly define the focus of the capacity building project in the first place and specify whether the focus would be allowed to adjust as circumstances change. As early as April 2001, the governments of the two countries had signed the co-operation agreement, but the implementation of the agreement had been well delayed because of domestic bureaucratic hurdles and differences in opinion of the project focus. In the meantime, the Chinese government had signed with other three donors on CDM capacity building projects. Although these agreements were signed much later than the one with the Dutch government, their implementations go much smoothly. This led the Dutch side to see that the three donors already worked with that university on research capacity building, and to question the additional value of doing similar project with it.⁵ Clearly, if the focus of the Dutch project were well defined and the flexibility to allow the adjustment of the project's focus with mutual agreement of the two sides were

⁵ Author' interview in Beijing on 15 January 2004.

built into the signed agreement, the unfortunate fate of the Dutch project could be avoided.

Following this withdrawal, the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) established the CERUPT (Certified Emission Reduction Unit Procurement Tender)⁶ program to directly purchase carbon credits through tender procedures. The initial CERUPT tenders led project developers to submit 78 expressions of interest. The Dutch government has put a national system in place to have selected the 18 most promising projects in terms of cost-effectiveness and feasibility. Together, these projects are expected to deliver the total emissions reduction of over 16.5 million tons of CO₂ equivalent (JIQ, 2003). Although only one project's baseline methodology for landfill gas recovery has to date got approved of the 18 selected projects (JIQ, 2005) and the remaining selected projects for new methodologies are awaiting the acceptance by the CDM Executive Board (EB),⁷ it seems that the Dutch government is very satisfied with the results from these tenders. To have had a good price (about \$5 per ton of CO₂ equivalent) for the tons purchased is more than expected.⁸ In the end, a combination of the different priorities on both sides and the promising results from the CERUPT tenders

⁶ For a description of the CERUPT program, see the web site at: www.carboncredits.nl.

⁷ The CDM Executive Board has to date approved the 22 baseline methodologies (JIQ, 2005). However, it should be pointed out that not every project developer needs to propose a new methodology to the EB for consideration and approval. A project developer is free to opt for using a methodology previously approved by the EB, if appropriate.

⁸ Comments by Tilly Zwartepoorte, Director, Department of Climate Change and Industry of the VROM at the International Conference on Climate Policy after Marrakech: Towards Global Participation, Honolulu, Hawaii, 4-6 September 2003 (Zhang, 2004b).

resulted in the Dutch withdrawal of the project, and it is unlikely that the Dutch government will get involved in similar projects again in China.⁹

It should be pointed out that although the Chinese government did not have its way, a Chinese company - the Inner Mongolia Long Yuan Wind Power Development Corporation -, with assistance of the Chinese Renewable Energy Industries Association, was awarded a CDM project contract on 13 March 2003 by the Dutch government through the CERUPT program (CDM Executive Board, 2004).¹⁰ Among the 18 selected projects (JIQ, 2003), this Inner Mongolia Huitengxile Wind Farm Project is the first CDM project in China. According to the SenterNovem, the tendering authority for the CERUPT, this project has been registered as a CDM project by the UNFCCC. The project is the second CERUPT CDM project after the registration of the Biomass Project in Rajasthan, India.¹¹ The project involves the installation of 22 turbines, 12 of which have a capacity of 900 KW and 10 of which have a capacity of 1500 KW. All together provides a total power capacity of 25.8 MW. The crediting period of the Huitengxile Wind Farm Project is taken as 10 years up to 2014. According to the contract, the price of CERs to be paid is € 5.4 per ton of CO₂ equivalent. As shown in Table 2,¹² this price is closest to the maximum offering price of CERs for renewable energy projects under the CERUPT program. The total emission reductions over the ten-year crediting period are

⁹ Author' interview in Beijing on 15 January 2004.

¹⁰ "Chinese wind farm makes Kyoto profits from Dutch", *Reuters*, 14 March 2003, Available at: <http://www.planetark.com/dailynewsstory.cfm?newsid=20156>.

¹¹ "Wind Energy Project in China Registered", 27 June 2005, Available at: <http://www.senternovem.nl/Carboncredits/news/CER0133.asp>.

¹² As shown in Table 2, the offering prices of CERs under the Dutch CERUPT program are differentiated according to technology types. Renewable energy projects in general have been assigned with a premium price.

estimated to be 514, 296 tons of CO₂ equivalent (CDM Executive Board, 2004). Through undertaking the CDM project along with the two PCF projects,¹³ the local project developer has gained valuable experience through actual practice. In the meantime, these projects on their own will play the strategically important demonstration role in both increasing the outside investor's confidence on local project developers and triggering more CDM projects in China.

Table 2 The maximum offering prices of CERs under the Dutch CERUPT program

CDM project type	Maximum offering prices of CERs under the Dutch CERUPT program (€ per ton of CO ₂ equivalent)
Renewable energy (excluding biomass)	5.5
Biomass energy (excluding waste)	4.4
Energy efficiency improvement	4.4
Fossil fuel switch and methane recovery	3.3

Source: Senter Internationaal (2001).

¹³ At this moment, two PCF projects in China are under development: one on coal bed methane capture and power generation in Shanxi Province, and another on run-of-river hydropower to displace coal-fired power in Gansu Province. The coal bed methane project is the first World Bank-supported CDM project in China. As one of the investors, the PCF contributes US\$ 17 million in return of 4 million tons of CO₂-equivalent of the total project's emissions reduction of 49 million tons of CO₂-equivalent. This is the first project in China that the PCF has signed the Emission Reductions Purchase Agreement with the local project developer. For the Xiaogushan hydropower project, the PCF invests US\$ 9.22 million and receives the emissions reduction of 2.17 million tons of CO₂-equivalent of the total project's emissions reduction of 2.93 million tons of CO₂-equivalent during the crediting period of 10 years (The information cited above on the PCF funding contributions and the received amounts of emissions reductions for these two PCF projects is taken from the PCF web site at: <http://carbonfinance.org> (accessed on 27 July 2005)). Based on the PCF funding contributions and the received amounts of emissions reduction of CO₂-equivalent, the purchasing prices of emissions reductions for these two PCF projects are set through negotiation at US\$ 4.25 per ton of CO₂-equivalent. This is the highest purchasing price that the PCF paid for the CERs until the end of the year 2004. See Zhang (2006) for further discussions on why China had initially hesitated to sign up as a host country of PCF projects, what has led China to endorse the PCF projects in the end, and the implications of the PCF's offering prices for the emerging global carbon market.

4. The treatment of low-cost, non-priority projects like HFC23 decomposition type of CDM projects in China

Project selection criteria are very important because what kinds of criteria are going to be set and what kinds of projects are given priority certainly impact the scope of CDM projects and the overall size of investment. Led by the NDRC, a set of interim provisions and regulations on the operation of CDM in China, including project selection criteria, had been prepared. The approval of these provisions and regulations, along with the establishment of the National CDM Board and the CDM Project Management Center to be discussed in the next section, was expected to happen by the end of 2002, but had been delayed until June 2004 due to the restructuring of governmental organization.¹⁴ On 1 July 2004, the Chinese National Coordination Committee on Climate Change (NCCCC) held its annual meeting, and publicly released the long-awaited “Interim Measures for Operation and Management of CDM Projects in China”. As would be expected, given that China is more concerned about local pollutants, logically, CDM projects that would also lead to reductions in local pollutants, for example, energy efficiency improvement projects and renewable energy projects, would be given priority in China. On the other hand, outside investors/donors would probably like to have a broad choice of the types of CDM projects. Thus, project selection criteria could represent one area where the interests of the Chinese government conflict with those of outside investors. Closely related to this is the issue of how the Chinese government is going to deal with those low-

¹⁴ Author’ interview in Beijing on 14 January 2004.

cost, non-priority projects like HFC23¹⁵ decomposition type of CDM projects, which only have climate benefits but do not offer other social and environmental benefits to host countries. In my view, there are two options that China could take:

- A) Remove such low-cost, non-priority projects like HFC23 decomposition type of CDM projects from the list of CDM projects and forbid the implementation of them in China. This option is too blunt.
- B) Charge fees or impose taxes to endorse any project under the CDM. This will ensure that the cheaper options are not the only ones that get implemented in China. Charges/taxes could be differentiated, with no charge/tax on those CDM projects that are in line with China's national priorities and development needs.

Legally speaking, either of the above options is allowed under the Kyoto Protocol. The CDM is both a market mechanism and a development mechanism, and has the twin goals of combating the global climate change and promoting sustainable development. A market mechanism means that the CDM market would gravitate towards the lowest mitigation options as measured by carbon value alone. On the other hand, although international agreements like the Kyoto Protocol and Marrakech Accords specify what are allowed (e.g., sinks projects and unilateral projects), it is up to individual developing country governments to define the project eligibility criteria and facilitate implementation

¹⁵ HFC23 is a by-product of the production of HFC22, which is used as a refrigerant and a raw material for the production of fluorinated resins. HFC23 is a very potent greenhouse gas. Its 100-year global warming potential is 11, 700 times that of CO₂, implying that releasing one ton of HFC23 in the atmosphere is equivalent to 11, 700 tons of CO₂ emissions.

of priority projects that are in line with their national priorities and development need.¹⁶ In other words, individual governments still have flexibility in choices that fit best into their national circumstances. Although different choice would certainly impact the scope of CDM projects and the overall size of investment, either of the above options would enable the Chinese government to filter CDM projects, thus encouraging those CDM projects that promote both climate and sustainable development goals.

There are both advantages and disadvantages of promoting particularly favorable CDM projects through a charge/tax scheme. On the positive side, a charge/tax on certain types of CDM projects would direct CDM capital flows towards those projects with the high overlap possible with other social and environmental criteria. This will ensure that the CDM helps accelerate the Chinese economy to move along the more sustainable paths. On the negative side, China's ability to use the CDM to promote more costly, sustainable development projects over cheaper alternatives that offer less co-benefits will be determined by the price competition that develops on the international carbon market. This would limit the degree to which 1) the charge/tax is imposed on low-cost, non-priority CDM projects and 2) more costly projects could be advanced as candidate investments.

¹⁶ For example, at this time, China does not allow unilateral CDM projects without direct involvement from partners of industrialized countries. This is partly because unilateral CDM projects do not contain the element of technology transfer and have no additional up-front investments from industrialized country partners. Another consideration might be that unilateral CDM projects, if allowed, would lead to an increase of cheaper permits flooding the already weak demand market, which would do more harm to developing countries. Ultimately, you could accumulate huge amount of credits. Later, when negotiating future commitments, other countries could argue that you should take on and meet more stringent commitments because of the many accumulated credits.

While the Kyoto Protocol provisions allow the differentiated treatment of CERs from different types of CDM projects, does it conflict with any WTO rule? This boils down to whether CERs are considered as products or services under the WTO. Because CERs will be traded internationally and will have an economic value, they can in economic terms be characterized as commodities. However, the domestic or international tradability of CERs does not change them into products or services for WTO purposes, because the terms “product” and “service” are legal terms that take on specific meanings in the context of the GATT (General Agreement on Tariffs and Trade) and the GATS (General Agreement on Trade in Services) (Werksman, 1999). Even if CERs themselves are neither products nor services under the WTO, then rules differentiating the sources of CERs are not covered by WTO disciplines. Thus, an individual country is free to treat the sources of CERs differently as long as such differential treatment is not based on ownership.

Currently, a charge/tax scheme is under discussion in China. In case China is determined to adopt a charge/tax scheme for the purpose of promoting particularly favorable CDM projects, the following design and implementation issues have to be considered prudently:

- On what basis and how much to charge under a charge/tax scheme?
- On what basis and how to differentiate revenue sharing for the Chinese government or charge under a charge/tax scheme?
- If charges are imposed, who will collect charges? If not by tax authorities, how to be coordinated with tax authorities in collecting and using charges?

- How to treat developed regions and less-developed regions within China, and how to treat the area with more urgent need to protect the environment within the same region under a charge/tax scheme?

These issues are only partially on the agenda of the Chinese government departments concerned (Lu, 2004), but are very important because they are essential to the success of such a scheme. It is unlikely that such a scheme will commence until these issues are seriously addressed.

5. The main institutional actors in the policymaking and implementation of CDM projects in China¹⁷

As early as February 1990, the NCCCC was established in China. This inter-ministerial coordinating body is the highest policymaking organ for climate policymaking in China. The body is to supervise and coordinate ministries and agencies in their efforts to address climate change. The NCCCC is responsible for deliberation and coordination of national climate strategy, including CDM-related policies, regulations and criteria. Because the NDRC is in charge of the national development plan and national project evaluation and because climate change may potentially have serious social and economic implications, the Climate Change Office - the executive office of the NCCCC, is situated in the NDRC's Department of Regional Economy and is responsible for routine work of the Committee. It is undisputed that the NDRC has played and will continue to play the

¹⁷ The expected functions of major institutions engaged in CDM-related policymaking and management in China are based on Gao and Li (2003) and Sun (2003).

leading role in formulating and coordinating China's overall climate policy and actions.¹⁸ The NDRC is the designated national authority (DNA) in China, and makes the final approval of the CDM projects in China. Because science and technology play a very important role in addressing climate change problem and the project mechanisms involve many technical issues, the MOST has involved in climate issues from the right beginning, and will continue to provide expertise on the technical aspects of the CDM. The MOST has a representative on the CDM Executive Board. For matters related to the UNFCCC and its subsidiary instruments (e.g., the Kyoto Protocol, the Marrakech Accords), the Ministry of Foreign Affairs (MFA) will continue to take the lead in the international climate negotiations.

5.1 Institutional structure of the CDM management in China

Transparent CDM procedures and sound governance will reduce the transaction costs of implementing CDM projects and mobilize investment from the private sector. The Chinese government has set as priorities the establishment of the institutional structure and streamlined procedures to reduce transaction costs of the CDM operation in China. For this, the National CDM Board has been set up under the NCCCC. This Board consists of seven ministries (the NDRC, the MOST, the MFA, the State Environmental Protection Agency, China Meteorological Administration, the Ministry of Finance, and the Ministry of Agriculture), and is co-chaired by the NDRC and the MOST. The main responsibilities of the Board include developing regulations and procedures for the

¹⁸ This explains why the Chinese delegations to the Conference of the Parties to the UNFCCC are headed by the minister-level official from the NDRC. This makes the Chinese case different from the US case where the head is Under Secretary of US State Department.

operation of CDM projects in China, providing guidance to the operation of the CDM Project Management Center (PMC), approving the CDM projects (in particular, examining an estimate of the CERs generated by the project and the price of CERs) that have passed the pre-screening by the PMC, reporting to the NCCCC the overall progress in implementation and performance of the CDM project activities, and making recommendations to the NCCCC on both how to solve the problems encountered in implementing CDM projects and amendments to the interim regulations and procedures for the operation of CDM projects in China.

The CDM Project Management Center has yet to be established. The Center is to be subordinated by the National CDM Board. Situated in the NDRC, the Center is mandated to take responsibility for all practical aspects of managing the CDM process in China. It will mainly operate on the project level and will be not involved in policymaking. Specifically, the PMC will engage in the following main project-related functions:

- Accept the application of CDM projects.
- Screen the candidate CDM projects.
- Submit those CDM projects that have passed the initial review to the National CDM Board.
- Develop and maintain an information system for China's CDM projects, and make related information available for the public access.
- Monitor, and provide support and advice in the implementation process.

- Assist the Board in identifying capacity building needs and undertake and/or facilitate CDM-specific capacity building activities.
- Take on other responsibilities assigned by the Board.
- Provide information and make recommendations to the Board on CDM-related issues.

The establishment and the authorized size of the PMC have yet to be approved by the Committee of the Central Organization Constructing. This approval has been delayed due to the restructuring of governmental organization. Prior to the operation of the PMC, the Climate Change Office takes the temporary responsibility.

5.2 Application and approval procedures for CDM projects in China

A CDM project consists of the general component and the CDM component. The general component is the part related to specific project construction. This part has to go through the existing application and approval procedures for conventional project construction.

Before being approved, a newly built project is required to undergo an environmental impact assessment (EIA). This EIA ensures that the pollution control facilities are designed, built and put into operation simultaneously with the principal part of the new project (the so-called “three-synchronous”). At the moment, there are no additional requirements for the EIA of the CDM projects. But for the CDM component, the following application and approval procedures apply:

- A domestic project developer prepares a project design document (PDD) of the CDM project and sends the PDD to the PMC for an approval.
- The PMC screens all the CDM projects, and submits those CDM projects that have passed the screening process to the Board.
- The Board will examine the CDM projects that have passed the screening process by the PMC, and submit those approved projects to the NDRC.
- In collaboration with the MOST and the MFA, the NDRC makes the final approval of the CDM projects, issues the approval letter on behalf of the government of China, and asks the PMC to put the approved projects on record.
- The project developer selects an appropriate designated operational entity (DOE) to undertake an independent evaluation of the PDD against the requirements of the CDM. If the proposed project is determined valid, the DOE submits a request for registration to the CDM Executive Board.
- The project developer reports to the PMC the status of the approval within 10 days after it being communicated from the CDM Executive Board.

6. Further steps needed to be taken

In order to fully capitalize on its CDM potential, further steps need to be taken in China. They include but are not limited to the following four ones. First, given that private investors have complained that China's requirements for approving CDM in the light of sustainable development (SD) are very unclear, China should make it clear to outside investors what is meant by the SD objective of the CDM on China's national conditions.

The Kyoto Protocol only provides the general principle, but it is up to each individual developing country government to define what is meant by whether a specific CDM project meets the sustainable development objective of that host country. Currently, conflicting views have been expressed from the different government departments in China.¹⁹ Some department indicates that China intends to develop a set of specific SD indicators in the future, which are to be used to evaluate whether an individual CDM project implemented in China meets the SD objective. By contrast, other department concerned says that there is no need to separately develop a set of specific SD indicators, because a CDM project, which has undergone the EIA and has met the “three-synchronous” requirements, is considered to have met the SD objective. Doing so will only add additional burden on CDM developers. In order to facilitate the implementation of CDM projects, China should make its stance on this more clear to CDM developers in the future, whatever that is. In case China is determined to develop the criteria against which the SD objective of CDM projects is measured, a set of specific SD indicators must be well defined and practically workable. For those low-priority CDM projects on the SD ground, we suggest adopting an economic instrument to deal with them, rather than removing them from the list of CDM projects and forbidding the implementation of them in China.

Another important step is to further disseminate CDM knowledge to local authorities and project developers, and get them involved in the process of CDM rules and procedures-setting. Currently, the CDM capacity is concentrated centrally in China, with the central government departments concerned and a few Beijing-based research institutes gained

¹⁹ Author’ interviews in Beijing, January 2004.

vital expertise and improved knowledge on the CDM. Although the current capacity building projects with international and bilateral donors, the CDM project in Inner Mongolia and the two PCF projects have gradually began to get local authorities and project developers familiarized with CDM-related knowledge, programs and financing opportunities, the scope of their involvement and their representations of sectors and regions are far from the point needed to fully exploit its CDM potential.

Third, the Chinese government, with assistances of international and bilateral donors, should support two domestic legal entities to apply for accreditation/designation as a DOE. The DOE under the CDM validates and subsequently requests registration of a proposed CDM project activity, verifies emission reduction of a registered CDM project activity, certifies as appropriate and requests the CDM EB to issue CERs accordingly. Thus, the DOE plays a very important role in a CDM project cycle. To date, the CDM EB has approved ten DOEs and is in the process of considering 30 applications.²⁰ However, none of these applicants are from China. This means that CDM projects in China have to rely on the expensive services of foreign DOEs for validation, registration, verification and certification. This inevitably increases transaction costs of CDM projects. Thus, to foster the effective implementation of CDM projects in China, China has to get initially at least two domestic legal entities accredited as the DOEs, although more domestic DOEs could be established later on as the demand for DOE services increases.

²⁰ Information on DOEs and an exhaustive list of DOEs are available at the UNFCCC web site at: <http://cdm.unfccc.int/DOE> (accessed on 26 July 2005).

Fourth and most importantly, in order to be more attractive to outside investors and help promote the development and implementation of CDM projects in China, the Chinese government needs to amend timely its interim measures for operation and management of CDM projects in such a manner to make them even more efficient and transparent and easy to operate in practice. This referred interim measures are deemed a positive development because they provide the provisional CDM guideline to facilitate the smooth implementation of CDM projects without making a lengthy administrative and legislative procedure a precondition for project approval and clarify few concerns by project developers. That said, the interim measures still leave many design and implementation issues unsettled. Although the concern has been raised about Article 15.4 under the interim measures, which empowers the Chinese government to review and approve price and the commercial terms of the transactions of CERs, the most controversial issues relate to Article 11 and Article 24 under the interim measures. These two provisions have raised particular concerns among foreign participants and potential investors. Article 11 requires that solely Chinese or Chinese-controlled enterprises are eligible for project development. Clearly, this Article expresses an unwillingness to allow most of the CDM benefits to flow out of China and imposes significant barrier to foreign investments in CDM projects in China. In my view, the Article needs to be amended at least to allow some exceptions to reflect, for example, the technology content of CDM projects. Such exceptions could be made on a case-by-case basis. For example, given that China has emphasised the component of technology transfer under the CDM, in case a specific CDM project in the priority area as identified in Article 4 under the interim measures has the much high content of technology (e.g., the type of advanced technology

that China needs most), the foreign company undertaking this project could be allowed to own more than 50% of equity in the project. Another provision of particular concern is Article 24. This Article regulates the distribution of the revenues derived from CDM project between the project developer and the Chinese government (with the revenues to be owned solely by the project developer prior to the determination of the Chinese government). To date, the Chinese government has not yet specified how to distribute the revenues of CERs. It is also unclear how the Chinese government would use the distribution of the revenues as a means of encouraging those prioritized types of CDM projects as identified in Article 4 under the interim measures, although it would be expected that the government's share in the revenues from these types of the CDM projects would be very low or even zero. This has triggered great concern about the danger of losing part, or all, of the revenues of CERs from those non-prioritized types of CDM projects through the governmental revenue-sharing clause. To date, the Chinese government has taken notes of these issues and concerns, and has recognised that there is a need to, at least to some extent, amend the current interim measures because these controversial issues have increased the perceived project risks and have created the barriers to CDM project development in China. However, it is expected that this amending process will be not that easy because it needs to well balance the Chinese government's concerns about protecting the Chinese interests with outside investors' desirability of increasing their control over project development and reducing uncertainty over return on investment.

7. Conclusions and recommendations

With the already huge and growing amount of greenhouse gas emissions and a great deal of low-cost abatement options available, China is widely expected as the world's number one host country of CDM projects. But, making this potential a reality represents a significant challenge for China. This has raised great concern about China's ability to compete internationally for CDM projects and exploit fully its CDM potential.

Generally speaking, Asian countries have not rushed into the CDM process, as they are concerned about the quality of the CDM and the integrity of the Kyoto Protocol. In this regard, China is no exception. This might be the desirable strategy when they have overly optimistic expectation for CDM investment. With the US withdrawal from the Kyoto Protocol, China gradually comes to realize that the size of the CDM market is much smaller than originally projected and that the CDM market is a competitive market. This realistic expectation and the sense of urgency to gain real experience through learning-by-doing, combined with positive development in international negotiations on the rules and modalities for governing the operation of the CDM, have led to a positive and determined attitude of China towards the CDM. At least the following two positive and encouraging development trends reflect that China is taking a proactive and sustainable policy towards the CDM.

First, realizing the significant need to gain more insight into the CDM and increase its capacity to initiate and undertake CDM projects, China is working with a growing number of international and bilateral donors on many CDM capacity building projects.

To harness potential synergies and minimize overlaps of these projects, the Chinese government has exerted strong co-ordination to ensure that each of these projects has different focus and that all these projects together help to build capacity needed at national, local and enterprise levels to ensure that China is well positioned to take advantage of CDM opportunities. In addition, China has endorsed the two PCF projects, and a Chinese company has been awarded a CDM project contract - the first CDM project in China - through the Dutch CERUPT program, although the Chinese government did not have its way in hoping to translate the signed agreement with the Netherlands into a research capacity building project on the CDM. No doubt, undertaking these projects will provide China with much-needed, real learning and practice about baseline setting, project boundaries, monitoring and verification at project levels, these aspects that are most relevant to all prospective projects under the CDM but in which China has gained little experience in the AIJ (Activities Implemented Jointly) pilot phase.²¹ All these capacity building projects, the CDM project in Inner Mongolia and the two PCF projects will help to disseminate CDM-related knowledge, programs and financing opportunities to various stakeholders in China, particularly in the energy sector, and will lay the groundwork for the successful development and financing of CDM projects there.

Second, China has prioritized the areas of the CDM investment, and is putting clear institutional structure and implementation strategy in place. This institutional building involves establishing the National CDM Board and the CDM Project Management Center

²¹ See Zhang (2004a) for the reasons why China is a slow starter of AIJ projects and its implications.

and defining their responsibility and functions in the development of regulations and procedures and a system for application, approval and implementation of CDM projects. In so doing, the Chinese government has clearly attempted to have streamlined and transparent CDM procedures and sound governance of clearer lines of responsibility and functions. These efforts will ease domestic procedures for future CDM projects, and help to reduce transaction costs of CDM projects and make CDM projects in China more attractive to outside investors. It is fair to say that the CDM project in Inner Mongolia with the Netherlands and the two PCF projects with the World Bank, to some extent, have helped to speed up the institutional building process in China, although its official approval had been delayed somewhat due to the restructuring of the overall governmental organization in China. Moreover, as the PCF experience suggests, these projects on their own have played the strategically important demonstration role in both increasing the outside investor's confidence on local project developers and triggering more CDM projects in China.

On the other hand, it is fair to say that China has lagged behind Latin America regarding the awareness of the CDM, the formulation of CDM policy, institutional set-up, private sector involvement in the CDM, and the volume of emissions reductions exchanged. But China is catching up quickly as it undertakes with massive capacity building with international and bilateral donors and puts the necessary institutional structure and implementation strategy in place. Clearly, these capacity building assistances, the establishment of streamlined and transparent CDM procedures and sound governance, and the lessons learned and experience gained from the implementation of the CDM

project in Inner Mongolia and the two PCF projects will greatly enhance China's ability to internationally compete for CDM projects and effectively implement CDM projects. Moreover, in order to further capitalize on its CDM potential as suggested by many economic modeling studies, there is a pressing need for the Chinese government to amend its current interim CDM regulations, in particular those controversial provisions on the eligibility to participate in CDM projects in China and the distribution of the revenues derived from CDM project between the project developer and the Chinese government. Furthermore, we recommend that China should make its SD objective of the CDM well defined, disseminate CDM knowledge to local authorities and project developers as sectorally and geographically wide as possible, and get at least two domestic legal entities accredited as the DOEs. We believe that taking these capacity building projects and the recommended actions, addressing those controversial CDM provisions with clearer guidance, and gaining experience from real practice will reduce the perceived project risks and lower the barriers to CDM project development in China.

Clearly, these aforementioned domestic efforts will boost China's ability to develop CDM projects. However, whether China is able to fully capitalize on its CDM potential depends on the price of CERs. Since March 2005, the European Union allowances (EUAs) have been traded at the price of over €20 per ton of CO₂-equivalent, as compared with €7-9 in 2004. Allowance-based transactions, which represented only 2.5% of the total volume of assets exchanged on the carbon market from its inception to May 2004, now account for nearly as much volume exchanged as project-based transactions (Lecocq and Capoor, 2005). By contrast, CERs are changing hands for €4-9 per ton of CO₂-

equivalent. Given that the EU “Linking Directive” allows the import of CDM credits into the EU allowance market, this huge price gap between CERs and EUAs suggests that there is a huge demand for CDM credits. However, the price of purchasing project-based emission reductions is considered too low, although it is not expected to be higher than the price of EUAs, because purchasing project-based emission reductions involves a range of risks, such as project risk (namely, whether or not the project will adequately perform and deliver the expected amount of emission reductions), country risk and Kyoto-related risk (namely, the project might ultimately not be registered under the Kyoto Protocol). This substantial difference in the prices of CERs and EUAs raises the question of whether non-Annex 1 countries including China are able to supply enough CDM credits before 2012. No doubt, the additional cash flow from CDM credits can boost the internal rate of return. But, the World Bank-led study found that this added value from the current low price of CERs is insufficient to cover the incremental costs of implementing many CDM projects in China. Put another way, the corresponding stream of CERs will be rarely the decisive factor that makes the most significant difference and renders these projects viable. This, combined with the lead times required for CDM projects and the current highly debatable process to review and approve CDM projects by the CDM Executive Board, raises both the concerns about China’s ability to fully capitalize on its CDM potential and the uncertainty over whether there will be sufficient amount of CDM credits available for meeting the demand from the EU and other Kyoto-constrained parties before 2012. At the current low prices, a clear and understandable preference is to highly potent source of emissions, such as HFC23.²² This will simply

²² The World Bank study shows that HFC23 decomposition project dominates among all

exclude a whole range of other CDM projects. All this clearly suggests that having the appropriate price level of CERs is critical for the development of CDM market, because, in the long run, the price of CERs, either too high or too low, would severely hamper the development of the market.²³ To that end, effective CDM policies, in particular those in major players on the carbon market, are needed to strike the balance between encouraging investors to engage CDM projects (thus increasing the volume of CERs of CDM projects) and ensuring the quality of CERs.

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project types, providing about 25% of the worldwide emission reductions supplied from January 2004 to April 2005 (Lecocq and Capoor, 2005).

²³ The Host Country Committee of the World Bank's Carbon Finance Business has been aware of this price issue. At its recent Plenary Conference in February 2005, Washington, DC, it was decided to set up the CERs Price Committee. This clearly reflects that host countries have great concerns about the price of CERs.

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