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Understanding the dominance of unilateral CDM projects in China: origins and implications for governing carbon markets

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Wei Shen

Abstract

This paper analyzes the development of unilateral Clean Development Mechanism projects (uCDMs) as the dominant project pattern in China's CDM market. It intends to reveal the political and economic reasons of such dominance and argues that the uCDMs pattern is particularly favoured by powerful actor groups, mainly business actors, involved in the CDM project circle. The corporate or business strategy, interests and day-to-day practices hence become an important governance element to develop and maintain the dominance of unilaterally financed CDM in the market. The flourishing of uCDMs is an important deviation of the initial assumption of CDM, which is generally believed to be a mechanism of joint implementation of projects between developing and developed nations and companies. These observations in China, the world leading CDM market today, also have notable implications on how carbon markets are governed 'from below'.

Key words: additionality; China; Clean Development Mechanism (CDM); foreign direct investment; governance; political economy; sustainable development; unilateral

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Abbreviations and acronyms

CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DNA	Designated National Authority
EB	Executive Board
ERPA	Emission Reduction Purchase Agreement
EU-ETS	European Union Emission Trading Scheme
GHG	Greenhouse Gas
NDRC	National Development and Reform Commission
PDD	Project Design Document
SOE	State Owned Enterprise
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WTO	World Trade Organisation

1. Introduction: CDM booming despite criticism

The Clean Development Mechanism (CDM), as one of the most innovative and controversial flexible instruments established under the Article 12 of Kyoto Protocol, has been a target of criticism since its inception. Its administrative structure and decision-making process is regarded by many as highly inefficient (Streck and Lin, 2008; Grubb et al, 2011). There is unequal sectoral and geographic distribution of projects, as Asian giants are taking up around 65% of the total CDM portfolio and some sectors like energy efficiency and transportation, though crucial in the global GHG mitigation efforts, have a very limited representation in CDM pipeline (Bakker et al, 2011; Grubb et al, 2011). In addition, the additionality of some of the projects has been questioned, since it is believed that most of these projects would be built anyway even without CDM subsidy. Many previous studies have also revealed that there are negligible sustainable development benefits for the host countries (Olsen 2007; Sutter and Parreno, 2007; Boyd et al, 2009) and limited impact on technology transfer from the developed world (Seres et al, 2009; Wang, 2010).

Despite these criticisms, however, the market itself grows at a stunning rate. Since its launch, altogether 7468 projects have been submitted to CDM Executive Board (EB) at UNFCCC and among which 3034 projects are officially registered as of April, 2011. These projects are expected to produce 1084 million CERs (one CER equals to a ton of carbon dioxide equivalent) between 2008-2012 and 5515 million CERs after 2012 (UNEP Risoe, 2011). The CDM boom is mainly due to their eligibility with the EU-ETS, the world largest carbon trading platform, which allows project-based credits to be used. As a result, the performance of the CDM market has far exceeded the expectation from its designers and regarded by many as breath-taking success.

China is the largest contributor of this round of CDM boom and remains the biggest CERs supplier since 2007. Ironically, China was reluctant to develop its CDM market at the initiation stage of the mechanism due to the diverging opinions towards Kyoto's flexibility mechanisms (Tangen and Heggelund, 2003; Zhang, 2006; Heggelund, 2007). The country was therefore regarded as an inactive participant in Kyoto Protocol's market mechanisms despite its huge potentials for carbon offsetting activities (Jotzo and Michaelowa, 2002; Zeng and Yan, 2005; Zhang, 2007). It was not until late 2006 when such conflicting opinions towards CDM in China were swiftly overcome (Vennemo et al, 2006; Qi et al, 2008). Since 2007, both CDM activities and studies concerning China's CDM's potential started to mushroom (Yamaguchi, 2005; Schroeder, 2007). On average four CDM projects have been approved at the national level each day, and China has established itself as the leading host country in the global CDM market, with which the total number of registered projects with UNFCCC's CDM Executive Board (EB) amounts to 1345, taking up 47% of the total projects registered with EB and more than 2941 projects approved at the national level.

Previous studies identified various reasons for the Chinese dominance of CDM market, including its favourable political and economic environment for foreign investment (Jung, 2006), large GHG mitigation potentials and abatement projects options, relatively efficient institutions and well developed regulations. However, one often overlooked factor is that almost all the CDM projects are solely implemented by Chinese companies, rather than Annex-1 parties as many would imagine. Any CDM project, whatever type it may be, is in the first place a commercial 'project' which needs equipment, land, finance and employees to make it work. In present CDM reality, all these duties have been transferred to domestic companies, so that Chinese organization's capabilities to fulfil these obligations have become a crucial determinant for the steady growth of the CDM market. As a result, although there is a gold rush for CDM projects both at supplier and

buyers side since COP7 in Marrakech, only few CDM host countries have ample domestic industrial capacity to carry out large number of essentially industrial facilities eligible as CDM projects, among which China is certainly one of the biggest and strongest both financially and technologically.

The main argument presented here is therefore that business' preferences and strategy have become a driving force in determining this unilateral nature of the CDM projects. It is not just the pattern of individual CDM transactions that has been changed, namely from bilateral cooperation to unilateralism. Rather, the Chinese market bears witness to a whole set of norms and on-the-ground rules that have emerged that fundamentally shape the functioning and various dimension of the governance of CDM.

This paper will therefore focus on the role of business power in advancing unilateral CDM projects (uCDMs) and how it transforms some basic dimensions of carbon governance in China. The rest of the paper will be separated into four sections. Firstly I would like to redefine the unilateral approach of CDM in the Chinese context and explain why such approach is particularly favoured by powerful business groups; Next, I investigate how business interests are sustained and advanced in the Chinese political and economic context. Section three will focus on the implications of unilateralism for the governance of carbon market, particular with regards to some criticisms around CDM today, namely additionality, coverage and sustainability. The paper will conclude with further discussions about the future of uCDMs in the post-2012 scenario.

2. Unilateral CDM: a silent triumph and why it rules

The win-win solution of CDM is often taken for granted. It is universally regarded that CDM, as a flexible mechanism, would encourage entities in industrialized countries to invest, either financially or technologically, in project activities with both cost-effective abatement options and sustainable development benefits. In this sense, every CDM project should be, at least theoretically, jointly implemented by both Annex 1 and Non-Annex 1 entities and most of the financing required for these projects should come from Annex 1 entities, whether public or private. Companies in the West would directly invest in the low cost abatement activities and harvest the GHG emission reduction units once these activities have been built. In reality, FDI in the CDM projects is almost non-existent. Instead, entities from Annex 1 countries generally prefer to purchase emission reduction units as an end-product of the projects, which are carried out essentially by the Chinese companies independently. Such an approach is therefore referred to as unilateral CDM.

The unilateral approach of CDM has been discussed in many previous studies (Michaelowa, 2007; Lutken and Michaelowa, 2008; Maraseni and Xinquan, 2011). Yet, these studies have presented a divergent understanding of the nature of uCDM, mainly due to the fact that prior to the completion of the project construction, most project owners (domestic companies) have signed an forward purchasing contract of carbon credits, known as ERPA, with a particular buyer from an Annex-1 country. Under the ERPA, this buyer guarantees to purchase all the CERs delivered by the project in the future and agrees to pay a down payment for this future carbon asset (usually 10% of the total estimated value of CERs to be generated). It is therefore believed by many that projects with such forward contract arrangement cannot be regarded as uCDMs because Annex-1 entities have already put a stake, no matter how small it is, during, or even prior to, the project development phase. With such understanding, only a small portion of CDM project (102 out of total 2941 projects approved by NDRC, China's Designated National Authority, DNA) are eligible as uCDMs in China's huge CDM pipeline.

However, in this paper, I would like to propose a more strict definition of uCDMs solely based on the project's ownership structure. Though the forward contract, or ERPA may play a vital role to the survival of the CDM project if it is truly additional (an issue that will be discussed later), it has not changed the unilateral nature of the project, since the ownership structure of projects remains as a domestic venture. In addition, it is revealed in the interviews with the CDM participants in China that the down payments paid by the buyer under the ERPA are in most cases too small to produce any meaningful assistance in financing the cost of building up the whole project from the ground. Hence, with or without ERPA, the domestic project owners are by and large the sole party financially responsible for the construction of the project, and consequently, in the CDM circle, the only party who would suffer the total loss if the project failed due to various risks at the implementation phase. If we include this type of CDM projects with forward purchasing agreement as uCDMs, then it is clear that the dominant majority of the CDM projects in China are indeed uCDMs.

One carbon fund manager referred to the situation during the interview: 'we as buyers are only interested in carbon asset (CERs), not the equity return of the project itself.' Why not? Previous studies indicate that the risks aversion strategy adopted by the Annex-1 entities is the main driver for embracing the unilateral model of project development (Michaelowa, 2007; Lutken and Michaelowa 2008). Such an argument is echoed by this research which finds there is an obvious preference from the buyer's side to abandon the bilateral CDM model because direct investment in those projects is considered to be 'too risky'. The policy uncertainty, time consuming financial arrangement, negotiations around land acquisition, equipment purchasing and employee recruitment, to name but a few, are all risks related to equity investment that are preferred to be shifted to the domestic companies. One informant explained this preference during the interviews: 'To be frank, we have no expertise in dealing with the uncertainties that might arise during the project implementation, for us (purchasing CERs) is a safer choice.'

The low percentage of successful registration and CERs issuance also encourage the Annex 1 companies to avoid 'putting all eggs in one basket.' One project developer explained the buyer's situation, 'If I had 20 million Euros for CDM investment, I would prefer reaching 10 ERPAs to investing directly in just one project. (Under the ERPA model), [e]ven if some of these projects failed I could still make money from the successful ones. If I put this 20m USD in one project, once the project failed it would be a total loss.' At present, the rate of successful registration of Chinese CDM projects at EB is below 50%, strongly supporting this argument.

In addition, the uncertainty of CDM's future in post-2012 climate regime reinforces the preference for buying rather than investing. Due to the deficiencies of flexible mechanisms there have been various proposals to reform the project-based offset mechanism in the next round of international climate negotiations. It is predicted that large developing countries may have to take up some emission caps, which will directly affect the legitimacy of further carbon offset activities in these countries. Since most of the CDM activities will remain in operation after 2012, and for some activities, such as wind farms, the operational period can be extended to even more than 30 years, the possibility of a future cap in some host countries make direct investment in CDM projects an unwise business decision.

Unlike the general risk-averse mentality among the Annex-1 parties, many Chinese companies believe CDM is a golden profit opportunities and would be happy to put their money into these activities. Some companies, like most giant state-owned enterprises

(SOEs), have very strong capabilities in delivering highly capital intensive projects like wind farms or hydro power stations. Their stronghold in financial sectors and close links with local government officers make the implementation of the projects much easier than for foreign investors. Though CDM revenues may not contribute a significant boost in their profit, it is generally taken for granted that China will sooner or later introduce its own carbon trading scheme and Chinese companies are urged to take on CDM projects in order to gain relevant expertise and knowledge of the carbon business. As one manager of a large state-owned wind farm builder informed the author:

'Our projects are seldom stuck in the midway, we know who to speak to (in the government) if there is a problem...Financing is not a issue either, as our parent company (a big state-owned utility company) would be the guarantor of any loans that we borrow from the bank. As a matter of fact, the banks nowadays are chasing after us for more lending, yet for some small projects, we don't even need the banks because we have sufficient cash flow to take up some projects by our own.'

When asked if the company, with such robust financial performance, really need CDM revenue to support its operation, the manager laughed and said: 'Carbon revenue is not a significant part of our income, yet we need to look at the future as the carbon market will eventually be a very attractive market and we need to move early.' During the field study, such enthusiasm about the future of China's carbon market, and the desire to make a profit from it, is a common response among Chinese companies, who, as a result, have become the prime investors in China's CDM market today. As Lutken (2010) put forward, the Europeans may be happy to claim their effort in producing these carbon reduction credits, but it is the Chinese themselves who developed and financed them.

Besides powerful Chinese investors, the newly emergent project developers or carbon consultancies in China's CDM market also prefer the uCDMs model because their business relies solely on the knowledge and expertise gap between the CER buyers and suppliers. If an Annex-1 company decided to invest in a CDM project on their own, it will eventually become the CER producer and consumer at the same time, which leaves very little business room for external consultancy or project developers.

3. uCDM projects within Chinese political economy

If uCDMs are clearly favoured by the business interests and corporate strategies of both Annex 1 and non-Annex 1 parties, how does it get normalized in the market and how has the concept and practice been developed as a dominant pattern, particularly when there are voices against uCDMs from other actors in the CDM project circle? Previous studies assumed that developing countries would compete with each other over CDM investment (Jung 2006, Sutter and Parreno, 2007). Why has the Chinese government become tolerant of the dominance of uCDMs projects, which attracts no FDI as many had anticipated?

The surprising fact is that uCDMs, initially, were indeed opposed by the Chinese government when it was formally discussed and eventually allowed at 18th meeting of EB in February 2005. The Chinese officials at that time wanted to put a high priority on technology transfer (Michaelowa, 2007) and feared that uCDM would make non-Annex 1 entities mere technology buyers instead of technology requesters (Seres et al, 2009). In December 2005, a more controversial policy was announced by NDRC that requires all CDM projects to be in Chinese majority ownership. This policy is regarded by many as an encouragement of unilateralism (Maraseni and Xinquan, 2011). However, the rationale behind the policy is still to encourage technological learning through the form of joint ventures established between Western and Chinese entities.

Since 2006, however, there have been a few significant paradigm shifts in China. At first, China, as the global biggest GHG emitter since 2007, faces tremendous international pressure to impose emission reduction targets of its own. It became increasingly difficult for China to hide behind other developing countries and to flag the idiom of 'common but differentiated responsibility' at international climate conferences. As a result, the concern to retain CER revenues to meet its domestic purpose in the future has become much more relevant than it was in 2005. Secondly, China's clean technology, particularly its renewable energy sector, has undergone an unprecedented development and today China is even exporting some technologies. Such transformation has made the policy priority on technology transfer through CDM irrelevant.

Meanwhile, there is also persistent strong economic growth which allows the government to promote, and even to finance directly, many ambitious plans for renewable energy production and other low-carbon facilities throughout the country. As Chinese premier Wen Jiabao announced at the Copenhagen conference in 2009, China will not be (or is no longer interested in) competing with other developing countries over a share of climate assistance coming from the developed world. As a result, Chinese government's attitude towards uCDM has been changed accordingly due to such political and economic development domestically.

At the micro level, uCDM model was celebrated by the local political leaders due to a series of successful capacity building efforts, mainly taking place at provincial or even county level. Although these programs were largely organized by central government entities or multinational organizations, private companies, particularly newly emergent CDM project developers, are often requested to illustrate some successful CDM cases to lure local officers into the rush for CDM revenue. It should be noted that the Chinese political economy of local environmental governance has played a unique role here in such efforts. Firstly, although China is known for its traditional command and control way of governing environmental issues, governmental commitment alone is not a guarantee for the success of new environmental policy or governance instruments, if there is no effective integration of private and local interests into these policies (Ho and Vermeer, 2006). Local governments always regard economic development, which is often interpreted as GDP growth, as their paramount task. As most of the environmental regulation from the top may impair the productivity of local enterprises, it is not in their interests to implement these regulations in a serious manner. But for the first time in China's relatively short history of modern environmental governance, CDM was introduced in the name of a new environmental mechanism but with tremendous economic incentive, and hence embraced by the local leaders.

Secondly, although the power of political institutions in controlling economic activities has been receding after 20 years of reform from a planned economy to a more market oriented one, China's politicians, particularly at the local level, still have a dominant influence over the local enterprises. Given the fact that local governments have been given much greater autonomy to govern their economic affairs since market reforms began, Oi (1995) noted that local officers in China often treat enterprises within their administrative purview as one component of a corporate whole and act as leaders of the local business. It is often referred to as 'local state corporatism' (Oi, 1995) or 'clientelism' (Kennedy, 2005) when the local leaders are treated as the patron or CEO of the business in the region. In such cases, once the local leaders are convinced of CDM's benefits, they can efficiently urge the local companies to engage the market.

Yet most potential CDM projects were located in relatively underdeveloped areas where the local authorities lack awareness, expertise, knowledge, and experience to deal with a

novel and complicated governance mechanism like the CDM. They want to make a profit from it but need private companies like project developers to show them how. Interviews with project developers indicate that most of the local leaders are easily convinced by the rosy pictures of uCDMs presented by project developers, often during the capacity building seminars or workshops, and agree to identify as many projects as possible in the region. By misunderstanding the win-win solution as a mere profit making opportunity, they jump to embrace uCDM as the only proper model.

It is argued by Lutken and Michaelowa (2008) that China's unilateralism is state-imposed. Such an argument is largely valid, because Chinese policy makers demonstrated a diminishing appetite for foreign capital and technology through CDM as time goes by, which creates room for uCDMs to flourish. However, this research indicates that market interests, both from the buyers and suppliers side, have served as an important force to create a political alliance in favour of uCDMs in China. The incoherent, and sometimes even conflicting, policies concerning investment and technology transfer issues around CDM in China indicate a two-way, rather than one-way, adaptation and compromise of perception and priorities between the policy makers and market practitioners.

4. Unilateralism and its implications on CDM governance: uneven distribution, dubious additionality and unchecked sustainability

Previous sections revealed the origin of uCDMs in China. In this section, I would like to discuss the implications for the governance of carbon market as a whole. Particular attention is given to the most frequently criticised issues around CDM and its governance, namely its uneven distribution, both among host countries and between various project types, a long raging debate of additionality and CDM's weak performance in terms of sustainability contribution.

4.1 Uneven Distribution

This paper argues that uCDM is a prime reason for a high level of regional and sector concentration of CDM activities today. CDM is a game between big countries (CASS, 2009), reflecting the rationale and logic of market forces. As the expansion of the CDM market has been largely dependent on the financial and industrial strength of the non-Annex 1 countries and their companies, it is not surprising to notice that the geographic coverage of the CDM activities has been restricted to a handful of countries who are capable of delivering massive amounts of projects without any significant external financial and technological assistance.

For the same reason, as the uCDM model has been successfully integrated into the domestic political and economic system in the host countries, the diversification of the project types shrinks accordingly. The field study indicates that the capabilities of the project owners in developing CDM projects is largely determined by their closeness to financial and policy making circles: an observation highly compatible with China's present political and business culture. As one carbon fund manager put forward: 'State companies are our priority clients, as they can deliver a large number of projects and their projects generally run smoothly, even though they are tough negotiators sometimes.'

At present in China's CDM pipeline, renewable energy projects dominate the portfolio with over 70% in terms of the total project number approved at the national level. It is arguably because the renewable energy industries in China, dominated by giant state companies, are much stronger than other sectors in terms of mobilizing adequate

financing and lobbying Chinese officialdom for favourable policies. These companies are at the same time the least sensitive to the fluctuation of the CER price. Therefore, it is highly unlikely that the shares of renewable energy CDM projects will be significantly affected by the ups and downs of the carbon price, which is another big advantage for them to engage the market.

On the contrary, for those small project owners who do need external financing to kick off a project, they often get little, if any, meaningful financial support from the present CDM structure. The problem of CDM financing is that the money often comes too late because CER revenues would only be materialized upon project completion. Some of the small projects have very solid PDDs and ERPs, but these well articulated documentations would help little when applying for a bank loan for financing the project construction. The banks would insist on at least 25% of total project cost as equity investment from the project owners and decent collaterals. None are offered by the present CDM system. The result is a large number of small projects eventually being dead on arrival.

Based on these observations, I would argue that most of the proposals in recent studies concerning the issue of uneven distribution of CDM projects, either across the regions or sectors, become less relevant. For example, the idea of placing a CDM quota on various host countries may not help to increase the CDM share from sub-Saharan LDC countries, because they still rely heavily on external financing and technology if they wish to set up a decent CDM portfolio. Lacking incentives for direct investment from Annex 1 entities, as explained in previous sections of this paper, would probably leave most of these quotas unmet since not many Annex-1 parties are willing to accept all the risks associated with the project construction phase.

For the same reason, a maximum limit of CERs sales, or a quota, for particular host countries, for example China, would further marginalize small project owners who are already in a very difficult situation due to their weak position in competing with giant state companies for a share of CDM revenue. It is estimated that state companies has taken up more than 70% of the Chinese CDM investment (Lutken, 2010). As these companies will be reluctant to invest CDM activities outside their own business scope, a quota on Chinese CERs is likely to lead to a further concentration of project types in the portfolio and an unequal distribution of CDM revenue among Chinese companies.

4.2 Additionality: a long haunted issue over CDM

During the interview, one project owner informed the researcher that he first heard of CDM when a project developer approached him by phone: 'He asked me if I was interested in making some extra money with our cement waste heat recovery projects. He told me about this agreement in Kyoto (Kyoto Protocol) from which we can claim some credits. I asked him if there is any additional cost. He said no, only his consultancy fees. I almost took him as a liar (laughter).'

This was a frequent phenomenon in China in 2006 and 2007, with newly established carbon consultancy companies calling to inform people that there are 'cakes falling from the sky', persuading Chinese companies to re-brand their on-going projects with a CDM label. As most of these projects have eventually been carried out as uCDMs, whether such 'top-up' projects meet the additionality requirement is highly questionable (Lutken and Michaelowa, 2008).

One feature of CDM is that people do not have to be climate conscious to engage in the projects, particularly when they have no mitigation constraint on themselves. Lutken

and Michaelowa (2008) argue that uCDM will encourage opportunistic behaviour among project owners or developers to look for business-as-usual projects rather than new projects potentially outside their core business scope. Yet a more worrying observation that emerged from the field work is that most of the buyers under the uCDM model are also indifferent to the additionality of the projects. On the country, they generally prefer business-as-usual projects because the probabilities of these projects being successfully completed are higher.

The uCDM model requires buyers to select projects with the highest possibility generating CERs. Once the implementation of these projects is in the hands of Chinese companies, the buyer would consider who is capable of doing so, because if projects failed, there will be no CERs. Such a preference further discriminates against cross-sector, green field investment, or projects using innovative technologies, because the uncertainty of these projects is much higher. A carbon fund manager informed the researcher, 'We would like to see our projects carried out by those who know their business well, who are proved to be capable to go through the implementation process. If a project was carried out by an inexperienced project owner in that field, we will be very cautious to reach a purchasing agreement (ERPA), we would probably pay less down payment or curb the CER prices if possible.'

In addition, the political economy of China also has a role to play. As explained above, the dominance of uCDMs in China make state owned companies a major group of investors in the market. Yet these organizations are not only profit seeking entities. Their investment decisions are often highly political rather than economic, which leads Lutken and Michaelowa (2008) to conclude that China's uCDM is 'state-imposed' rather than market-driven. During interviews with state companies, it is generally agreed by interviewees that national policies, such as China Renewable Energy Law, published in 2005, served as an important incentive for the corporate expansion of renewable projects. However, the companies' own optimism for carbon market and clean energy business in China is also identified as the main element in an investment decision. It is therefore regarded as an appropriate corporate strategy to develop renewable projects even with a considerably low investment return ratio, with or without the CDM boost. It is indeed a unique form of business-as-usual due to nature of the Chinese political and economical context. Remarkd One manager of a large state-owned CDM project owner remarked: 'It is like we are determined to attend some training courses and someone suddenly came and agreed to pay part of the tuition fees for us. There is no reason for us to reject the offer.'

Call it state-imposing or market-driven, the key underlying assumption is that the present additionality rules which are primarily based on the estimation of the internal rate of return (IRR) is not an appropriate, or even relevant, benchmark in the Chinese context, because the investment decisions are not strictly following the profit-seeking logic as supposed by many designers of the mechanism.

4.3 Unilateral CDM and sustainable development benefits

Sustainability is a slippery term and this paper does not intend to propose appropriate sustainability criteria, neither to measure the sustainability benefits of uCDM projects in China comparing those of bilateral CDMs. Rather, it will point out two noticeable conceptual shifts concerning CDM's sustainability contribution due the dominance of uCDM in China. It should be noted that the requirement of CDM projects to demonstrate a contribution to sustainable development in the host country is based on the assumption that CDM investment (presumably from the West) shall not only assist industrialized countries to comply with their emission reduction commitment, but

benefits developing countries with new technologies and funds that are needed for their own development path towards sustainability. As the majority of the projects are developed unilaterally by Chinese companies, the rationale behind CDM's sustainability requirement becomes irrelevant to anyone but the Chinese themselves. As for the buyers, their detachment from the actual projects also allows them to keep aloof from the concern of sustainability effect of these projects. One carbon fund manager said during an interview: 'We believe that every CDM project in China contributed to sustainability, otherwise they won't be approved by the Chinese government. That's not a big problem for us as a buyer.'

Hence, many procedures that are designed to safeguard stakeholders' interests against foreign investors' irresponsible behaviour under the CDM, such as public hearing sessions and stakeholder interviews, has become a sheer power game between domestic actors, which is highly dependent on the domestic political culture and political economy. Such an observation makes the proposal of establishing an international minimum and quantified threshold for sustainability benefits (UNFCCC, 2009) an even more impractical task. Because if a Chinese company undertake both CDM and non-CDM wind farms, it would not make much sense to require its CDM projects to produce higher (or lower) sustainability benefits, such as jobs and pollution alleviation, compares to its non-CDM counterparts.

The second issue is who shall benefit under the uCDM model, even if we could quantify and impose sustainability benefits and monetarise them? Gold Standard certification can be a useful illustration here. In today's Chinese market, if a CDM project is accredited with Gold Standard and gains extra CER revenues, all of the accrued revenue would, in practice, go to the buyer's account. That is to say, the buyer will normally purchase the credits from the Chinese project owners at a normal price and then sell it to the end users as a gold standard project. This is rather surprising because the project was actually built and owned by a Chinese company. Any rewards for the projects' enhanced contribution towards local sustainability should presumably be attributed to the Chinese investor, rather than the buyer who in reality just purchase the end product of the investment. If the buyers under the uCDM model are able to stay away from any criticism of a project's contribution to sustainability, they shall refrain from reaping the extra benefits of the projects' sustainability contribution at the same time.

5. Conclusion

In this paper, the prevalence of uCDM has been illustrated and the origins of its dominance in the world's largest CDM recipient countries have been investigated. The major conclusion is that the power of business, both from Annex-1 and non Annex-1 countries, has been identified as the main driver responsible for such prevalence. Development of uCDM is in effect a significant deviation of the original blueprint of CDM and many significant implications can be drawn to understand the governance of the carbon market from the experience of uCDM. It is believed that more efforts shall be made to reinforce the initial idea of CDM as a tool to channel sufficient direct technological and equity investment from the West into the developing world. In this regard, an officially initiated and supported financing or guarantee scheme would need to be introduced in Annex-1 countries if we would like to encourage more CDM activities in less development countries or in sectors that are currently discriminated against by private investors.

In addition, the uCDM model indicates that the political economy of host countries has a major role to play in shaping the outcome of an innovative mechanism such as CDM.

Lutken (2010) argues that there is no mastermind from the public or private domain overseeing the development of carbon market as a whole. Rather, the growth of market should be understood as a mutual adaptation and evolution between foreign and domestic entities, and between political and market forces. Many issues have been raised concerning the future of the CDM in the post-2012 climate regime, among which are the proposals to include more domestic efforts, such as unilaterally adopted policy reforms or programmes, into the existing offsetting mechanism. Besides the technical difficulties of these approaches, such as setting baselines or choosing methodologies, it is argued in this paper that more attention should be given to understanding the logic and exercise of market forces in specific domestic political and economic context, which determines the effectiveness of carbon governance. This is particularly relevant if we shall expect a more unilateral initiated carbon offset market in a post-2012 scenario.

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