

UNIVERSITY OF EAST ANGLIA,
SCHOOL OF INTERNATIONAL DEVELOPMENT

The Political Economy of CDM Market in China:

Business Actors in the Governance of Carbon Offset

by **Wei Shen**

8/1/2013

Acknowledgment

My principal supervisor Professor Peter Newell has been an integral part of the development of this PhD thesis and a constant source of very much appreciated inspiration, guidance, support and motivation. I'd also like to give a heartfelt, special thanks to Professor Katrina Brown for encouraging me into this PhD study and for her patience, flexibility, genuine caring and generous efforts on the supervision during the first three years of this project. Dr. Heike Schroeder and Professor Declan Conway, who joined the supervision team later in the process, have given me tremendous support and ideas during the last year of this project. They have pushed me through the final stage of this project with tremendous flexibility and assistance. Without the help of these brilliant supervisors this thesis is merely impossible.

I would also like to thank Jun He and Lucy Baker at DEV, who have been generous sharing their thoughts and ideas.

I would like to thank School of International Development and Tyndall Centre for Climate Change Research for the studentship, which enables me to carry on this research.

Lastly, I must acknowledge with tremendous and deep thanks my family. There are no words that can express my gratitude and appreciation for all they have done and been for me. My wife, Dr. Ying Wang, has been central to my completion of this study as she has rendered me confidence and motivated me in so many ways. My son, Boheng Shen, is the greatest impetus for me to complete this PhD task since I believe that every environmental or climate research is essentially about creating a better world for our kids to live in.

Contents

List of Abbreviation.....	IV
1. Introduction	1
1.1. Research background and the history of CDM	4
1.1.1. China's contribution to an explosive CDM market	8
1.1.2. Justifications of the research: empirical and theoretical puzzles	15
1.2. Research Questions	20
1.2.1. Key question 1: who governs CDM in China?.....	20
1.2.2. Key question 2: Resource, lobbying strategy and outcome	22
1.2.3. Key question 3: what are the implications?.....	25
1.3. Structure of the Thesis.....	28
2. Literature review	33
2.1. Studies of China's state-market relationships in the reform era.....	35
2.1.1. Central-local relationship: a fragmented authoritarianism.....	37
2.1.2. From dependents to allies	42
2.1.3. Distinctive features of the Chinese state-market relationship	45
2.2. Environmental governance and politics in China.....	48
2.2.1. State and civil society in environmental problems.....	49
2.2.2. International cooperation and environmental diplomacy	52
2.2.3. Climate politics in China: from outside-in.....	53
2.3. Studies of CDM: growing out of the criticism.....	57
2.3.1. Carbon offset: a divided ethical ground.....	59
2.3.2. Problems of the CDM: manifestations and remedies.	64
2.3.3. The future of CDM.....	77
2.4. Concluding remarks.....	84
3. Business Power in CDM markets: an analytical framework	86
3.1. A neo-pluralistic approach: why and how?	88
3.1.1. Business power: sources and manifestations	89
3.1.2. Multi-dimensional view of business power	96
3.1.3. China's CDM governance: making sense of the complexity.....	105
3.2. Introducing the framework	107
3.2.1. Business cooperation and networks in a transitional economy	112
3.2.2. Conflicts and confrontations in the CDM market.....	117
3.2.3. Evolution of the CDM market.....	122
3.2.4. Evaluate the implications of business power in CDM governance	127
4. Methodology	132
4.1. Case Study Strategy: Case selection, epistemological roots, and its advantages (limitations):.....	132
4.1.1. RE-CDMs in China as a least-likely, interpretive single case.....	134
4.1.2. Case study: pros and cons.....	138
4.2. Research technics and data generation procedures.....	142
4.2.1. Ethnographic observations	142
4.2.2. Document analysis	146
4.2.3. Interviews	151
4.3. Research Ethics.....	158
4.4. Qualitative data analysis	162
4.5. Conclusions	164
5. The political economy of RE-CDMs in China	167

5.1.	RE-CDM: business actors and policy framework	169
5.1.1.	A new carbon bourgeois: who they are and what they do?	169
5.1.2.	Policy and legislation framework of RE-CDM	178
5.2.	RE-CDM with Chinese characteristics	185
5.2.1.	State's interests and power in developing RE-CDMs	185
5.2.2.	Business leverage in governing the RE-CDMs	199
5.3.	Implications and discussion.....	209
5.3.1.	CDM revenue: too small, too late and too pro-elite.....	210
5.3.2.	Additionality: how complex can it be?	212
5.3.3.	Governing CDM for sustainability?.....	215
5.4.	Conclusion.....	217
6.	CDM at localities	219
6.1.	RE-CDMs: incentives and constraints of local policy makers.....	220
6.1.1.	Economic return as a political incentive	221
6.1.2.	Constraints faced by the local governments.....	228
6.2.	Private power at local level	237
6.2.1.	The rise of centrally controlled SOEs.....	238
6.2.2.	DOEs at project sites: 'carbon judges' on the ground	245
6.2.3.	Project developer as a policy intermediary?.....	247
6.3.	Impacts of local political economy to the performance of CDM	250
6.3.1.	Hybrid governance in a fragile coalition	251
6.3.2.	Hollowing out the local states?	256
6.4.	Concluding remarks.....	265
7.	Inter-business conflicts in CDM market.....	268
7.1.	International and national business actors in the CDM market: division or integration?.....	273
7.1.1.	Internationalization of market instruments and its scepticism in China.....	275
7.1.2.	International companies: unchallenged missionaries	276
7.1.3.	Local rhetoric on the CDM: a sense of apathy	283
7.2.	Divided opinions on protectionism in the CDM market.....	285
7.2.1.	Is the floor price requirement out-dated?.....	285
7.2.2.	Co-ownership and CERs revenue sharing policy.....	288
7.2.3.	The majority Chinese ownership requirement.....	291
7.3.	Cross-sectoral conflicts in the CDM market.....	295
7.3.1.	Wind and solar: a tale of two renewables	297
7.3.2.	'Carbon' finance: the hidden master of the CDM	304
7.4.	Conclusion and implications.....	313
8.	Conclusion and implications for future studies	316
8.1.	Theoretical implications.....	319
8.1.1.	Not a single state, not a single market	320
8.1.2.	Non-linear progression and uneven distribution of business power.....	322
8.1.3.	Business lobbying with Chinese characters	326
8.2.	Empirical implications.....	330
8.2.1.	Domestic carbon market	332
8.2.2.	Global carbon market with integrity and SD benefits.....	337
8.3.	Limitations and future studies on climate politics in China.....	341
	Bibliography:	344
	Appendix 1: Lists of Interview Participants.....	344

List of Abbreviation

ACFIC	All-China Federation of Industry and Commerce
CBDR	common but differentiated responsibilities
CCP	Chinese communist party
CCS	carbon capture and storage projects
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CMA	China Meteorological Administration
CNECC	China New Energy Chamber of Commerce
COP	Conference of the Parties
CREIA	China Renewable Energy Industries Association
DNA	Designated National Authority
DOE	Designated Operational Entities
EB	Executive Board
ERPA	Emissions Reduction Purchasing Agreement
EU ETS	Europe EU Emission Trading Scheme
FYP	five year plan
IEA	International Energy Agency
GHG	greenhouse gas
IRR	internal rate of return
JI	Joint Implementation
KP	Kyoto Protocol
LDCs	Least Developed Countries
LOA	Letter of Approval
MFA	Ministry of Foreign Affairs
MNC	multinational corporations
MOF	Ministry of Finance

MOST	Ministry of Science and Technology
NDRC	China Development and Reform Commission
NGO	non-governmental organizations
NBSC	National Statistic Bureau of China
ODA	official development assistance
OECD	Organization for Economic Cooperation and Development
PDD	project design documents
PoA	Program of Activities
PPA	Power Purchasing Agreement
RE-CDM	renewable energy CDM
REDD	Reducing emissions from deforestation and forest degradation
REL	Renewable Energy Law
SASAC	State-owned Assets Supervision and Administration Commission
SD	sustainable development
SOE	State Owned Enterprises
TT	technology transfer
VER	Voluntary Emission Reductions
UNFCCC	United Nations Framework Convention on Climate Change

Abstract:

This thesis examines the role of business actors in networking, influencing and shaping the governance of China's CDM market. By adopting a neo-pluralistic view of business power, it reveals how companies in the CDM market in China are wielding their unique capabilities and technics to affect policy making and implementing process both at the national and local level. It is based on a qualitative case study strategy to investigate and reveal the detailed context and causes for some worrying problems around CDM in China. 42 interviews, plus large number of document, and field observations have been carried out to collect data. The study also illustrated their constraints to achieve their goals and strategic preferences due to the confrontational interests among business actors. In general, it contributes insights of the reform era political economy in China's environmental and climate governance.

Key words: governance, CDM, China, political economy

1. Introduction

China plays a decisive role in the global effort of combating climate change both in terms of its sheer size of greenhouse gas (GHG) emissions and the large potential for abatement options. In 2007, China overtook the United States to become the largest annual emitter nation even though its cumulative and per capita emission remains much lower than the US. With over six billion tons of CO₂ emissions in 2010, or 24% of total global emissions (IEA, 2012), the volume of Chinese emission and its growth rate dwarfed other BRICS countries (Brazil, Russia, Indian, and South Africa) by a large margin. Hand in hand with soaring GHG emissions is a rapidly growing economy in the last two decades under the Chinese government's unyielding backing of economic growth. Since the market reforms began in the early 1980s, economic development became the top priority of the Communist governments at all levels. Everything else, including environmental impacts of the rapid industrialization, are *de facto* secondary in the political agenda. According to International Energy Agency (IEA, 2012), key economic sectors like electricity consumption and transport are at the same time the primary drivers for emission growth in China.

Hence, how the challenges of climate change are to be tackled in China could serve as a role model for climate governance, particularly for other

developing countries. The attitude, strategy and policy tools that are adopted by the Chinese government and non-government entities would produce a profound impact not only on the domestic development path but the overall sustainability at global scale. It is in this context that I was motivated to start this PhD research on China's newly emerged CDM market, which is often regarded as the most innovative governance 'invention' to tackle climate change. I hoped the study of how CDM activities were implemented in China would shed some light on the the country's climate politics and governance.

In this introductory chapter, the history of the Clean Development Mechanism (CDM) is overviewed with a specific description of China's CDM market and its main features. I also explain how the empirical and theoretical puzzles around CDM governance emerged, along with the fast development of the market in the last decade highlighting the rationale and importance of this research. In the next section, I present the research questions with the central inquiry seeking to investigate how powerful the business actors are to shape the international carbon market in a rather unique political and economic system like China, and what are the implications when the domestic and transnational business power were unleashed in the developing world for the first time in the history of global climate governance. The chapter concludes with a brief overview

of the thesis structure.

1.1. Research background and the history of CDM

Offsetting is not an innovative idea for effective environmental governance. It has a long conceptual tradition among eminent economists since Pigou (1920), who developed the externalities concepts, and later Coase (1960), who argued that allocating and trading property rights could promote efficiency. Although neither of these economists intended to apply their theories to addressing environmental issues, the application of their economic theories to pollution control was soon proposed by Dales (1968), who pointed out that a market in pollution rights is needed as a ‘third way’ for environmental governance. In general, these early academic works endorse the application of market instruments, such as taxes and emission trading, to addressing environmental challenges, compared to the traditional ‘command and control’ approach such as a pollution ban or penalty system. In general, these flexible tools are designed to allow polluters themselves to identify the most cost-effective options to control and clean up the pollution that they created (Pearce 1989).

These revolutionary thoughts laid the foundation of many innovative market instruments for environmental governance since the 1980s in some developed economies. Consequently, the cap and trade system of

GHG emission, or a flexible mechanism that created demand and supply of carbon reductions to be priced and exchanged between the excessive emitters in one place and emission savers in another (Bumpus and Liverman, 2008), has become the centrepiece of a formal discussion of how to fix the problem of global climate change. Prior to the establishment of carbon offset markets, experiments of 'cap and trade' systems were carried out with other pollutants. For example, trading of sulphur dioxide (SO₂) and nitrogen oxides (N₂O) pollution permits began in the United States in the 1990s.

These programs were once greeted with scepticism (Stavins, 1998), but are now often viewed as a success of paradigm shift from traditional government led approaches to a market centered policy design to deal with environmental crises (Keohane, 2009). The faith in market instruments and some rather successful piloting experience in the most influential and wealthy economies led to the creation of carbon offset market. The architects of the carbon market are in firm belief that setting a price for carbon could create strong incentives to reduce emissions as efficiently as possible (Ekins and Barker 2001; Weyant 1999).

As a result, several governments had implemented carbon trading schemes, including the United Kingdom in 2002 and the Australian state of New South Wales in 2003 (Hepburn, 2007). The pan-Europe EU

Emission Trading Scheme (EU ETS) was created in 2005, and eventually became the largest carbon trading system to date. The appeal of market instruments as a panacea reached its climax when the 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) adopted three flexible mechanisms towards the end of negotiation, namely Emission Trading, Joint Implementation (JI) and the Clean Development Mechanism (CDM). These prescriptions indicate that the carbon offset as an experimental policy has been formally elevated to the international stage, and consequently, companies and state agencies around the globe are now allowed to trade carbon credits as a commodity in order to meet their emission reduction target or make profits from selling their emission reduction credits (Böhringer, 2003).

Although the pervasiveness of carbon offset programs over other policy instruments in dealing with climate change is often believed to have a strong neo-liberal ideology root (Newell and Paterson, 2010), the real intention of adopting flexible instruments, particularly the CDM, is through strong political orientation at the international climate negotiations. Firstly, the key player during the negotiations was the US, which tried to utilize the market mechanism as much as possible. It is generally believed that the inclusion of offset programs aimed primarily to coax the US, then the world's biggest emitter, to ratify the protocol and

endorse a legally binding emission reduction target. Secondly, flexible mechanisms were also designed to be a magnet for the developing countries, which in general opposed fiercely any legally binding reduction targets for the global 'South' since it was against the dogma of 'common but differentiated responsibilities (CBDR)' (Victor, 2004). However, it should be noted that targets for some parts of the global south do not run against the idea of CBDR.

The first objective of luring the US to remain on board largely failed when the Bush administration discarded the Kyoto Protocol in late March 2001. Nevertheless, the second aim of persuading developing countries to make some 'paid' efforts for global emission reduction turned out to be a huge success. Although developing countries were initially suspicious of the intention of any market instrument and hesitated to participate in CDM (Depledge, 2000), most of them gradually picked up the discourse of 'win-win solutions' and begin to show their huge appetite for CDM investment from the Annex 1 parties.

Meanwhile, the direct link between Kyoto credits to the newly created EU-ETS enhanced developing countries' confidence of profit prospects and the enthusiasm for CDM grew dramatically after 2005. By the time of writing, more than 10,000 projects had been proposed by developing countries across the world to the United Nations (UNEP, 2012).

Considering it was not until COP7 in Marrakesh in 2001 that the Executive Board (EB) for the CDM was established, and the main part of the ‘rule book’ was decided upon, the maturity and development of ‘Kyoto’s surprise’ (Werksman, 2002) stunned even its designers’ eyes.

1.1.1. China’s contribution to an explosive CDM market

China is the largest contributor for the CDM boom since 2005. Yet the rationale to select China’s CDM market as the theme for this PhD projects not only because the nation hosts largest quantity of CDM activities. Rather, it is believed that understanding Chinese CDM market becomes particularly important for three reasons. Firstly, such case study would provide crucial evidence of how the role of business actors and host country’s political economy can affect the overall performance of international carbon offset activities. CDM is a new instrument designed in the international forum arguably without considering too much about local details. However, new market creates new governance vacuum, which needs to be taken up by various social actors eventually. Therefore, CDM provides an extraordinary site to examine the state-market power struggle and networks to legitimize their governance inputs and outputs.

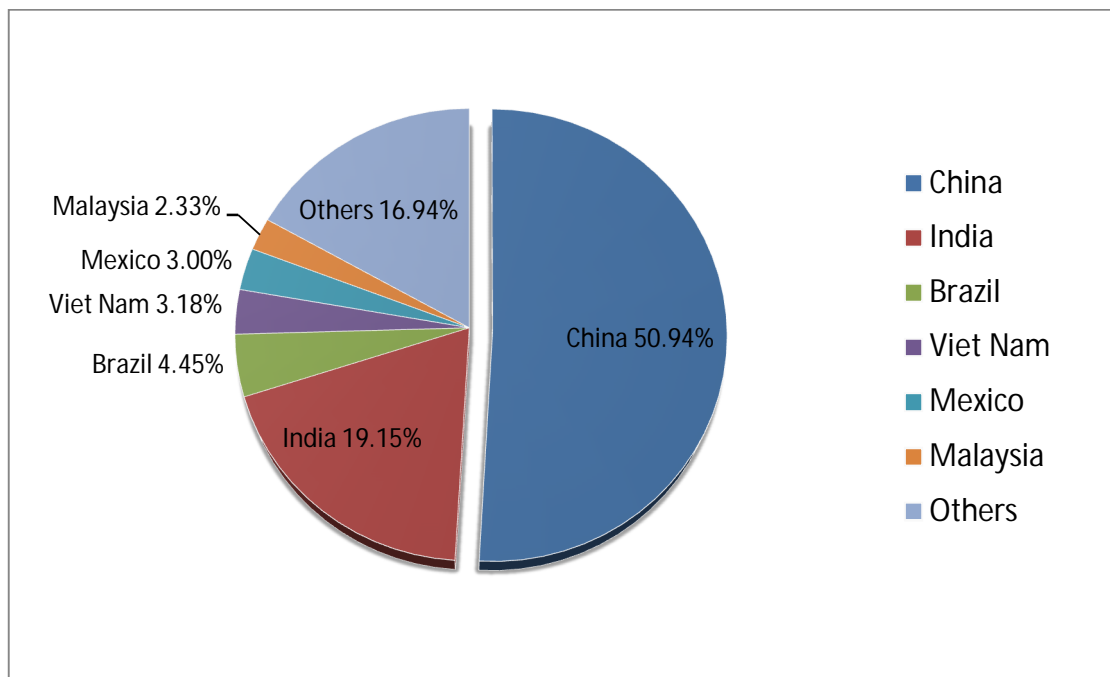
Secondly, CDM as an international mechanism has to adapt itself in the national and local political and market system, which eventually creates new layers of collaborations or confrontations within the existing

governance arrangement. Hence, it becomes a perfect site to investigate the relationship between the rising carbon elites and existing state or market institutions. I hereby echo with Peter Newell's argument that the governance of carbon offset has to be examined in a broader range of governance system (Newell, 2009), and CDM market provides an excellent opportunity for such analytical approach. Last but not least, CDM is by nature a cross-sectoral market and hence provide a good window of understanding cross-sectoral and cross-ministerial coordination or conflicts in China's climate governance, which is rarely examined previously.

In May 2012, during a seminar attended by the author on the CDM approval system in Beijing, a government officer from the China Development and Reform Commission (NDRC, China's Designated National Authority for CDM project approvals) pleaded for appreciation and understanding of NDRC's work in front of an audience of a dozen or so CDM stakeholders, for the latter often criticise NDRC's low efficiency and delay in CDM project approval through various channels. China's Designated National Authority (or 'DNA' in CDM terminology) is operating under a tremendous workload and the officers had been trying their best to meet the applicants' tight time schedule (Sohu News, 2012). The officer's remark during the seminar is by no means one of those

bureaucratic talks often heard among Chinese state officers, as documents from the NDRC website reveal that since the beginning of 2012, the NDRC doubled its speed of project approval and increased the average speed of Letter of Approval (LOA) issuance from around 50 projects per month to 100 plus (NDRC, 2012). Considering the CDM office is a rather small office with only four formal employees, Chinese officials appear to have exhibited very high efficiency in dealing with CDM project approvals. However, such high speed of project approval also leads to concerns about the quality of supervision of project proposals.

Figure 1.2: Total registered CDM projects distribution by host country



(Source: UNFCCC, 2012)

First of all, it partly explains the main drivers of the explosive market in

China. Linking Kyoto credits to the world's largest carbon market (EU-ETS) opened up the demand side for carbon offset credits, but China's keenness for delivering these credits is believed to be the most important factor from the supply side of the market (see *Figure 1.2*). Since the first quarter of 2007, China has overtaken India to become the biggest CER supplier not only in terms of CDM project numbers but also in terms of CER volume (*Figure 1.2*). However, this is not a surprise to many scholars and policy makers, given the huge emission reduction potential and large size of the country. Earlier researchers have successfully predicted the share of Chinese projects at around 60% by the end of 2010 (World Bank 2004; Zhang 2006). These predictions are surprisingly precise when looking at today's CDM portfolio (see *Figure 1.3*).

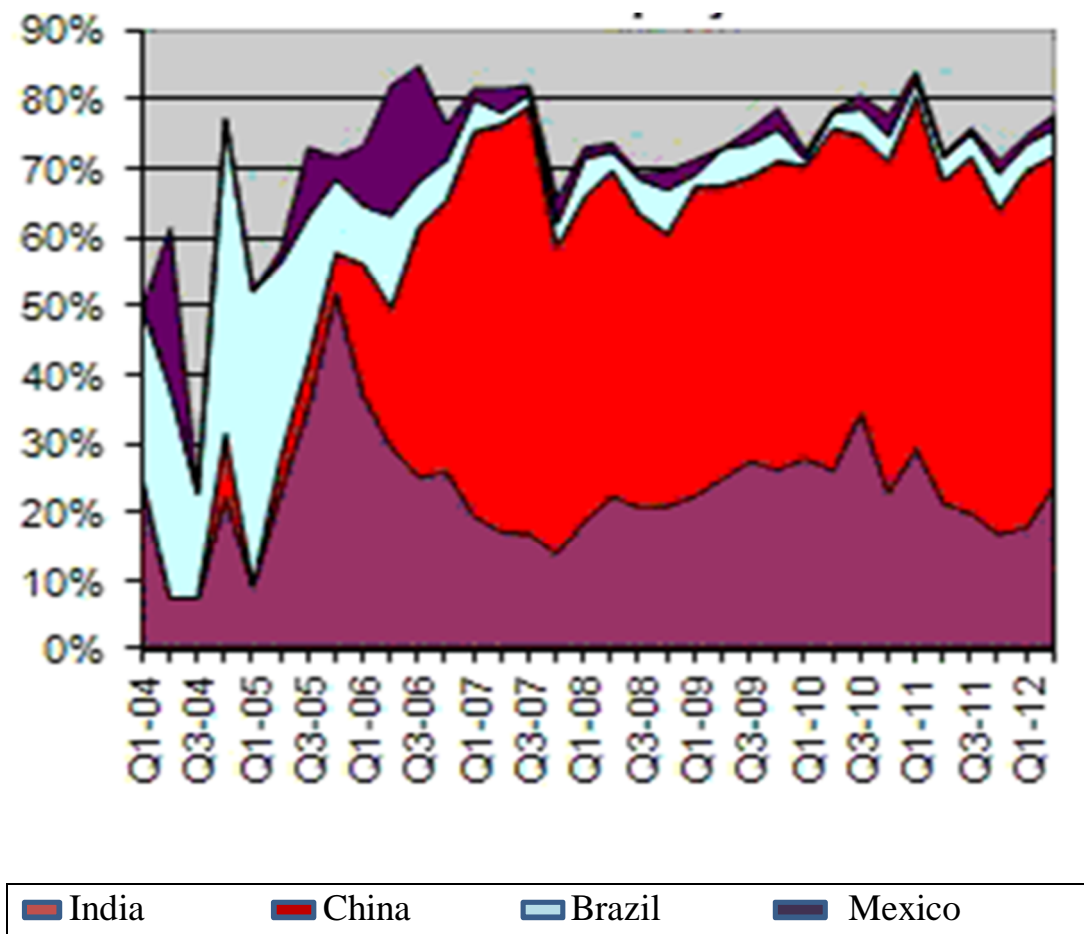
Secondly, the comment at seminar in Beijing also reveals the relentless support for CDM development from the Chinese government and regulators. In earlier stages of development the governing institutions were established and regulatory policies were crafted out (Schroeder, 2009). In addition, government even acts like 'volunteer' market promoter and business developer by presenting and explaining CDM benefits to the Chinese enterprises through some bilateral and multilateral capacity building efforts (see Chapter 5 for a detailed account of the state's role in promoting CDM). Chinese regulation also allows the

government to tax CER revenues according to different project types (NDRC 2004), which makes the state essentially one of the stakeholders together with the business companies within the project cycle (see Chapter 5 for detailed analysis). In general, Chinese officers' strong interests in promoting CDM activities present a sharp contrast to the government's suspicious attitude towards market instruments in previous years.

Yet government support for CDM is only a necessary condition but not a sufficient condition for the market expansion. The NDRC officer's comment in the beginning of this section indicates that without dynamic support and involvement from the business community such rapid market growth would have been impossible. As a matter of fact, the idea of CDM was quickly picked up by both international and Chinese companies who sensed the profit opportunities from this 'win-win solution'. Many domestic companies interpreted it as a free lunch from the developed countries or entities, or 'cakes falling from the sky' (Schroeder, 2009). Hundreds of carbon funds and consultancy companies emerged to hunt for potential project activities that might be eligible for CDM criteria. The research will show how project investors also acknowledged the mechanism swiftly and realized the possibility of making extra profit from selling carbon credits to Annex-1 parties and how they then started

to package their existing or planned projects into CDM projects, as explained in detail in Chapter 4. A Chinese CDM boom finally took off in 2005 (Figure 1.3).

Figure 1.3: Major host countries' share of registered CDM projects



(Source: UNEP Risoe, 2012)

Perhaps a surprising feature of China's CDM market is the high concentration on renewable energy projects in the portfolio. Renewable CDMs account for more than 83% of the total numbers of registered

projects (NDRC, 2012). Taking wind energy as an example, China developed 1519 projects with total installed capacity of 84086mw (UNEP, 2013). Given the country's tremendous emission reduction potential and abatement options across various industries and sectors one might expect a more balanced distribution of CDM projects. For example, China relies heavily on coal and has a large number of relatively old and low efficiency power plants (Jotzo & Michaelowa, 2002), but there are very few CDM projects aiming to improve the efficiency of these outdated power plants with new technology. Other large emitting sectors such as transportation and building efficiency are also rarely approached by the CDM project developers due to the lack of approved methodologies. The disproportional distribution of CDM projects also leads to an unbalanced geographic allocation within China because most of the projects are eventually implemented in China's western inland provinces, due to the abundant clean energy resources in the area, such as hydro, solar and wind power, compared to the more dense populated and economically well-developed coastal regions.

As China started to dominate the project pipeline, criticism grew over the dubious quality of some Chinese projects among academics and NGOs. In general, there was a split view of the Chinese contribution and implications for the global carbon offset market. Some view it as a major

part of a successful story of CDM (Figueres and Streck, 2008), while such ‘great leap forward’ type of growth is perceived as a threat to the mechanism’s equity distribution (Bakker et al, 2009) and environmental integrity (Haya, 2007). In addition, some believe China’s rise has essentially exposed the primary challenge of the present institutional arrangements and credibility of the newly established international flexible mechanisms (Hepburn 2007; Wara & Victor, 2008).

1.1.2. Justifications of the research: empirical and theoretical puzzles

Behind divergent opinions of the implications of China’s dominance in the CDM market are some theoretical and empirical puzzles that need to be addressed. The detailed discussion of these gaps is presented in Chapter 3, here I only lay out the main issues as the justification of this research.

The history of CDM and China’s experience imposes a fundamental puzzle that needs to be clarified, namely what were the main causes of China’s dominance of the CDM market, its unbalanced allocation of project types, and its questionable project quality. Before the CDM started to mushroom in China, some early studies provides theoretical assumptions of how factors such as abatement potential, institutional arrangements, economic development and investment environment would

affect the prosperity of CDM in a given host country (Jung 2006; Michaelowa 2003). As we look back today at CDM's development track in the last decade, it is clear that some of these early theoretical assumptions have been proved to be incompatible with the actual market reality. For example, the field study of this research indicates that host countries' abatement potentials and attractiveness for foreign investment is not the main cause of China's large CDM market share (See chapter 5 for detailed analysis), and some large emergent economies, with equally abundant market potential and low FDI risk level, such as India or Mexico, have developed significantly less projects than China. Hence the causes of such differences should be re-examined.

In addition, for a country that is distinctive for its authoritarian traditions and carrying out marketizing reforms only in the past three decades, few on-site empirical studies have been carried out to link China's specific political and economic dimensions to the explanations of how CDM governance has been implemented on the ground. Schroeder's research is one of the few pioneering studies on the dynamics of the CDM market in China, but the research focus is concentrated on the government or government affiliated entities, with the conclusion that in the CDM market state actors are still at the centre of the stage (Schroeder, 2009) and some hybrid actors (quasi-governmental local CDM offices) are

becoming the major steering parties of the market growth (Schroeder, 2011).

Therefore, the vast number of private companies that are either newly created or recently mobilized for the carbon offset market, and the roles and influence of these organizations in the governance of CDM have yet to be systematically investigated in China. I argue that the study of business actors in China's CDM market could provide critical insights about why China outpaced other developing countries to become the largest host of CDM, why renewable CDM dominates in China, and why the integrity and quality of some of these projects is questionable. In general, better understanding of business power and influence in the CDM domain would provide empirical evidence of how CDM is developed at the implementation level. The empirical evidence may shed some light on those rather contradictory perspectives on China's CDM story in the recent years; either as a huge success or an enormous fraud.

As for the criticisms around China's CDM projects, there is still a significant lack of evidence of both the magnitude of the problem and how it happened. Gilley (2012) pointed out that China's response to climate change has been a characteristic case of authoritarian environmentalism with a distinctive non-participatory nature during the policy making process. In such a case the production of governance

outputs in terms of policy, measures, regulations and institutions can be highly efficient, yet the environmental outcomes are often disappointing due to countervailing interests among stakeholders, particularly at local level (Gilley, 2012). Besides, studies of China's renewable policies also indicate that uncoordinated inter-ministerial arrangements in China are the major obstacle to achieving the grand policy goal of the top (Lema and Ruby, 2007). These previous studies illustrate another important puzzle for understanding the performance of CDM in China, some of the problems may not be the direct consequence of state policies due to the fragmented interests at the operational or local level, hence empirical efforts to identify alternative explanations for the causes that have led to the dubious quality of CDM activities is a very crucial task.

The research also addresses several theoretical puzzles that have affected CDM since its inception. At the outset is the question of why a market mechanism blossoms in one of the more authoritarian countries in the world. As explained before, the fundamental theoretical assumption of carbon offset market is that these flexible instruments make the effort of reducing environmental crises more cost-effective than those of command and control type policy options. However, today's geographic distribution of CDM ironically illustrates that, after a decade of development, this innovative global offset instrument thrives in a country with a distinctive

nature of environmental authoritarianism (Beeson, 2010; Gilley, 2012). Countries like China would theoretically face more difficulties when trying to harness a market instrument within their ‘command and control’ political system, compared to those more democratic host countries like India or Mexico, but in reality China turns out to be the most popular destination for CDM activities. Therefore, interrogations of how the flexible instruments are integrated into China’s political reality could provide theoretical insights on governing market instruments in non-liberal economies like China.

Another related issue concerns the notion that ‘state power’ is retreating in the governance of public affairs (Strange, 1996) and non-state actors have started to fill the governance vacuum left by the state officers (Rosenau and Czempiel, 1992). In the environmental arena, the inception of market instruments is believed to be a typical example of this trend of government-to-governance transformation and CDM is often regarded as a new form of networked governance jointly sustained by public and private entities at all administrative levels (Streck, 2004). The analysis and fieldwork in this research reveals the leverage of business actors in the carbon market in terms of allying with or confronting state actors in order to sustain or shape governance structures in the CDM domain. Such analytical efforts will hopefully provide informed insights of how non-

state actors are taking up the governance vacuum left by the state actors after new governance tools are enforced on the ground.

1.2. Research Questions

The research questions are designed to address the empirical and theoretical puzzles elaborated in the preceding paragraphs (see Figure 4).

Firstly, these questions differ from a state-centric approach and shift the analytical focus to the business actor instead. The overarching question of this research asks how business organizations and their strategic preferences are reflected in the governance of CDM in China and its implications for China's clean development. This research question will be addressed by three subsets of questions explained below (see Figure 4).

1.2.1. Key question 1: who governs CDM in China?

Currently a plurality of private and public actors is engaged in the day-to-day governance of CDM, even if they are not formal participants in the decision making process (See Figure 5). As the only market mechanism prescribed under the KP to promote cooperation between Annex-1 (mainly OECD members) and Non-annex 1 (developing) countries, the successful implementation of every project needs participation from international organizations (EB), multinational corporations (MNCs), financial institutions, national and local governments from both Annex 1

and Non-annex 1 countries, domestic public or private companies, independent consultants, and professional validators. Although it is rather obvious that for such a complicated system to function, the interaction and collaborations among these actor groups is crucial (Streck, 2004), the actors' level of involvement and their purpose can be largely different to each other when joining the project implementation phase (see Chapter 5 for a detailed analysis).

The first key question hence intends to clarify the boundary of these actors, their roles and strategic priorities in the CDM market in China. It identifies the most active players at the operational level and interrogates the primary motivations and mandate for their involvement. It is noted that this is essentially a challenging task due to the complicated configuration of public and private spheres in China. Schroeder (2012) revealed that quasi government institutions were set up in China to take advantage of their ambiguous status for the profit making opportunities in the CDM market. I argue in this research that quasi-public business entities such as state owned companies (SOEs) or other corporations with close political connections, apply similar strategies to tap their political resources and advance their own political or policy preferences in the newly emerged CDM market. Therefore it would be simplistic to view these companies as mere profit-making organizations as from time to

time their priorities can be non-economic.

1.2.2. Key question 2: Resource, lobbying strategy and outcome

This subset of questions deals with the sources of business power in China's CDM market, as well as how the power was used by business actors in building up coalitions or accommodating conflicts either with state actors or other actors in the market. The marketization of China's economy in the past thirty years has cultivated a fast growing business class who has an urgent need for supporting regulatory frameworks and favorable policies, which has resulted in extensive lobbying activities by companies within various industries, such as steel, electronics and software (Kennedy, 2005). The Chinese companies have various capabilities to influence the polity just like most Western companies do with their policy makers. However, Kennedy (2005) pointed out that the ways Chinese companies' influence the central-party state are notably different from Western corporations due to China's unique one-party political system. In addition, various sectors seem to have different approaches so that no single pressing model, such as pluralism, clientelism or corporatism, suffices to describe the complex business–government relations in China.

This research largely echoes those of Kennedy's findings but goes further

from two perspectives. Firstly, the analytical focus is given to a newly emerged cross-sectoral market with strong political orientation. The carbon market accommodates elements from various traditional economic sectors including finance, energy, consulting, heavy industries (such as steel and cement, transportation and buildings), etc. It is thus interesting to see how actors from various sectoral and ownership backgrounds compete with others over the dominant influencing strategy for CDM regulators. It somehow illustrates which form of power resource is likely to be more effective over others and why. Secondly, the research also brings the local political-economic dynamics into the analysis, which provides insight to the power variance between local, central and international business in terms of networking or countervailing local state actors. In general, the analysis of Chinese business actors' pressing strategy and networking techniques in the CDM market can also serve as a complementary effort to the previous studies of business power in developed economies in global environmental or climate governance (Falkner 2008, Levy and Newell, 2005, Meckling 2011).

The last element of this subset of research questions concerns the policy outcomes. Previous studies show that direct lobbying activity hardly exists in China's CDM market (Schroeder, 2009), indicating that the relational dimension of power, in which business actors achieve their

goals by organized pressuring activities (Falkner, 2008), is not an observable phenomenon in China. Power interactions are therefore not always observable as they are not exercised in open competitions for influence over policy making and process. However, as Kennedy (2005) pointed out informal lobbying, often in the form of discussions behind the closed doors, individual pressing of the state officers or manipulating the media, is a dominant phenomenon in China. Hence I argue that understanding of different techniques and strategies of Chinese business to leverage their positions in the CDM arena is important since these informal activities may generate an aggregate effect on setting and changing policy parameters. In order to reveal these informal activities, I selected interviewees not only from current business managers or market regulators, but also those with previous CDM expertise who had left the carbon business.

Therefore, the outcomes of the policies are approached in this research by unraveling how privileged business actors build political coalitions and policy frameworks in accordance with their own preferences. For example, the analysis in Chapter 5 reveals that the dominant transaction pattern of CER trading in China is due to the joint efforts of major business actors in the market. Such a transaction pattern is a significant contributor to China's CDM miracle and is tacitly tolerated and agreed by

the policy makers, even though it is essentially a serious deviation of the KP's original intention. Examples of this kind of policy outcome also reveal that elite business groups are able to subdue the debate of other acceptable transaction patterns and keep them off the policy agenda. In addition, they are also capable of making the public take this outcome for granted as the only option for implementing the CDM projects in China.

1.2.3. Key question 3: what are the implications?

The third subset of questions deals with the implications of business power and policy outcomes for the overall performance and quality of the CDM as a flexible mechanism. The international carbon offset market is distinctive from traditional markets. On the one hand, it is essentially a market with a clear global public mission to combat climate change by exploiting most cost-effective abatement options around the globe. Hence the integrity of the mechanism is utterly important since any fake or miscalculated credits would literally inflate the emission cap of Annex 1 parties and increase the global GHG emissions (Schneider, 2009). In this regard, a market flooded with dubious carbon credits would threaten the fundamental justification of the offset market. That is exactly the reason why CDM Executive Board at the UN imposed very stringent verification and validation rules for CER issuance since the offset mechanisms took off.

On the other hand, carbon offsetting is basically a market instrument where business actors are lured into the arena for profit making opportunities only, either in the present stage or in the foreseeable future. If most of the business actors see their efforts or investment in CDM would not pay off, due to high transaction costs or an uncertain future, they would quit and the market would collapse, as we see what has happened in the CDM market today. Hence there is a notable trade-off between quality and efficiency, and most of the critical argument and debate around the CDM today is essentially about how and where to strike a balance between the two extremes.

The last subset of research question asks how the interactions of business actors affect this trade off. The massive number of Chinese projects may suggest that China's political economy in the carbon market is pushing the whole governance system towards efficiency end instead of the quality end. Yet such an assumption would only be grounded by strong empirical evidence of what is the real nature of those dubious credits and what is process of producing and approving these credits at the national and local level.

Another benchmark to evaluate the performance of CDM is its sustainability contribution, which also received tremendous academic and public criticisms since the inception of the mechanism (Böhm and Dabhi

2010; Olsen, 2007). The fundamental problem is that CDM itself does not generate any tangible products or services to society apart from the credits being used as offsets. Hence if projects produce negative social, environmental and economic impacts on the host countries they should be avoided. The paradox lies in the fact that any CDM activity has to be attached to an industrial activity, such as power generation or cement production, which would inevitably produce both valuable products or services, and social and environmental impacts to the host localities. The evaluations of CDM's sustainable development (SD) contribution are essentially assessing the social and environmental impacts of these industrial activities. That is where national and local political economy enters. Previous studies revealed that the Chinese government's SD check is carried out in a rather *laissez faire* manner with only a broad description of priority CDM sectors (Newell, 2009). The questions of this research are then asking why it is the case and to what extent do power interactions between business and government shape the evaluation process of SD contribution of CDM projects, and which ultimately impact on who benefits from the project activities.

At the time of writing this thesis, the CDM market with the CER price hit record low level of below 1 Euro. Noting there are many uncertainties, hesitations and discouraging prospects, I argue that the empirical

evidence of how CDM is governed by business actors also sheds some light on the future evolution, improvement or restructuring of global carbon offset mechanisms in the post-2012 era. Yet the results of this research concern not just the CDM as they are also critically relevant to future successive or replacement instruments in global climate governance. For example, the lessons learned in Chinese CDM projects can help to improve the governance design of forest carbon offset mechanisms such as REDD (Lederer, 2011) or carbon capture and storage projects (CCS) in developing countries (de Coninck, 2008).

1.3. Structure of the Thesis

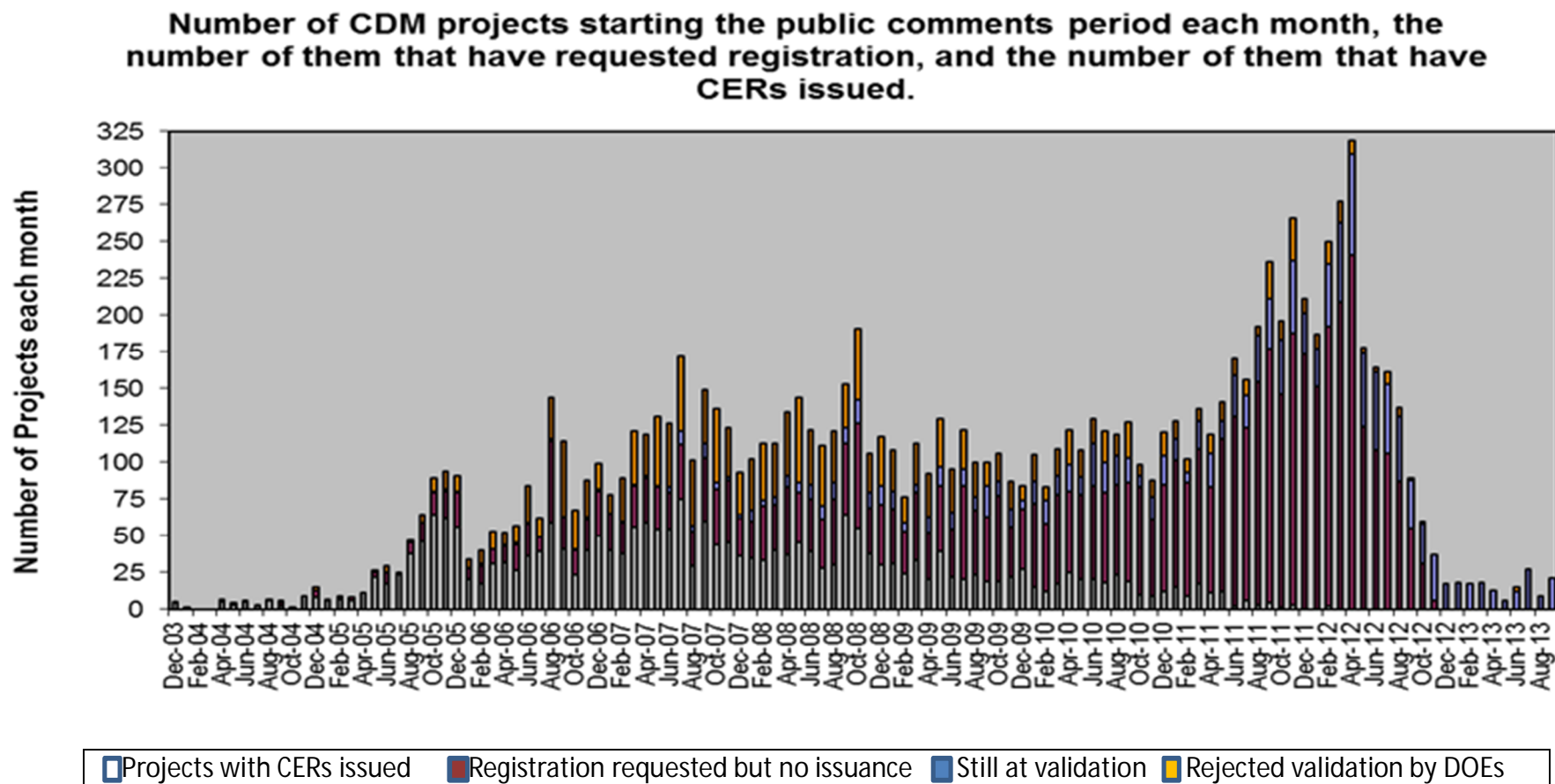
In order to develop further the research questions and eventually present the empirical results, the rest of the thesis is structured in 7 chapters. The literature review is carried out in Chapter 2, which focuses broadly on two set of previous studies. At the outset is literature concerning the main themes around CDM and its governance, particularly its ethical roots, manifests inefficiencies, and possibilities for improvement or reform. The second part of the literature review looks at the political economy of China, particularly in the area of environmental governance. The review aims to provide a link between a highly contested international mechanism and China's unique political context. It also offers strong justification for a business centered analytical orientation due to the gaps

or limitations revealed in previous research. In Chapter 3, an analytical framework is designed to apply neo-pluralism perspectives and concepts as the main theoretical tools to investigate the role and influence of business actors in China's CDM market. Based on the research questions and analytical framework, the research methodologies, data collection and analytical techniques are discussed in Chapter 4.

The empirical part of the thesis starts with Chapter 5, which mainly examines the role of business actors at the national level governance of carbon offset activities. The intrinsic but subtle relationship between state regulations and market activities at the various stages of CDM market are the focus of the analysis. Chapter 6 shifts the analytical focus to the local or municipal level where the projects are actually set up. The relationship between local dynamics and trans-municipal business such as national state owned business champions are at the centre of the discussion since such power relations and their impacts are relatively neglected in previous studies in the CDM context. As the last empirical chapter, Chapter 7 looks at the inter-business conflicts that are constraining business companies. It reveals how various forms of leverage and strategies among business actors collide and how this process changes their overall impacts on the CDM governance at both local and national levels. Chapter 8 presents a summary of the key findings, their policy,

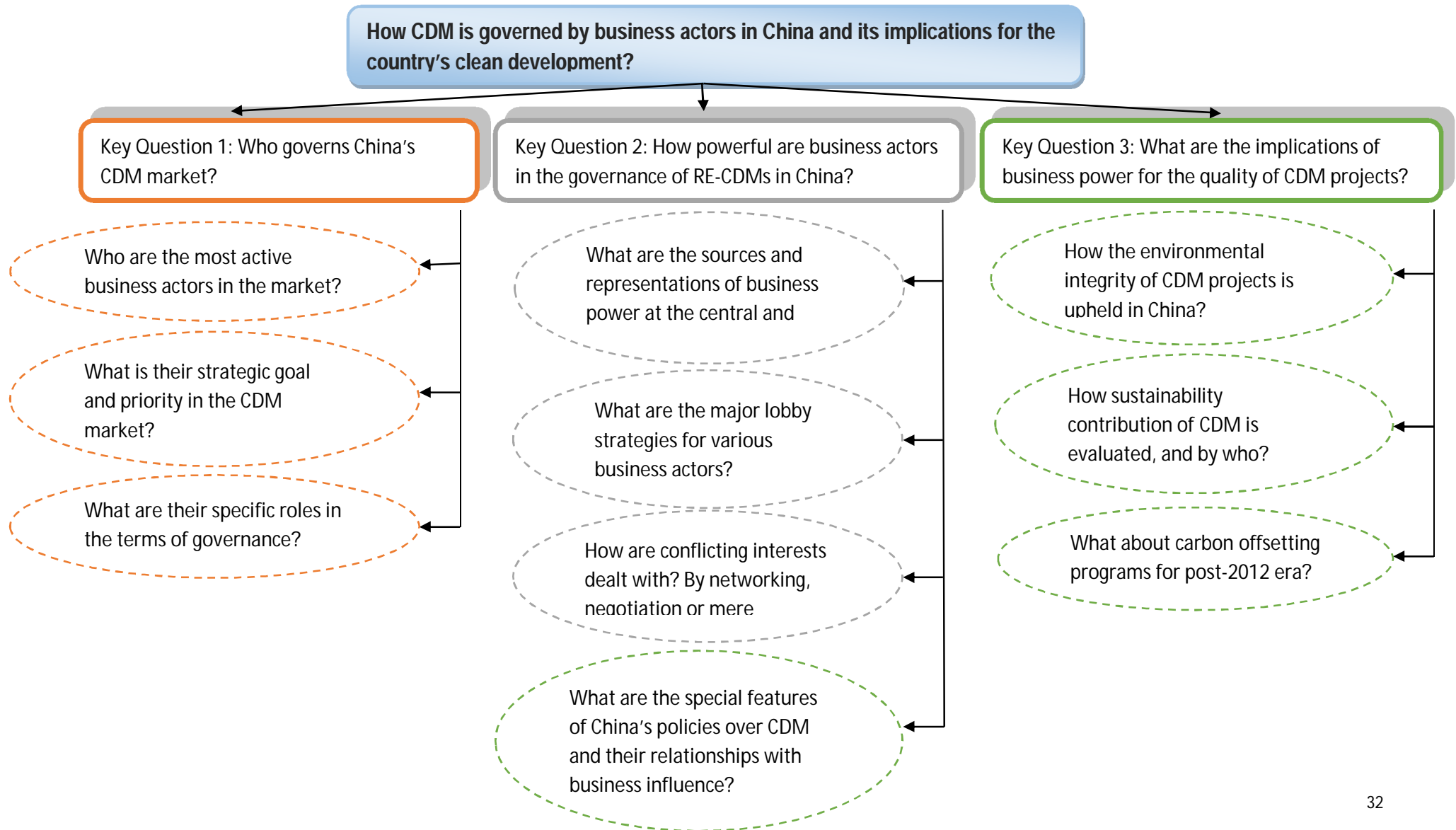
theoretical and practical implications, limitations, and the directions for future research.

Figure 1.1 Number of CDM projects by months



(Source: UNEP Risoe 2013)

Figure 1. 4: Research Question



2. Literature review

This chapter provides a summary of related literature regarding to the main themes of this research. At the outset, I look at China's political economy in general since the reform era. It is only an outline review with the focus on public-market relationships, because a comprehensive version of the evolution of China's domestic politics and policy process would take a book in itself. This part of the review is based on the assumption that any market or market system in transitional states is politically, historically, socially and culturally embedded (Breslin, 2007). Therefore in order to understand how any given market is governed, such as the CDM market, one has to investigate these contextual and structural factors that are constructed to serve specific purposes such as generating and trading carbon credits in the market place.

The second category of the literature is more specifically related to China's policy process on environment and climate change arenas in particular. The review of this literature intends to reveal the resemblance or differences of China's environmental or climate politics to its broader political practice and tradition. It also helps to illustrate in what specific policy context the CDM market is embedded. The third part of the literature review considers the studies that are directly related to the CDM and its governance, with a focus on its ethical roots, manifest

inefficiencies, and possibilities for improvement or reform. The aim is to investigate the background knowledge and current debate around CDM governance. As explained in Chapter one, the ultimate goal of this research is to provide some empirical insights on whether this flexible mechanism is environmentally and economically effective and what are the causes for its dubious performance in China.

In general, the literature review will present two traditionally parallel tracks of research that may help to lay the foundation for this study. On the one side is the analysis of Chinese (environmental) polity and its notoriously complicated relationship between the Chinese regulators and the business community since the economic reforms began. On the other side, however, are the studies of CDM or carbon offset as part of international schemes or global efforts to combat climate change. My assumption is that CDM has dual identity as both an international mechanism with a trans-national climate objective, and a significant part of the domestic reality that is subject to the national interests, either political or economic. Therefore, both strands of literature are important to gain insights on how CDM markets actually evolved along with China's fast changing economy and politics since the last decade. The aim of the literature review is to establish a link between the international academic critics of CDM and the reality of China's political economy, governance tradition and policy process particularly in the environmental

domain. It is believed that once such links are established, it would be easier to find out whether academic critics and policy suggestions around CDM are actually making sense and why.

2.1. Studies of China's state-market relationships in the reform era

The economic reforms that began in 1978 generated profound impacts on the relationships between the ruling communist party (CCP), states and markets. During the transition from a centrally planned economy to a market oriented hybrid economy, the autonomy of market actors has expanded tremendously (Kennedy, 2005). However, it is generally agreed among scholars of Chinese political economy that the relationship between the state and economy is blurred, and strong elements of state control and intervention remain in place (Breslin, 2007, Wank, 1998). There is a number of the studies that illustrate the retaining control of state institutions and their influence over policy making and implementation via bureaucratic activities such as license management and project approval to fine-tune the economic development in their favorable directions (Duckett, 1998). In addition, researchers have also revealed other factors that add to the complex picture. For example, on the one hand, much of the non-state sector in China originates from the party elite, either direct relatives or close friends of senior party-state

officers (Dickson, 2003). On the other hand, private business leaders are found trying to secure CCP membership or affiliate their business activities to a state-controlled organization, known as the ‘red hat’ strategy, in order to gain a political advantage over their competitors (Chen, 2007). These complicated features lead to claims that in reality it is all but impossible and pointless to distinguish between public and private spheres in China (Wank, 1998), as much of what is theoretically considered ‘non-state’ and ‘state’ is so closely connected and interweaved.

Therefore, the idea is well accepted among scholars of contemporary China that the country’s state-market boundary is particularly hazy, and the power of the business community and their level of involvement in the policy process remains a highly contested argument because there is strong evidence that the non-state actors are spawned by the party-state sector (Breslin, 2007; Wank, 1998). In the following paragraphs, I divide the studies of Chinese contemporary political economy into three sub-categories. Firstly, I focus on the studies regarding central-local relationships as major political change during the reform era. I argue that contemporary central-local relationship is the key to understand various connections and controlling mechanisms over business elites at different political purviews. Secondly, I look at the studies that focus on economic factors that affect business actors’ political strategy such as their

ownership, company size, market share and technology capability. In the third part, I emphasize studies that intend to identify the distinctive patterns or features of state-market annexes in China. In other words, by breaking down both 'state' and 'market' as monolithic groups to find out their symbiotic interactions, I intend to highlight how these theoretically rival actor groups became connected and allied.

2.1.1. Central-local relationship: a fragmented authoritarianism

There is a considerable large literature on the relationship between central and local authorities in China, and most of these studies agree that along with the shift from a centrally planned economy to a more market oriented economy, the authoritarianism in Beijing is waning and local governments' autonomy is gaining prominence (Breslin, 2007; Chung, 1995; Oi, 1995). Among these studies Breslin's (2007) argument is most straight forward, that local authorities at different levels in China are powerful enough to decide whether to adhere to central regulation or not, hence if China is truly shifting from a centrally controlled economy to a market regulated one, it is only a partial capitalist system that is voluntarily participated in by the local states.

However, since it is also obvious that different localities would have different levels of authority (Goodman, 1997) many studies set out to

answer the question of what makes some localities more or less powerful, compared to others (Cheung et al, 1997; Hendrichke and Feng, 1999). No consensus has been reached but factors like cultural identities, local leadership, and roles in the national economy are attributed as relevant to the different degree of autonomy at local levels. Although the process of decentralization is not the focus of this research, these earlier studies illustrate the necessity to look at what happens at the sub-state level of the carbon market by taking into consideration the internal processes and dynamics within the localities.

As for the relationship between the local states and the market, two important insights are found in previous studies. One is that given the growing autonomy, governments are found to deploy innovative and proactive policies to generate income and encourage development (Bernstein and Lu, 2003). In this regard, most of the reforms in China are essentially carried out in the bottom-up fashion. One typical example is the flagship reform program in rural areas, the household contract responsibility system, which was formally adopted in the agriculture sector in 1981 and later extended to other economic sectors. Yet, this system was actually invented by a group of poor farmers in Anhui province in 1978, who signed the contracts with village leaders in secret and they were willing to risk being labeled and even prosecuted as anti-revolutionary capitalists or landlords. They were lucky because the then

province leader in Anhui, Wan Li, was a reformist in the party, who eventually recommended this innovative mechanism to Deng Xiaoping and got it formally adopted and promoted. Throughout the history of China's economic reform such bottom up innovations can be found in many key sectors of the economy and are well documented by both Chinese and Western researchers (Chen et al, 1992; Rawski, 1995).

The other important insight is the notion of the so called local state corporatism or rampant patronage relationship at various localities (Oi, 1995; Wank, 1998). On the one hand, the local state maintains firm control over local business activities by controlling their financial resources such as tax revenue, fees, license, and investment plan (Breslin, 2008; Kennedy, 2005), as well as political resources such as the local judicial system (Xie, 1999). Harassment, interference, and consequently corruption are rampant as business elites usually have to seek protection from individual political officers to stay in business. On the other hand, however, local states act as a protector or promoter of local business in competing with other localities or securing favorable treatment from higher officialdom. Oi (1995) pointed out that local political leaders are in effect acting like CEOs of the business who zealously promote business activities as a major drive of economic development. This situation became obvious after the taxation reform in 1994, when fiscal revenue from local business income tax became arguably the only major

revenue source for most of the local governments (Tsui and Wang, 2004). In addition, for a relentless pro-development nation, thriving business sector and high GDP growth is the single most important benchmark to evaluate the performance of the local leaders (Li and Zhou, 2005). Hence for the sake of money and careers, local leaders often do not hesitate to provide all kinds of support to keep their enterprises in good shape. In the same vein, local leaders are found to deter outside competitors fiercely and protectionism has become the major features of Chinese sub-state political economy (Huang, 2002; Young, 2000). The result is a less integrated national economy with limited internal trade as most local companies prefer to trade with overseas partners rather than their neighbors (Sasuga, 2004).

The relentless support from the local state officers for their patronage of business is believed by some researchers to be the engine of China's miraculous economic growth (Oi, 1999). But it has obvious drawbacks too, one of them is a lack of coordination at the macro-level since local leaders can choose to ignore the national goals and interests if they are in conflict with their own (Tsai, 2004). Protectionism at the local level also encourages widespread duplication of successful ventures in neighboring localities and consequently leads to overcapacity and weakening competitiveness in the given sector (Yu, 2004). Consequently, some Chinese researchers refer to this 'local control and protect' model as the

old feudal or dukedom economy (Shen and Dai, 1990; Xie, 1999).

These insights on China's local political economy provide an important analytical reference to this research. For example, although the patron-client ties appear to be hierarchical, beneath it are the needs of exchange of resources that are held by the opposite party. It helps to understand the reaction of local states to the call from the central government to promote CDM activities. There are a handful of studies that tackled the local politics in the CDM market and illustrated the local appetite to develop hybrid institutions with market actors (Qi et al, 2008; Schroeder, 2009). But these studies have not yet captured the tradition and culture of China's transitional local politics and integrate these factors into their analysis. Therefore they have not yet answered the key questions such as why hybrid institutions are more welcomed than other institutional arrangements in China's carbon market, or why certain project types such as RE-CDMs are more popular, or why local states are not very keen to uphold environmental or sustainability principles of CDM projects even though these projects are to be built on their doorsteps.

Another gap that that can be noted among the existing CDM literature is that most of the studies fail to capture the important fact that the growth of local autonomy is by no means a linear process. On the contrary, according to MIT Professor Yasheng Huang (1996, 2008), local

autonomy experienced ups and downs throughout the years of struggle with both central government and the often trans-locality market actors. Huang (2008) also pointed out that there were many times during the reform when central government tried to re-capture or retain some parts of local authority. Meanwhile, local business actors may grow so fast that they are no longer satisfied with their 'offspring' statues. In this research, all these dynamics have been carefully examined via the analysis of the local development of CDM markets. Hopefully such analysis would contribute to the existing understanding of China's local political economy.

2.1.2. From dependents to allies

Then how about the power of business in China? Are companies just treated as a subordinated class to the state sector? At least on the surface, the patronage relationship observed in the Chinese state-business relationship seems to suggest that the ongoing market reforms have not yet significantly increased the power of business actors in terms of their capabilities to affect national policy (Wank, 1998). Zweig (1999, p67) argues that business in China is no more than 'barnacles on a ship' and their life substance, such as credits, market opportunities or favorable regulatory environment, depend heavily on the officialdom that they were spun off. Other studies echo with such arguments by going further to

explore the role of the ruling CCP in the transitional economy. Breslin (2007) insists that the party resists any substantial challenge to its dominant position in Chinese polity. Zhang (2003) believes that the newly emerged social groups or agencies, including business actors, are largely the new representatives of state interests, and the level of their independence or autonomy is given and controlled by the party-state. In other words, it is a result of intentional incorporation from above (Howell, 1998; Solinger, 1992) and hence there is no real independence of anyone from the private sector, since the state has the capability to reverse the trend when they see fit (Breslin, 2007).

Another group of studies echoes this view by studying business associations in China. Foster (2001, 2002) asserted in his empirical study of local industry associations in China that these institutions are merely extensions of bureaucratic systems and state authority. Wank (1998) and Bruun (1996) argue that trans-sectoral associations that are directly appointed and sponsored by the state are often found squeezing or shutting down spontaneous grass-root industry associations, often at the local level. In general, these studies explain why business associations fail to undertake their roles as a platform for organized business lobbying as they normally do in developed countries, and probably more importantly, why most business actors prefer to rely on direct and personalized networks or relationships with the state officers (or the

‘guanxi’ relationships) in the Chinese business society (Gold et al, 2002). This strong relationship is so endemic and symbiotic that some believe the economic reforms in the last thirty years are not driving the society towards pluralism (Meisner, 1996) but on the contrary, it creates a single blended class of ‘entrepreneur bureaucrats’ in China.

Alternative opinions, however, argue that it would be simplistic to treat business community as the mere dependents of the party-state. An important work on business power in China is Kennedy’s study on business lobbying activities in three different economic sectors, namely steel, electronic goods and the software industry (Kennedy, 2005). His main finding is that business actors in different markets deploy a wide range of strategies and techniques to influence the policy making process. Factors such as ownership, company size or market share plays an important role in the success rate of their influence in the polity (Kennedy, 2005). Another important insight is that big companies no longer wish to be the passive receivers of policies that are closely related to their business interests, to them ‘public policy *is* business’ (Kennedy, 2005 *pp.176*).

The contrasting arguments of business power in the contemporary China prove one thing, that it would be at least simplistic to assume that the state-market relationship in China has a fixed pattern across various

economic sectors. Any attempt to describe China's current state-private relationship with a fixed pattern or model would be futile. In some markets or some localities, businesses do operate like 'barnacles on the ship', but in other sectors business actors are gaining prominence in policy making process, such that their identity has been largely changed from mere dependents to meaningful allies or partners with the state. It would be interesting to investigate the position of business actors in the CDM markets in between this spectrum.

2.1.3. Distinctive features of the Chinese state-market relationship

If there is no fixed pattern that can be applied to describe the contemporary state-market relationship in China, how can we analyze the influence of business actors in any given sector? Previous studies provide several excellent clues on how to navigate through complex relationship map and grasp some the distinctive features of the political and economic dynamics.

2.1.3.1. Transparency and direct interactions

One important feature of the Chinese market is a lack of transparency, which means every market has insiders who can use social capital or *guanxi* to secure important knowledge and information as a key source of power (Breslin, 2007). Although some critics argue that it is not the

authorities' intention to retain an opaque system, it is rather obvious that the lack of transparency has been constantly exploited by officers, particularly at the introduction phase of new market or projects. Breslin (2007) points out that new regulation that overlaps with the existing regulations is often the main source of confusion and bureaucratic battles, though they are not intentional consequences. In this regard too much regulation is even worse than too little regulation.

Transparency issues are linked with state-market analysis because, as many believe, the heavy reliance on personal connections with the officers is the main cause of the lack of transparency and even corruption in the public policy domain (Su and Littlefield, 2001). However, it is also believed that the reliance on personal contacts and direct interactions between business leaders and state officers is not a new product of economic reform but a legacy of Maoist planned economy, since at that time both parties had to negotiate over the details of the production plan almost on a daily basis (Kennedy, 2005). This tradition of direct contacts with the officers remained strong during the reform era as an efficient way of communication over case specific issues. However, despite its vulnerability to rent seeking and corruption, my argument is that it is crucial to understand the accumulative effect of these interactions on policy making, change and implementation processes, same thing which is carried out in this research.

2.1.3.2. Capturing the transformation and dynamics

The previous studies also illustrate two important insights. The first is that no relationship is static and the basis of state or private power is always transforming (Hong, 2004). Within the Chinese economy, private companies, state-controlled companies and foreign businesses have all gone through tremendous changes in the last decade or so. Within the public sector, new institutions and regulations emerge almost on a daily basis. Yasheng Huang's excellent studies (Huang, 1996, 2002, 2008) on some major transformations in the key economic sectors such as finance and infrastructure during the reforms provide a strong case of the necessity and value to present longitudinal analysis in a given sector, rather than only snapshots of the reality.

Related to the first insight, is recognition of the non-linear nature of the dynamics in China's political economy. The literature reviewed in the above sections presents no convincing evidence that there is a smooth trend from a 'command-and-control' system to a more 'market oriented' one, hence contradictory conclusions arise regarding the nature of the Chinese political economy. As Breslin (2007) argues if we really want to believe that along with the state elites there are new economic elites, and they have become an effective alliance to mutually reinforce each other's power and fortunes in contemporary China, we have to question

not only what businesses have as their power basis, but also what the state actually lacks. But more importantly, I argue that we need to know the exact resource exchange mechanism between the state and market actors, which may vary significantly from one sector to another, as well as from one locality to another.

2.2. Environmental governance and politics in China

The purpose of reviewing studies on China's environmental politics is twofold. I wish to know the extent to which the environmental domain resembles the overall context of China's political economy. In addition, I want to know in what way they differ. Since political dynamics in the climate change area are largely apart from other environmental issues such as pollution control or loss of bio-diversity, special attention has been given to those studies focused on China's climate policy in recent years. It is obviously unrealistic to document a full intellectual history of China's environmental politics therefore the thematic focus is again directed to the role of state actors and civil society in the environmental realm. I also pay close attention to the research on China's international involvement in and cooperation on environmental issues, which appears to me the greatest difference between environmental problems and other domestic issues.

2.2.1. State and civil society in environmental problems

Wu (2009) pointed out in her review of environmental politics studies in China that few studies had been done before China's economic reforms regarding China's environmental management because the access to mainland China was difficult. Fieldwork, personal interviews and even survey research methods came into use only after the mid-1980s. Therefore, most of the studies that intend to reveal China's pre-reform environmental status are based on secondary data and narrated in a retrospective manner. Among these pilot studies, Judith Shapiro's work presents the devastating impact of Chinese politics on China's environment during the Mao years. Under Mao, the traditional Chinese ideal of 'harmony between heaven and humans' was abrogated in favor of insistence belief of 'People Will Conquer Nature'. Shapiro's strong argument is that the abuse of people and the abuse of nature are often linked (Shapiro, 2001). Peter Ho (2003) however, by using the first-grain campaign as example, argues that the negative effect of Mao's policy may be exaggerated and the environmental degradation is the result of comprehensive social factors rather than the sole victim of irrational policies.

No matter what caused the environmental degradation in China's revolutionary period, it is generally agreed that the situation continued to

worsen after the economic reform started. Elizabeth Economy's famous book, *The River Runs Black*, provides both rich narratives and comprehensive theories of the political causes of the environmental degradation in China (Economy, 2004). Other scholars such as Lester Ross also started to focus on the role of the state, whose work aims to provide comprehensive understandings of China's governance structure, regulatory setting, key agencies, policy process, and law enforcement in environmental areas (Ross 1987, 1992, and 1998). Ross and other critics' findings, to sum up, are that environmental governance resembles the overall Chinese governance system in terms of its 'fragmented authoritarianism' (Jahiel, 1998; Lieberthal, 1997; Mertha, 2009), as analyzed in preceding paragraphs. However, the level of fragmentation is particularly high because most of the environmental issues are trans-sectoral and therefore trans-institutional in terms of its regulation and governance (Wu, 2009).

This high degree of fragmentation is believed to be the main reason for poor coordination, low capacity, and slack rule enforcement in the environmental areas (Harkness, 1998; Lema and Ruby, 2007). Wu (2009) also argues that the environmental regulators, as the newly emergent institution, have raised bureaucratic friction with the existing regulators. This argument echoes with Breslin's findings that new rules and regulations are often the source of incoherence and conflicts (Breslin,

2007). Another general finding is that environmental issues are often subdued with local leaders' strong pro-development commitment in the past 30 years (Economy, 2006; Jahiel, 1997), which also leads to a weaker position of environmental protection units in the officialdom.

Another trend of studies departed from the state-centric approach to look at emerging environmental NGOs and social movements. Wu (2009) pointed out that the environmental sector is the forerunner and most fully developed area in terms of the rapid emergence of NGOs and suchlike associations. A large amount of studies have thus been carried out to understand their origins, roles, and even future prospects in China (Ho, 2001; Schwartz, 2004; Yang, 2005). Although few would dispute that the NGO community is growing fast in China, many critics are dubious of their autonomy and effectiveness as watchdogs of environmental problems. Peter Ho (2001), for example, is suspicious that NGOs in China would bring out fundamental transformations and argues that all these organizations can do is to adapt but rather oppose to the Chinese political reality (Ho and Edmonds, 2007).

On the other hand, there are more optimistic opinions. Researchers believe that using un-confrontational strategies is not only wise but also effective in terms of persuading local authorities to change attitudes and take action (Mol and Carter, 2006; Saich, 2000; Yang, 2005). The

disagreement echoes with the debate about the rise of business power in the previous sections. In this regard, studies of environmental NGOs and social activism provide another window to reflect the non-state actors' role in environmental governance.

2.2.2. International cooperation and environmental diplomacy

One of the distinctive features of China's environmental politics is the close links between domestic environmental problems and international cooperation and diplomacy. Liu and Diamond (2005) believe that given China's size of population, territory and natural resources its domestic environmental issues can be a severe challenge to the world. In addition, along with the China's economic miracle is its increasing influence in the global affairs, particularly with the developing world under the name of the G77. Therefore, academic focus has been given to both China's cooperation with foreign entities to address its own environmental problems, and its involvement, attitude and role in international environmental regimes (Carter and Mol, 2006; Chan and Lee, 2008).

As for international cooperation, researchers find that due to the lack of experience and technology in dealing with environmental issues, the Chinese government has been quite open for innovative governance devices and policies (Harris, 2002; Zhang and Wen, 2008). Many joint

projects and institutions were established (Wu, 2003) and international norms are introduced in regulating issues like biotechnology (Keeley, 2006). There are many studies that document the international efforts to reform China's environmental sector (Hyun and Schreurs, 2007; Morten, 2005)

As for China's participation in international environmental regimes, it is noted that entering these treaties has pushed China to induce domestic policy and regulations to meet international standards (Falkner, 2006; Newell, 2003). Yu (2008) also pointed out that due to the fact that the environmental protection ministry is a relatively weak institution in the domestic political system, environmental officers often use China's participation in international treaties as the justification to push for new domestic regulations or bureaucratic coordination in related areas.

2.2.3. Climate politics in China: from outside-in

Previous studies of Chinese climate change policies and politics reveal that there are many identical features between climate governance and environmental governance in China. Firstly, fragmentation is also inevitable in climate change domain as GHG mitigation or adaptation policies would include almost all the key economic sectors in the country. Heggelund (2007) points out that bureaucratic coordination and conflict is an important issue in China since many key ministry level institutions,

such as NDRC, China Meteorological Administration (CMA), Ministry of Foreign Affairs (MFA) and Ministry of Science and Technology (MOST), all want a role in the decision making process. Behind these formal government entities there are think tanks, consultancies, and academics who are also injecting their efforts into the policy process on a daily basis.

The second similarity is that just like other environmental issues, climate politics have both domestic and international dynamics. Many researchers argue that it is not the warming planet itself but related domestic issues, such as energy consumption, energy security, or the social stability that led to the change of attitudes among government officers throughout the years (Economy, 1996). Co-authored by 16 top climate scientist, Piao *et al* (2010) pointed out, in their paper published in *Nature*, that the impact of recent climate change on China's water resources and agriculture is rather limited but *'one cannot rule out the possibility of strong negative climate change impacts on food production, even though the most optimistic scenario provides a net increase.'* (Piao et al, 2010; pp. 50)

However, comparing the uncertainties and threats of climate change on China, Wiener (2008) argues that the biggest obstacle to persuade China to embark on comprehensive climate change policies is still the worry of its negative effects on national economic development. Therefore,

illustrating the net benefits of serious GHG mitigation effort, such as reducing damage of climate related natural disasters, improving public health, and pressing technology innovation and upgrade are crucial elements to understand in order to induce meaningful policy change in China (Wiener, 2008).

Given that the climate change issues have only been elevated to the political agenda since the mid-2000s, most of the climate related policies are just issued in the last few years and many more are still under discussion and at preparation stage. There are at the moment, very few studies that provide comprehensive analysis of these policies and their outcomes. On the contrary, the academic focus is primarily on China's role in the international climate regime. Specifically, many studies have been carried out to interrogate if China should commit to a quantitative cap on its emissions. Zhang (2000) envisions that some efforts and commitments could be expected from China only when its per capita income catches up with the level of middle-developed countries. It is very unlikely that China would impose a commitment that would severely jeopardize economic development. A decade later, Zhang (2011) again claims that China needs to take on an absolute emission cap around 2030 via several intermediary phases to reduce carbon intensity, try a 'no-lose' target, and binding carbon intensity target as international commitment.

Just prior to the Copenhagen Climate Summit, China pledged to cut its carbon intensity by 40-45% by 2020 to its 2005 level, which sparked off intense debate of whether such target are ambitious or merely ‘business as usual’ (Qiu, 2009). Stern and Jolzo (2010) believe that China needs substantial mitigation efforts to meet its stated target. But Zhang (2011) believes the target is neither ambitious nor ‘business as usual’, to him the most important thing is to ensure the targets are met in a credible way. Wang et al (2011) compares the different responses and contrasting policies from two local provinces, Anhui and Fujian, to the national carbon intensity target. Their study reveals that integrating the national target into local energy, development and sustainability policies can be a daunting task for the local government.

The previous studies indicate an important message. No matter what has been pledged by the Chinese government at the international conferences, it will be sooner or later translated into the local level, and hence China’s climate policy outcomes are highly subject to the Chinese local political economy as explained in the previous sections of this review. At least at the surface, China’s climate politics followed a trickling down of international-national-local process and it is an on-going process with a lot of uncertainties and struggles (Heggelund, 2007; Newell, 2008). Therefore, any attempt to analyze the performance of climate policies in China should adopt a bottom up approach to fully capture this process of

‘crossing the river by feeling the stones’.

2.3. Studies of CDM: growing out of the criticism

The inception of CDM sparked off extensive discussion among academic, policy, business and public communities. The mechanism is arguably the most critically acclaimed and debated policy instrument under the KP during the last few years and consequently there is a substantial body of work around almost every aspect of CDM. Yet the popularity of CDM and the flourishing of research is by no means a surprise, since the mechanism itself presents a number of theoretical, technical and empirical paradoxes or puzzles that attract attention of scholars’ from various disciplinary backgrounds. The presentation and debates of these paradoxes and puzzles, as well as their relevance to this research will be documented in this section.

This section begins with a brief review of the controversial nature of carbon offsetting, since the ethical justification of the idea of ‘putting a price on nature’ remains questionable to many critics (Daily *et al*, 2000). CDM in particular, as the newly internationalized market instrument to tackle climate change, has been interrogated for its moral grounds of purchasing low-cost offset credits (from the poor countries) to compensate for a high-consumption lifestyle in the West (Bohm and Dabhi, 2010; Smith, 2007). It is not my intention to join the debate of

ethical justification of the CDM since it is simply beyond the scope of this study. Yet I wish to lay out these fundamental arguments about carbon offsetting to raise an important question, which is why a highly contentious mechanism or idea can be accepted and promoted without any (open) challenge from the Chinese academic, policy making, business circles, and the general public.

The second part of the review focuses on the various problems of CDM presented in the previous research. Issues like capacity building or institutional arrangements, additionality or environmental integrity, sustainability contribution to the host countries, and technology transfer embroiled in the projects, are at the center of this review. There is a wealth of single case studies that focus on a given country or economic sector, but together they present a general trend towards questioning some fundamental elements of the CDM's performance both in terms of its integrity and its effectiveness for global GHG emission mitigation efforts. Given the large body of literature in these areas I focus mainly on the case studies related to China and the renewable energy sector, which is directly relevant to this research. I also look at those studies that intend to provide solutions to address these inefficiencies of the CDM, in the hope that the review can help to understand the possible outcome if these theoretical suggestions would be applied to China.

2.3.1. Carbon offset: a divided ethical ground

It is now generally accepted that most of the environmental problems that we face today are induced by the externalities of the market activities, or a market failure. The British economist Arthur Pigou (1932) is the first scholar to advocate government intervention to fix this problem by introducing a corrective tax (Pigovian tax) on the producers of negative externalities. Pigou's idea remained as the mainstream solution until an American economist R. Coase published his revolutionary paper 'the Problems of Social Cost' in 1960, which is written largely to challenge Pigou's tradition of government intervention on economic externalities. In his paper Coase (1994) argues that given the clearly defined property rights and minimized transaction cost, the externalities can be 'internalized' by negotiations and bargains among the pollution producers themselves without any government intervention. Inspired by Coase, economists like Dales (1968) and Montgomery (1972) formally proposed an emission trading system as a new policy tool to control pollution. Since then, the debate of whether, or in what condition, a corrective tax scheme would be outperformed by a cap and trade mechanism has almost been the eternal challenge for environmental economics and policy studies until today (Keohane, 2009).

Yet in reality, emission trading has later become the preferred method for

environmental governance in some of the most advanced economies such as the US and Europe, from the regulation of acid rain to sulfur dioxide (SO₂) emissions, and then the world's largest emissions market, the European Union's Emission Trading Scheme (EU ETS) for carbon dioxide (CO₂). Emission trading, once called 'grand policy experiment' by Stavins (1997), shows no sign of slowing down its pace by stepping into just another source of pollution and realm of governance. The explanations of the salience of emission trading, however, are often more political than economic. Buchanan and Tullock (1975) reveals that business actors would prefer quantity-based market instruments (cap and trade) to a price-based carbon tax, because the former policy creates a new entry barrier for the newcomers, who have to buy the pollution permits from the market.

Schneider and Volkert (1999) follow this public choice approach to further argue that since it is very difficult for the beneficiaries of environmental tax to organize a collective expression of their interests and voices, their political influence is considerably low. Policy makers would prefer a quantity based instrument if the policy making process is highly subjective to the leverage of interests groups. In addition, many scholars believe that the ideological shift to neo-liberalism since the 1980s in the major Western countries, paved the way for a full-fledged embrace of permit trading instruments in accordance with the idea of

‘nature-as-commodity’ and efficiency oriented policy making mentality (Byrne and Yun 1999; Levy and Newell, 2005; Newell and Paterson, 2010)

2.3.1.1. Carbon offset as a fundamentally un-ethical approach

Set aside the struggle for policy championship between a carbon tax and offset instrument from the welfare economics perspectives, the skeptical voices of carbon offset’s moral ground never dissipate in the academic and public communities. The debate of ethics is regarded by many as dauntingly absent in the orthodox economics of environmental policy (Spash, 2010). However, it should be noted that there are various logics and arguments that lead to a moral objection to using market approach in dealing with environmental problems. Lovell (2008) pointed out that pricing nature is believed to degrade the existing non-monetary value of the environment and turns the intrinsic value of the environment into an instrumental value. In such cases, moral values such as duty to others and care for the planet, are seen to be subsumed and disregarded, because the companies are allowed to pollute in ‘business as usual’ ways by buying carbon credits from other resources (Bohm and Dabhi, 2010). The idiom of ‘the polluter pays’ has been changed into, with the creation of market instrument such as a carbon market, the polluter pays someone else to pollute less (Newell, 2011).

Another argument of moral objection is that market instruments have a negative psychological impact as they are at least diverting, if not completely counteracting, the efforts to make painful structural economic and industrial changes that are urgently needed to prevent irreversible climate change (Spash, 2010). Spash (2010) also argues that the expansion of carbon offset is particularly worrying in terms of fairness and equity, when taking into the consideration the ‘historical responsibility’ of the polluters (mainly industrial countries), when the average duration of some GHGs in the atmosphere is between 200 and 300 years. Some critics argue, rather in a sarcastic manner, that if the polluters sincerely ‘want other people to clean it up for them’, their historical emissions in the past 200 years should also be capped and traded equally with their present and future emission (Lohmann 2008; Smith 2007).

Lovell (2010) pointed out that the above critics essentially deny the role of the carbon market since commodifying carbon is viewed as fundamentally immoral and unjust. According to this neo-colonist perspective, carbon offset is morally unacceptable as it entices developing countries to clean up the waste produced by the developed countries in the North, therefore these instruments should be removed completely from the policy agenda (Lohmann 2008; Smith 2007).

2.3.1.2. Mild critics on ethical issues

Alternatively, other critics believe that basic concept of carbon offset is acceptable, only the design, architecture of specific market mechanisms have serious flaws so that these instruments cannot possibly achieve the environmental and political goal that was initially promised (Bumpus and Liverman, 2008). So there is a set of more practical debates about the effectiveness of markets in mitigating climate change.

At the outset is the worry of speculation (Button, 2008). Although speculation exists, theoretically, for almost all the commodities in the market, speculation on the carbon units is believed to be particularly worrying for two reasons. Firstly, carbon credits are easy targets for speculation due to its 'invisible' nature of its generation process (Mansfield and Boyd, 2007). CDM is therefore another example of a creative accounting project and consequently derivatives transactions based on carbon units will not only be transacted by regulated entities with the aim of minimizing compliance costs and price risk, but also by financial intermediaries looking for quick profit from the new market (Button, 2008). The field study of this research also illustrates that most of the carbon credit buyers in China are intermediaries rather than the end users of CERs. This phenomenon echoes with worries that the boom in trading of carbon credits is no more than another round of 'sub-prime'

bubble that will implode sooner or later (Lohmann, 2008; Mol, 2012; Spash, 2010).

Narain (2010) argues that carbon business must not fall into the trap of cheap or corrupt emission reduction deals with only market value, aiming only to make a quick buck. Yet the question is how? Taking CDM as an example, the ideals of this instrument include assisting Annex-1 countries in complying with their emission reduction commitment (with genuine carbon credits), achieving sustainable development in the South, and helping holding together the fragile coalition of international climate cooperation. Liverman and Boyd (2008) argue that only when all these high-end purposes have been achieved that the adoption of quantity-based market instruments to reduce the political barriers of GHG emission reduction, though a sub-optimal policy option, can be acceptable and should be even welcomed as a meaningful part of efforts to combat climate change. A huge body of literature illustrates that after a decade of experiment with CDM, the result is far from satisfactory, as explained in the following paragraphs.

2.3.2. Problems of the CDM: manifestations and remedies.

The ethical questions about CDM encourage a vast body of literatures on the investigation of CDM projects' on the ground performance in host

countries. Most of the studies are based on extensive field studies in a given country or economic sector, in order to evaluate the qualities of one or a few aspects of the proposed CDM projects. Generally speaking, the problems emerging from these studies include the dubious additionality or environmental integrity of some project types, very limited (if any at all) sustainability contribution to the local areas, and lack of technology transfer involved within the project implementation.

2.3.2.1. Environmental integrity of the CDM

Environmental integrity is the most central concern for any offset program, because if the amount of emission reduction credits is over calculated or simply forged, it would indeed increase the overall emissions once these credits are used to offset emissions made elsewhere, in the case of CDM these are namely the developed countries (Michaelowa, 2005; Paulsson, 2009). In such cases the overall justification of the mechanism would collapse. In the realm of CDM, the most intensively debated integrity issue is undoubtedly the notion of additionality, namely a situation that some projects would occur even in the absence of CDM support.

Schneider (2009) argues that additionality measurement is the most important and difficult prerequisite to maintaining the environmental integrity of the CDM. The flawed quantification of CERs or a leakage

will only put part of the carbon credits in question, but if the project itself is not additional from the beginning, all the CERs produced are then fake credits. It is a 'total-loss' in terms of the environmental integrity and hence should be prevented through all means. But it is by no means an easy task, since there is an inborn paradox, according to Michael Grubb (1999), as the most 'cost-effective' projects may be the least 'additional' and strict project additionality would give perverse policy incentives.

However, many scholars are optimistic and propose ways to define and check additionality of projects (Greiner and Michaelowa, 2003; Shrestha and Timilsina 2002; Sugiyama and Michaelowa, 2001). Notably, most of these ideas are later integrated into the additionality checking procedures at the UN EB, which include barrier analysis, common practice analysis and financial return analysis as the major toolsets to determine the eligibility of CDM projects. Yet, it should be noted that the problem of additionality is not a mere technical issue. The fundamental problem is that the question of whether a project would also be implemented without the CDM is hypothetical: it can never be proved with absolute certainty (Schneider, 2009). In reality, only investors know exactly the profit margin of their projects. After a careful examination of more than 93 CDM projects' project design documents (PDDs), Schneider (2009) identifies a number of serious weaknesses in the way in which additionality is assessed in the CDM practice, which is the cause for a

large number of suspicious projects rushing into the pipeline.

There are number of supportive case studies for Schneider's critics of additionality assessment. For example, the term 'icing on the cake' has been used in many studies (Ellis and Kamel, 2007; McCully, 2008) to describe the rather embarrassing situation that CER revenue is not the reason for undertaking the CDM project in the first place. This means that the underlying project may need to be economically attractive enough even in the absence of the CDM in order to attract sufficient investment capital (Haya, 2007; McCully, 2008). Michaelowa and Purohit (2007) also identify some clearly non-additional projects in the Indian market. Chinese CDM projects received particular criticism in terms of their integrity, Wara and Victor (2008) showed that most of the renewable energy projects in China are seeking CDM credits. Assuming that no or only very few new gas, wind or hydropower plants would be added to the grid without the CDM incentive, which is in reality a highly implausible scenario given the supportive policies that China has adopted during the period. Victor (2008) estimates that between one-third and two-thirds of the CDM projects are not additional. With the same logic, Haya (2007) concludes that the majority of the hydro-power CDM projects in China are not additional, because otherwise the new installed capacity would have dropped in 2007 by 65% compared to the 2006 level in the absence of CDM – a situation that is hard to believe.

The criticism of Chinese CDM projects' integrity reached its peak after the EB rejected 10 Chinese wind farm projects in December 2009, which shocked the market as wind energy had been considered as the safest choice for CDM development (He and Morse, 2010). Both the Chinese government and investors publicly attacked the EB's decision (see Chapter 5 for a detailed review). The controversy presents a vivid example of the technical challenge, as previous studies suggest, particularly taking the local incentive policies into the consideration of additionality assessment. In their detailed report concerning the origin and implications of this controversy to the additionality assessment, He and Morse (2010) argued, that the existing assessment tool turns a deaf ear to the real picture of China's wind energy development, where the investors in the energy sector are not at all market-oriented or profit driven, making the existing "internal rate of return" (IRR)-based additionality test a systematic failure.

From the above debate of CDM's actual additionality it should be noted that to prove a project is non-additional is an equally difficult job because it is also hypothetical to assume that a project would be 'definitely' carried out without CDM support. Therefore what most of the above mentioned studies present are simply educated guesses rather than solid empirical evidence, a gap that this research intends to fill. In addition, it should be noted that additionality is not the only integrity issue of CDM.

Other problems such as improper baseline design and leakage effects would also lead to erroneous calculation of CER and hence affect the mechanism's environmental integrity. Nevertheless, I would like to argue that leakage and baseline problems are largely technical issues, which can be addressed through more carefully designed methodologies or clearly defined project boundaries. Additionality problems are instead deeply rooted in the asymmetric information between the market players and regulators so it is essentially a political issue, in which the power struggles between the market players and regulators (national or international) determine the overall integrity of the mechanism (see Chapter 5 for details).

2.3.2.2. Sustainability contributions of the CDM

There are broadly two key issues around the literature of CDM's contribution to sustainable development in the host countries. Firstly is the academic engagement to analyze and improve the measurement criteria or quantification benchmarks of sustainable development benefits for specific CDM project types. The second trend of academic effort is to understand the political difficulties at various levels to enforce a set of transparent and universal standard governance procedures for checking CDM's sustainable development. Therefore, the lack of SD contribution to the CDM is viewed both a technical and political issue. The research

focus of this study is why SD is neglected in China, therefore the second trend of literature received particularly attention for this review.

The inclusion of SD requirement for CDM originates from the ethical worry mentioned in the preceding paragraphs. Specifically, the designers of the CDM were afraid that some projects, even with potential climate benefits, may not produce positive environmental and social benefits for the host localities (Sutter and Parreno, 2007). However, when it comes to practical and concrete assessment of sustainability impact of the CDM activities there is no single, authoritative and universally accepted method, regardless of the project types and locations (Olsen, 2007). In addition, since the incentives for both Annex-1 and Non-Annex 1 parties to pursue efficient GHG emissions are much stronger than their desire for sustainability (Sutter and Parreno, 2007), the importance of SD benefits are most likely to be neglected, if not completely ignored (Ellis et al. 2007; Pearson 2007).

It should be noted that this ‘trade-off’ argument has already been evidenced by the later development of the market as end-of-the-pipes project types such as HFC-23 (a project type with very little SD benefits) has dominated the market. But small projects with higher SD benefits are not favored by the market due to their low productivity of CERs and high transaction costs (Muller, 2007). Another piece of evidence is that

countries with 'lassie-faire requirements' for SD contributions, such as China, have proved to be much more 'productive', both in terms of number of proposed projects and potential volume of carbon credits, than those host nations with relatively more stringent checking rules for SD benefits (Newell, 2009).

Yet sustainability in the CDM context is not just a technical issue. Politics plays an important role here. During the climate negotiations, governments of developing countries have insisted that SD is so contextualized to the characteristics of each country's specific development strategy so it is a 'sovereign issue' that should not be interfered by any international standards or norms. Consequently, the Marrakech Accords in 2001 concedes that developing countries can set their own standards and procedures to check the SD benefits of CDM activities in their territory. This regulation *de facto* rejects any possibility of imposing a universal guideline or introducing independent parties for SD checks in the official governance structures of CDM. David Victor (2006) points out that developing countries have rightly feared that the developed world's concern about the environment would overshadow their interest in development. CDM and international carbon offsetting is just another manifestation of this fear, as many critics believe that, behind the almost unanimous rejection from the developing nations of an international standard of SD checking for the CDM activities, is the fear

that such standards would essentially impose an interference scheme to the developing world and constraint their rights of development (or to pollute) (Cosby et al, 2005).

Hence, although many developing countries welcome CDM as an additional channel of finance from the developed countries, they normally do not want to be interfered with in relation to how the received funds are to be allocated and used within their political purview, because most of the countries have their own strategic priorities that may vary significantly (See the special issue of *The Journal of Environment Development, December 2009, vol. 18* for a detailed review of different carbon strategies in newly industrializing countries).

In the case of China, many studies are trying to reveal the political intention of the Chinese government to engage in CDM (Qi et al, 2008, Schroeder, 2009). Most of these studies arrive at similar conclusions that the Chinese government is using this newly created mechanism to advance its own SD strategy. For example, it is observed that the political emphasis has been put on the technology transfer rather than the financial benefits, which is believed to be crucial to cultivate a competent domestic green industry (Wang, 2010). For the same reason, many studies reveal the tremendous effort by Chinese government to promote favorable project types such as renewable project activities through a biased CER

taxation mechanism with the combination of other policy instruments such as tax exemption or subsidiaries (Lewis, 2010; Resnier et al, 2007; Schroeder, 2009). In general, China's position is clear that as long as the proposed CDM is in line with the national development priorities then the projects must have positive SD impact (Schroeder, 2009), so basically it does not need to enforce a comprehensive guideline or check list for each project's SD benefits within its domestic governance procedures.

Unfortunately, there remains one important question that the above mentioned studies are yet to answer: has the goal of the Chinese government been met yet? In the first section of this literature review I have explained the central-local dynamics and state-market relationships as the two important sets of relationships that may shape the policy goal and implementation process on the ground in China. However, these relationships and their impact on China's CDM governance have not yet been carefully examined. I argue that without understanding these local dynamics any conclusion regarding the causal links between China's CDM performance and its national policies can be highly contestable.

Mariam Schroeder's book on China's local climate governance is the first of its kind to interrogate the hybrid institutions at local level (Schroeder, 2011). Despite the excellent account of local incentives and processes to establish and maintain local hybrid CDM offices to reap the benefits of

CDM, it has not yet intended to interrogate the impact of these local institutional arrangements to the national policy goals. Nevertheless, she raises the question at the end of the book that if all parties involved in the CDM cycle care only about the economic benefits, who and how can we expect to check the environmental quality of this mechanism? This is one of the questions that this research intends to answer.

2.3.2.3. Technology transfer associated with CDM

The KP and Marrakech Accord do not have an explicit technology transfer (TT) mandate for CDM, yet TT is regarded as an important source of benefits of international offset mechanisms by financing projects using technologies currently not available in the host countries (Haite, 2006). Due to the expanding size of the market, an increasing TT could serve the dual purposes of both reducing the emissions of developing countries and changing their course of development (Schneider et al, 2008).

Haite et al (2006) analyse the technology transfer claims made by project participants in their PDDs and finds that the TT is a loosely defined term in the CDM context, but it mainly refers to the transfer of equipment and knowledge. Their conclusion is that almost one third of the projects claim some level of TT. However, TT contribution varied widely due to project size, project type and host countries' policy.

Another early study on TT in CDM was conducted by De Coninck et al (2007). Their article examined TT in the 63 CDM projects that were registered up until 1 January 2006 and found that nearly 50% of the projects were involved in equipment TT. They also noticed that the knowledge or software transfer can be substantial but uncertainties are rather high.

Dechezleprêtre et al (2009) compares TT in four major CDM destination countries: Brazil, China, India and Mexico. Their analysis reveals that TT can vary from 12% (India) to 68% (Mexico). The research conducted by Seres et al (2009) is based on 3, 296 proposed projects to EB and finds 36% of the projects are involved in TT. Echoing previous studies they find that TT is more common for large projects or projects with foreign investment partners. One significant observation in this research is that as the number of projects increases, TT occurs beyond the individual projects. This is observed for several project types in China and Brazil. For example, for Chinese N₂O and Wind projects it shows a declining trend of TT over time as more projects are developed, which cultivated a fast growing technological capability at home. A dedicated research on wind energy, carried out by Haščič and Johnstone (2011), also indicates that involvement with the CDM may increase domestic absorptive capacity for the new technology in the host country.

In Schneider et al's (2008) comprehensive study of CDM's TT contribution, it is argued that three major issues should be investigated: TT barriers, current technological distribution and TT quality. Based on qualitative interviews, their conclusion is rather promising because the creation of CDM increases the *commercial viability* of low-carbon and decreases the information and capital barriers for TT. But they also pointed out that CDM does not automatically improve the institutional framework for TT so local government needs to complement the CDM by fostering host-country-specific improvements in investment conditions for key technologies and not to rely solely on CDM.

Wang (2010) conducts a detailed study on how the TT performance of Chinese CDM projects with the conclusion that the incompatibility of procedures with Chinese domestic procedures, technology diffusion (TD) effects, and the role of carbon traders and CDM consultants all contribute to the different degrees and forms of TT. However, the proportion of CDM revenue to the projects' overall income plays a vital role for the Chinese project owners to deploy foreign (often more expensive) technology options. Doukas et al (2009) provides an exploratory analysis of five renewable energy options, namely Hydro, Wind, Solar, Geothermal and Ocean energy, in terms of their status in the developed world and their potential for deployment in the developing world under the umbrella of a programmatic CDM.

In general, the literature on CDM's TT benefits to the host countries provides a rather complicated picture as the magnitude of TT varies geographically and sectorally at different stages of market development. Capital intensive or large projects that involve equipment trade are the major contributor of TT in CDM compared to small sized projects. Popular project types may encourage technology diffusion and consequently decrease TT, when more projects from the same region are rushing into the project pipeline. The trade-off between the 'market expansion' and 'level of TT' is examined in detail in the analytical chapters, and I argue that understanding the perspectives of business actors can provide complementary insights to the present knowledge of TT in CDM, since most of these analyses are largely 'state-centered', which often focus on the government institutions' effort in promoting TT

2.3.3. The future of CDM

In section two I review the current critics of the performance of CDM. The focus of the review has been given to the empirical knowledge and findings around issues of CDM's sustainability benefits, environmental integrity and TT contribution to the host countries. The mounting evidence that is gathered in these studies indicates that CDM is not performing as it was once promised. The early assumption of easily achieved win-win solutions for everybody is at least dubious after a

decade of practices. It should be noted that besides these fundamental problems there are procedural issues concerning the EB's current governance structure and high transaction costs, which also affect the performance of the CDM (Hepburn, 2010). In addition, the geographic and sectoral distribution of CDM is unbalanced with Asian giants receiving over 90% of the total CER revenues (Bakker et al, 2009), and the transport and building sectors, both key for achieving ambitious climate targets, almost absent from the project portfolio (Zegras, 2007; Schneider, 2009).

This rather worrying picture has sparked off two trends of studies that focus on the substantial reforms and incremental 'fine tuning' respectively (Paulsson, 2009). In order to 'enhance' the performance of CDM, many recommendations of substantial reforms emerged through a series of studies conducted both by academics and senior officials of current CDM governance structures, which will be reviewed in this section. It should be noted that most of these reform proposals aim to address only part of the CDM problems that are presented in the empirical studies, and almost all of the reform proposals are prescribed in a top-down manner, with focus on the improvement of governance procedures and rules mainly at the international level. Hence on the surface these studies may not appear to be closely relevant to this research, which focuses mainly on the national context. But I argue that

these proposals not only present the intellectual development regarding the improvement of the first international offset market, but more importantly, they illustrate how difficult these top down designs are to implement on the ground, since most of these reform proposals have not yet successfully solved the problems they intend to. Some proposals, such as sectoral CDM or a discounting system of CERs, have never been tested due to their lack of practicality.

2.3.3.1. S-CDM and P-CDM

A sectoral approach of CDM (S-CDM) is probably the most discussed option to address some of the shortcomings of the CDM. The argument for an S-CDM approach is based on the belief that CDM's design, as a project-based mechanism, is fundamentally incapable of achieving both meaningful scale of cost-effective GHG emission reduction in the rich countries and essential structural changes desired by host countries (Figueres, 2006; Sterk and Wittneben, 2006). The S-CDM was firstly introduced by Samaniago and Figueres (2002), who suggested a government-driven mechanism that could enable Non-Annex I Parties to develop national or local policy initiatives that discernably lower GHG emissions in a particular sector. The CERs then can be calculated and paid directly to the host government that will eventually trickle down (hopefully) to the industry and households affected by the measures.

However, Cosbey et al (2005) believe this approach is essentially ‘policy-based’ and cannot be labeled as S-CDM as it is no longer a ‘market’ mechanism. They believe that S-CDM can still be initiated by the private actors who are able to bundle similar projects within a country or local region along the lines of a sector. To Bosi and Ellis (2005), whether S-CDM should be launched by public or private entities is not a big issue if the baseline could be set up in appropriate ways. They propose the introduction of sectoral baselines where any emission mitigation below the baseline would be credited, which could be implemented at the government level or might be devolved to the private entities in the respective sector. Schmidt et al (2008) follow their lead and advance a ‘no-lose’ GHG emission intensity baseline for some key economic sectors in major developing countries.

In general, S-CDM is believed to be a useful option to overcome some governance hurdles. Yet its limitations are also obvious. For example, the problem of lacking sustainability benefits would not be resolved by simply shifting project-base to sectoral base, and the unbalanced geographic representation of CDM will even be exacerbated as only a handful of countries are capable of devising and hosting complex projects such as S-CDM (Sterk and Wittneben, 2006).

One of the prescriptions to the CDM’s inefficiency in delivering

sustainability to the host countries is the programmatic CDM (P-CDM), According to Boyd et al (2009), P-CDM simply means bundling of many similar projects in order to bypass transaction costs of smaller projects. Programmatic CDM is registered with the EB as a PoA (Program of Activities). It is a voluntary coordinated action by a public or private entity consisting of unlimited number of CDM project activities, either large or small scale. All projects under PoA must have an implementing entity authorized by host country DNA. The sustainable development aspect of CDM should, at least theoretically, be better addressed as P-CDM aims towards this more integrated approach to creating local benefits.

The supporters of this approach argue that P-CDM projects are activities involving large numbers of dispersed emissions that cumulatively add up to substantial reductions, hence allowing these small projects that had been historically hard to implement via the CDM due to the difficulty of precisely monitoring and verifying emissions reductions (Wara and Victor, 2008). Figueres (2005) argues that the lessons learned from the programmatic CDM activities in the current CDM pipeline support the intuitive understanding that this type of CDM activity can broaden the scope of the CDM in areas with significant social and economic benefits that are currently under-represented in the CDM. In short, P-CDM can offer both quality and quantity in one go (Cosbey et al, 2005) and ‘there

is no reason not to continue to expand the possibilities of Programmatic CDM' (Hepburn, 2009).

Yet the challenges and barriers of a programmatic approach are also obvious. Hayashi and Michaelowa (2007) argue that programmatic CDM may require relatively complex and sophisticated emission reduction calculation methods, as well as a high demand of project developers' capability in order to avoid problems at a time of verification. In addition, additionality assessment is also demanding to capture the free riders in the program of activities (Hayashi and Michaelowa, 2007). Crosby et al (2005) also point out the major challenges of P-CDM in terms of project boundary and leakage potential, additionality and free rider problems, and difficulties of introducing multiple baselines or methodologies.

Therefore, from the regulator, validator and market participants' perspective, the paradigm shift from single projects to aggregate activities that are implemented over time and space has proven to be challenging due to the substantial liabilities it creates (Figueres and Streck, 2009; Michaelowa et al, 2008). Consequently, P-CDM continues to fall short of triggering the needed level of GHG emission reductions with quality programs of activities as once they were expected to. By the time of writing, only 19 P-CDMs have been registered with the EB (UNFCCC, 2012).

2.3.3.2. Discounting CERs

Chung (2007) initiated the argument for a CER discounting scheme in order to change CDM from a mere offset instrument to a mechanism that generates a net global emission reduction from non-Annex 1. His proposal is that only a certain proportion of CERs from CDM projects could be sold on the carbon markets, and then CDM would no longer be simply a compliance mechanism for Annex I, but would also function as a global emission reduction mechanism from non-Annex I. With such a discounting scheme, developing countries can contribute to the global GHG emission reduction without having to bind in quantitative reduction targets.

Such a proposal is endorsed by other researchers (Schatz, 2008; Schneider, 2009), who argue that discounting of CERs, not only to achieve net reductions for the atmosphere, but to increase the efficiency of the system by removing windfall profits made by project developers. Schneider (2009) discusses the major qualitative variables of applying discounting CERs, including discounting by sectors, countries (supply or demand side), and appropriate discount rate, with the conclusion that a CDM with atmospheric benefits could also benefit the host countries and enhance environmental integrity. The only obstacle, however, is the agreement of discounting schemes between negotiation parties.

Bakker et al (2011) follow the lead and conduct a comprehensive analysis of how discounting schemes between countries and project types could be implemented in practice, their impact on the carbon market, and implications for different actors. They notice a trade-off between the easiest discounting options for negotiations and their rather small benefits for enhancement. Castro and Michaelowa (2010) assess the impact of discounting on the distribution of CDM projects in host countries, with a special focus on Least Developed Countries (LDCs). They find that discounting has an impact on the competitiveness of individual CDM host countries as it affects their abatement cost curves. Hence it could become an instrument to force advanced developing countries to leave the CDM and engage in other farther-reaching climate-related commitments. However, a discounting system would not help LDCs to realize their CDM potential due to the financial, technical and institutional barriers to CDM development in these countries.

2.4. Concluding remarks

In this chapter I have reviewed three different schools of research, namely studies on Chinese political economy, environmental (specifically climate) governance, and the CDM related literature. My intention in linking these three previously separated areas is to echo Peter Newell's argument that most of the issues regarding CDM governance are closely

interrelated and deeply embedded in a broader political and economic context (Newell, 2009). Given the reality that such contexts may vary significantly in different sectors and localities, there is a crucial lack of empirical evidence of the observable governance pattern and specific state-market relationship in China's CDM market. So far there is very small number of studies that provide strong field evidence of what is really going on at the project site level in China.

Most of the empirical CDM studies are either based on PDDs and other available documents on the internet, or interviews with Chinese politicians particularly at the national level. Hence they regrettably do not yet establish a theoretical link between these 'local realities and perceptions' and their relevance to the governance or institutional arrangements of CDM at the local, national and international levels. An important gap emerges between the manifestations of local problems at the bottom and the call for reforms of the international regime at the top. Something in between is missing, namely the national political context, institutional structures, norms, conflicting interests and power dynamics, etc. Without properly understanding these dynamics, I argue, any attempt to assess or evaluate the proposals for future international carbon offset mechanisms would be bound to be a daunting but perhaps futile effort.

3. Business Power in CDM markets: an analytical framework

In this chapter, I establish a dynamic and flexible approach to conceptualizing the role of business power in the governance of the CDM market in China. This framework is built mainly upon the neo-pluralistic beliefs of business power as an influential but not determining force for political agenda setting, policy processes, and observable outcomes in a given governance domain (Falkner, 2008; Meckling, 2011). I will start the chapter by explaining the neo-pluralistic basis of this framework and identify the appropriateness of its application in the analytical context of China's CDM market. I argue that the hazy configuration of China's public and private domains, the creation of a 'National Team' of public owned business champions in the energy and financial industry, and the growing significance of climate change as a political issue, are the major contextual factors that require a more open and flexible theoretical approach.

The second section lays out the detailed structure of this analytical framework, which combines both structural and agential factors that help to legitimize, reinforce and change the role of business in governing the carbon market. In general the framework not only addresses the issue of how the coalition and networks in the carbon market are established by

business actors, but investigates their motivations to do so. In addition, the framework also intends to reveal the dynamism of the networks and coalition in the market and its implications, in order to make sense of the complexity of climate politics and governance in China. It examines the resources of business power in the carbon trading sector, as well as business actors' capability to utilize these resources to make their voices heard, identities established and interests legitimized in the governance process. It claims to hold significant explanatory power for analyzing the interrelationship between strategy formation, policy influence, coalition building and potential inter-conflicts of business actors in the carbon market. Analytical focus is also given to the actors, institutions, and the daily process of governance that happens on the ground in the form of day-to-day business practices and constant communications with other social actor groups such as media, governments, and business partners or competitors.

The chapter concludes with a brief discussion of the implications of applying this analytical framework to reveal the highly complex nature of how the carbon market is governed in China. I argue that the purpose of this research is not merely to present the complex reality but to make sense of it. Therefore, the theoretical frameworks intend not to only answer the questions such as what is the role of businesses and how they get what they want in the carbon market, but rather to interrogate the deep

rooted and diversified driving forces, either political or economic, that ultimately define and shape the power configuration and governance repercussions in the market.

3.1. A neo-pluralistic approach: why and how?

One of the dominant debates in the study of global environmental governance has been the ever-increasing involvement of non-state actors in governing national and global environmental problems. Previous research has noted that governments are no longer the only crucial actors in the arena of environmental regulation and policy setting (Young, 1997; Rosenau and Czempiel, 1992), as business and civil society are becoming ever more powerful. However, it is noted that the role of agencies of non-state actors in steering environmental governance, the blurry concept of the state, and its complicated relations with a wide range of non-state actors remain largely unspecified (Okereke et al, 2009). Hence the claim that non-state actors, including a large number of NGOs, business corporations and associations, can be regarded as legitimized ‘governors’ and states are losing power to them, or the concept of a ‘retreating state’ (Strange 1996) or ‘power shift’, cannot be taken for granted (Barry and Eckersley, 2005; Sending and Neumann, 2006).

In addition, although it is rather obvious that business has in the last few decades become one of the most influential actor groups in global

environmental politics (Falkner, 2008; Jagers and Stripple, 2003; Levy and Newell, 2005), the investigation of business power in environmental politics is often an overwhelming challenge, particularly when the analytical focus shifts from developed nations to those fast industrializing nations, such as China. In these countries the role of the state and the configuration of public-private spheres often vary significantly to those 'liberal state plus free market' Western nations. As some scholars once claimed, even prior to the official launch of a globalized carbon trading scheme such as the CDM, that one of the major obstacles for internationalized offset mechanism is that some offset activities would be established in the countries where markets and law operate poorly, and non-compliance and fraud would eventually dominate the market (e.g. Victor, 2004). Now a decade has passed since the inception of globalized carbon market and the launch of the first CDM project, it is timely to check the validity of such claims. In the following section the advantages of adopting new-pluralistic frameworks to tackle this issue are presented.

3.1.1. Business power: sources and manifestations

If the assumption holds true that at least some developing countries' governance infrastructures are not able to uphold the integrity of the global carbon market, then the crucial question would be: whether the global and local business community, as arguably a powerful non-state

actor group, is challenging the governance status quo and helping to improve the governance quality in these so called non-liberal countries, or they just did the opposite? In order to clarify this issue I argue that disaggregating business community as a holistic actor group is necessary in order to examine the power variance between those global companies and domestic ones in the CDM host countries and identify different sources of influence and leverage strategies when speaking to the national political system. Only in this way we can understand their aggregated influence to shape the overall performance of the CDM market.

Previous research on the driving forces of China's booming CDM market presents rather contradictory explanations: some believe it is due to a command and control mode of governance that is mainly led by the state (Schroeder, 2009; Shin, 2010) while others believe it is an expected consequence of using market mechanisms to govern environmental and climate crises (Pearson, 2006; Lohmann, 2008). It should be noted that this kind of overt conflicting explanation is not rare among discussions about other achievements or setbacks of a transitional state from a planned economy to a more market oriented one: some believe the marketization reforms have gone too far, while others believe just the opposite. In this regard, questioning China's rather 'bizarre' CDM explosion and its implications for the overall quality of the carbon market's governance need to be reconciled in open and flexible theories,

which can simultaneously take seriously the agency of business, its relationship with the state, and the complex nature of power structures. In the complex arena of climate governance in a transitional and fast changing society, the neo-Pluralism approach can offer a promising means to address this challenge for several reasons.

At the outset, a neo-pluralistic approach provides a rather complex and less bounded account of public-private configuration. On the one hand, the state is conceived as a site of struggle for interest group influence and policies are the reflections of the underlying balance of power between different interest groups. It echoes with structuralists' view that states retain their authority in some core functions such as national security (Strange, 1988) and remain (powerful) gatekeepers in policy areas that are more open to the influence of non-state actors (Drenzer, 2007). On the other hand, business is regarded by neo-pluralists as a privileged interest group based on their economic contribution to the national welfare, and consequently possess and (though not always) exercise structural powers that may limit the state autonomy (Falkner, 2008; Meckling, 2011). On the surface, this concept of business power echoes with the neo-Gramscian thought on the power of firms in global environmental politics (Newell and Paterson 1998, Levy and Egan 2003, Levy and Newell, 2005), which serve as a main 'reference point' for neo-pluralistic perspective as both represent business-centered approaches.

The major difference of these two schools of thought, however, lies in the various understandings of the weight of business actors' structural forms of power in influencing the environmental politics. The neo-Gramscian tradition emphasizes the material power of business and argues that business actors from the core sectors of the economy would most likely prevail due to their strategic importance to a market system (Cox, 1997), while the neo-Pluralists insist that the dominant position of business actors are far from certain due to the agential capabilities of individual business institutions, even their leaders, as well as the conflicts or contestations with other social actors and among business actors themselves (Falkner, 2008). That is exactly why business around the world still needs to press or lobby state actors for a favorable policy, and network with other social actor groups or influence the public ideas via media. In this regard, in a neo-pluralist view, the interaction between state and business actors is not treated as a 'win-lose' scenario, with power shifting in a 'zero-sum' fashion (Weiss, 1999).

The other major difference between the neo-pluralist and neo-Gramscian approaches is the former tradition's dedication to understand the context of issue specific areas. The pattern of the engagement of business actors in the policy area and their influences is shaped by the nature of the policy issue. Previous studies on Chinese lobbying activities reinforce this contextualization viewpoint and affirm that there are multiple

lobbying strategies within various economic industries (Kennedy, 2005), therefore understanding the context of Chinese CDM market is a crucial and requisite element to interrogate how it is governed. The role of the market and state actors, as we may observe in China's CDM market, is often overlapping both at the policy and the implementation level. In a country with over 80% of its public listed companies essentially state controlled (The Economist, 2012), distinguishing pure private actors from state actors is almost destined to be a fruitless effort. In the case of CDM, although the nature of CDM projects are commercial projects, the governance of CDM cannot be fully separated from the broader political and industrial context in which it is embedded. For example, CDM's most closely related markets, arguably energy and finance, are all heavily state controlled, and consequently subject to a series of policy changes, privatization and nationalization, and change in top regulators in the past few decades. All these activities have produced profound impact on how carbon markets are developed and regulated in China. Hence, in order to explore how renewable energy CDM is governed, one has to understand the overarching governance structure, policy process and policy change of the country's energy and financial sector.

In the same vein, both public and private actors involved in CDM governance are often playing determining roles in broader governance domains. DNAs are at the same time regulatory agencies for environment

and energy sectors (in different branches), and CDM project owners can be the champion of state-owned fossil fuel energy utilities, DOEs can be either major international accounting firms or quasi state-owned national quality certification centers, and local CDM offices can be quasi-private low-carbon consultancy companies (see Schroeder 2012, for a detailed account of these hybrid actors in China's carbon market). Therefore, analytical distinctions between these actors as rival groups under the CDM context will underplay the multi-level social networks and political coalitions that speak to a wider political framework.

In this regard, the neo-pluralistic view of public-private relationships can be described as a political effort of both state and business actors to coalesce an alliance of interest groups and thus its governance essentially arises out of the power interactions among them. The neo-Pluralist approach treats business actors as alliance builders instead of rival parties to the state or other non-state actors in advancing their economic preference and political strategy. Hence, the national and international regulations on CDM do not create governors from the top, rather it is the newly emergent alliance among the existing social interest groups that creates, sustains and shapes the practices, implementation process, norms and structure of CDM governance at the national level, which is then played out, scrutinized and sometimes challenged internationally. The answer of who governs who (or what) is not a matter of choice among

rival actors (state vs. market, or global vs. local, etc.), but rather an understanding of dynamic and complex political-economic system (Levy and Newell, 2005). The political outcomes are neither determined by coercion from the states, nor the material power of the economic production.

It should be noted that the neo-Pluralistic argument of a networked elite in governance is echoed by some neo-Gramscian theorists who believe that the newly emergent networks and alliances are essentially the reconfiguration of capitals in the society (Levy and Newell, 2005). The slight difference between the two perspectives lies in the understanding of the level of the dominant role that business actors play in promoting and sustaining the coalition. Neo-Gramscian approach emphasizes the structural power of business or capitals in general to create a hegemonic coalition, while neo-pluralists believe the role of business is crucial but far less decisive to the policy and governance outcome. I argue that the latter perspective is believed to be more applicable to the reality in China, since the country has just been transformed from an orthodox planned economy thirty years ago when the capitals were essentially buried and state power stayed at its peak over all other non-state sectors including the business community (if any at all). Business power is therefore growing out of state power and plays a far less decisive role compared to most Western countries.

In short, the growing popularity of CDM activities in China has created new elite groups within a rather blurred configuration of public and private domains (Shin, 2010). These actors, as the political agents, are active both at various domestic sectors and at the international level, shifting the nature of relations among business, state and civil society. The carbon market, from the neo-pluralistic perspective, is developed and governed as (the pro-trading) coalitions and networks are constructed, developed and changed in real-time conditions among a plurality of actors (Cerny, 2003).

3.1.2. Multi-dimensional view of business power

The above paragraphs present the justification for adopting a neo-pluralist approach to investigate business power in China's carbon market, with particular reference to another business-centered yet more structural oriented neo-Gramscian theoretical approach. In short, neo-pluralism treats business actors as alliance builders instead of rival parties to the state or other non-state actors in advancing their economic preference and political strategy. Business actors do enjoy certain degree of privileged leverage in the policy arena yet their dominance statuses cannot be taken for granted, due to the countervailing forces either outside or within the business community. Such an understanding leads to the query of various resources of business power, how these power resources are utilized by

business actors to influence the policy, and with what implications.

Power has long been considered to be an ‘essentially contested’ concept (Lukes, 2005). From a pragmatic perspective, it works in various forms and has various expressions that cannot be captured by a single formulation (Barnett and Duvall, 2005). The neo-pluralist understanding of power should therefore advance a comprehensive view of power and its various forms should be analyzed in their relevant context (Falkner, 2008).

This research will mainly borrow Lukes’ (2005) conceptual analysis of power and advance a multi-dimensional approach to understand business actors’ influence in China’s CDM market. Lukes’ argument of three dimensional power is based on previous theories of power. Dahl’s understanding of power as a party’s prevailing over actual and observable conflict of interests or preferences (Dahl, 1958) is regarded by Lukes as ‘the first dimension of power’. Such understanding of power usually involves a research focus mainly on the behaviors of the parties in the decision makings over an issue area. Dahl’s later critics, Bachrach and Baratz (1970), argue that power also exist in non-decision making processes when a given actor has the capability to keep the unpreferred issue off the political agenda. This is the second dimension of power according to Lukes, which is still inadequate for several reasons. Firstly,

it focuses on the agential factors of the party to influence others but somehow ignores that behaviors, group behaviors in particular, are socially constructed and culturally patterned. Secondly, it is still a conflict-centered approach but overt conflict may be absent during power interactions such as manipulation, authority, or mind control. Lastly and closely related to the second inadequacy, Lukes argues that it has not yet revealed the possibility of reaching consensus with a process of shaping perception and preferences from a given party to the others, where power interactions may somehow be embedded.

Lukes proposes a third dimension to view power that shifts the analytical focus from overt conflicts to latent ones among the parties. Such turning will inevitably involve observations of actions such as persuasion and inducement into the analytical boundary (Lukes, 2005) and therefore can only be resolved in empirical studies that acknowledge both the agential and structural resources of power in a given issue area. Lukes' three dimensional view of power is highly pertinent for this research for several reasons. Firstly, it is noted that business actors are powerful not because they get what they want by lobbying state actors, but by setting the parameters of policy (Falkner, 2008). Power interactions are therefore not always observable as they are not always exercised in open competition for influence over policy making and process. However, power is either embedded in the political-economic structure that privileges business

actors to build up political coalitions and policy frameworks in accordance with their own preference (Levy and Newell, 2005), or deeply rooted in intentionally constructed discourse, or translated into the policy process through day-to-day interactions between business and state actors in the name of formal or informal lobbying. Such an understanding of multiple facets of power enables us to reveal how business actors are able to use different techniques and strategies to leverage their positions in the CDM arena, even in a seemingly state-centered governance system where relational power of business community, or direct pressing for the preferred policy, is often limited.

In this research, a pragmatic approach to categorize power is adopted based on the understanding of the multiple dimensional view of power. Three forms of business power, namely material, institutional and discursive power, are to be examined in this research. Although such a categorization of power is parallel with neo-Gramscian approaches, I argue that it provides insightful understanding of the various resources of power that business actors possess, particularly within the context of China's CDM market, as illustrated in the following paragraph.

3.1.2.1. Material Power

Business is said to possess material power because of its central role in the national economy and it serves as the main source of economic

growth, employment and technology innovation (Falkner, 2008). It should be noted that in CDM projects, the CERs often constitute a small part of the revenues and the material power of business actors in the CDM market therefore derives not only from the sales of CERs but also the control of production and technologies of the given sector in which CDM projects are developed. For example, the material power in renewable CDMs is expressed not only through the renewable CERs but also through the production of renewable energy equipment and electricity as main output of the projects. Hence the politics of renewable CDMs have to be understood in relation to China's (renewable) energy policy and politics.

The development of renewable energy plays a central role in China's present energy and economic strategy as China has identified it as a key growth component of the country's economy. The official targets of 362 GW of renewable energy capacity by 2020, established as part of the 2007 'Medium and Long-Term Development Plan for Renewable Energy in China', has appeared to be too conservative and a total of 500 GW renewable power capacity can be expected by 2020 (NDRC, 2010). The figure indicates that the material contribution of the renewable energy sector to the country's economic growth will be enormous. In addition, as most of the renewable resources are concentrated in the relatively under-developed inland provinces in Northwest and Southwest China, local

governments also exhibited their relentless support for developing renewable projects such as wind farms and solar power stations. It is not surprising that CDM is viewed as the major element in achieving such an ambitious goal and consequently renewable CDMs have been treated as the most significant category in China's CDM portfolio (NDRC, 2011).

Technology and technological innovation is another crucial aspect of material power of business actors in CDM governance, since technology transfer (TT) was designed in CDM to play a key role for Non-Annex I countries in achieving GHG reductions (See Chapter 2 for a detailed review of TT in CDM). Policy makers may want to encourage technological innovation by using regulatory instruments. For example, the wind energy related technology attracts particular policy attention in China in an effort to diversify its energy mix and enhance energy security. Such attention provides a rather conflicting approach to attracting foreign technology and foster domestic ones simultaneously (Schroeder, 2009), which has tremendous impact on the power configurations among business companies. In general, the design of the regulation depends on the knowledge base which is often largely controlled by business actors. This technological power enables business to shape the regulatory agenda and discourse (Falkner, 2008).

3.1.2.2. Institutional Power

Institutional Power derives from the access to bureaucratic structures and decision making processes within the state institutions at various levels that have responsibility for governing CDM activities in China. It generates insights about the forms of influence that non-state actors can exercise formally and informally (Newell, 2009). Due to the significant material contribution to the economy, it is hardly surprising that some CDM elite organizations, such as leading CDM consultancies or DOEs, are heavily involved in formal decision making in China. This is particularly obvious when most of the renewable CDM activities, such as wind energy CDMs, are dominated by State Owned Enterprises (SOEs) who often have privileged links with state institutions. However, the term ‘state-owned’ is not equal to ‘state-controlled’ and it is inappropriate to perceive SOEs as mere tools for the state to implement renewable policies (Cunningham, 2007). In reality, large Chinese SOEs often selectively tap state resources as they see fit (Kennedy, 2005).

As a result, renewable energy policy, including CDM regulations, have become a battleground of negotiation among powerful actors, which fuels constant institutional evolution with regulatory agencies rebuilt (often in the name of capacity building) or disbanded (often in the name of reform) in the last decade, and some integrated supra-institutions remain either

ineffective or dead-on-arrival (for a comprehensive review of policy coordination in the Chinese wind market, see *Lema and Ruby, 2007*). Non-state actors' privileged access and their capability to influence the institutional mechanisms and policy process suggest a strong alignment of purposes with regards to CDM governance. Though various non-state actors may have their own preferences in advancing special policies or measures, the consensus of desirability of renewable CDMs, as the general interests of this coalition, remains almost uncontested.

3.1.2.3. Discursive Power

The neo-pluralistic perspective believes that business power is not enforced by coercion but rooted in consensus and acquiescence (Meckling, 2011). Therefore the ideological power has an important role to play to establish moral and intellectual legitimacy for governance. This form of power is originated in sociological constructivism, which focuses on the role of inter-subjective ideas and understandings of social life (Finnemore and Sikkink, 2001). Some of the constructivism theorists go further to argue that political action is primarily driven by ideational rather than material factors (Ruggie, 1998; Wendt, 1992 and 1998), which shapes both interests and identities just like what Lukes describes as the third dimension of power. However, I do not suggest that discursive or ideational power is somehow more crucial to other forms of power, which

is at least not the case in China's CDM market. Yet business actors do communicate with each other and struggle over ideas, identity and value on a daily basis, in order to shape the social understanding of carbon offset projects.

The discursive power hence derives from and expresses itself in the ability to construct dominant framings of issues (Newell, 2009) and set the tone for public opinion (Okereke et al, 2009). In addition, it is used by business actors to deflect the skepticism of using CDM to address climate change and its implications for clean and sustainable development in China. The dominant discourse of renewable CDMs is that these activities provide win-win-win solutions for economic development, environmental protection and social benefits in China. Wind energy projects in particular, are regarded as the most suitable project type for CDM. Such statements have been sustained through government speeches and documents, marketing materials of companies and media coverage.

The exercise of this form of power is particularly obvious when contestation of the dominant discourse emerged. For example, the rejection of approval for many wind CDMs by the EB sparked off enormous criticism from Chinese CDM officers and business organizations through Chinese media and press conferences. Another

latest example is one in which the Chinese vice minister who denounced, at the National People's Congress, that most of the Chinese wind farms are 'show business' which deliver neither economic nor environmental benefits (Jinghua Times, 2010). Such a claim received tremendous counter arguments from business circles, which use the popularity of wind CDMs in China to justify the appropriateness in developing these activities. This is a rather exceptional case, since senior officers in Beijing are rarely challenged overtly by non-state actors in the centralized China, which may illustrate the powerful discourse in this sector.

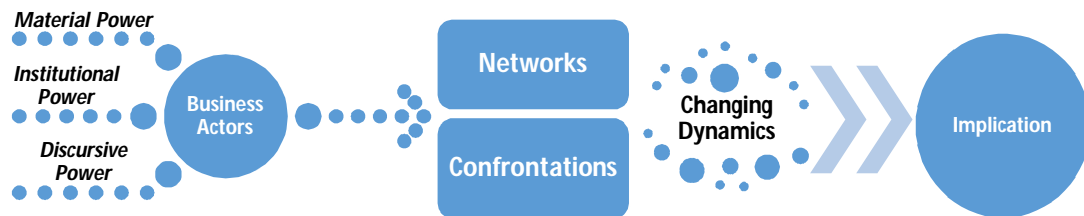
3.1.3. China's CDM governance: making sense of the complexity

In the above section I identify the theoretical roots of this research based on the neo-pluralistic approaches to understand the power of business in the Chinese carbon market. Three major sources of power have been identified which provide a lens through which we can examine the strategies and techniques of business actors to influence the overall governance of CDM. Yet a question emerges as how these resources are applied and exercised by the business actors to shape the governance structure of the carbon market. This is more than an empirical enquiry. It is essentially a methodological challenge, as the causal link between the business actors' daily action and an aggregated governance effect can be

hard to establish. Therefore, the crucial task of a neo-pluralistic analytical framework is to relate the agential factors of the business actors to the structural context of the issue area.

In this research, business networks and business conflicts are believed to be the major two segments of the analytical framework, since building alliances and confrontations are the two major strategies that guide business organizations' daily operations. Business power is therefore manifest in how business actors are making friends and fighting foes for their own interests and benefits. But since the purpose of this research is not to present only a snapshot of how the CDM market is governed in China in a given time, but a longitudinal analysis of the impact of business power on the governance structure and quality of the international offset mechanism I thus have to consider the changing dynamics of the situation during the years as cooperation and confrontation may come and go in a market-state system. Hence, interrogating these changing dynamics would be a third pillar to sustain the analytical framework of this research. Finally, the constantly changing nature of cooperation and confrontation centered on business power could produce profound impact on the structure and quality of the governance structure, which will serve as the fourth pillar of this analytical framework, as illustrated in Figure 3.1.

Figure 3.1: The analytical framework for business power in China's CDM market



3.2. Introducing the framework

Analytically speaking, CDM has a two-tiered governance framework which consists of a regulatory framework and an operational framework. The formal regulatory structure constitutes official institutions both at international level and national level, such as EB and DNAs. It also provides the basic rules and procedures such as applicable methodologies and project approving processes, etc. This regulatory framework operates in a classical top-down manner (Streck, 2004) with the UN EB as the ultimate decision making authority. Regarding the implementation framework at the project level, however, it can be described as a 'complex' of networks, where business actors are undoubtedly at the centre of various contractual or non-contractual relationships with other actors such as business partners, CER validators and national government.

This operational framework is believed to be considerably less hierarchical (Beneck et al, 2007) and some scholars argue that it operates in a typical ‘network governance’ fashion (Streck, 2004). Therefore, in order to clarify the role and influence of business actors at the operational level of CDM governance, the preliminary conceptual task is to identify the basic features of these networks, as well as investigate motivations for business actors to create or sustain them. In short, the nature and purpose of these coalitions or networks among private and public actors in the project cycle should be clarified.

However, understanding the operational networks inside the CDM arena would not be sufficient, because these networks are constantly communicating with broader social frameworks or contexts that are outside the CDM project cycle. For example, domestic economic industries (e.g. energy or finance) and their regulators, local state officers, or international organizations, are only a few of the types of actors and organizations that CDM project participants have to deal with on a daily basis. The constellation of these ‘external’ forces would also affect business actors’ motivation, role and leverage in the carbon market. Therefore, these external interactions and motivational factors need to be carefully examined as they may reinforce or diverge from business actors’ interests, which may or may not be in accordance with the CDM’s intention.

The second element of the analytical framework investigates the conflicts, contradictions and incoherence of business actors' behavior in the CDM arena. Such enquires are rooted in the neo-pluralistic theoretical approaches that intend to reveal the limits and constraints of the role of business and their influence. Contestations exist not only between the parties who have contradictory ethical views of carbon offset projects, but also between the private actors who are competing for a larger market share, CER profits, and favorable standards or norms. Besides, there is an observable tension between the market actors and their regulators at national and international level. Once the projects begin, local politics creep in and begin to challenge and confront the business interests. Finally, there are bureaucratic frictions between the relevant state institutions and some business actors that are inevitably deeply involved in the disputes in order to either secure a favorable policy or to legitimize their business operation. Hence, the framework intends to categorize the conflicts in the carbon market as public-private, public-public or private-private in order to understand the nature of the confrontation.

The confrontations in the carbon market suggest that the governance arrangement at the CDM's operational level is considerably fluid and unstable. The power interactions among the actors may lead to new norms, standards, and patterns of cooperation as time goes by (Beneck et al, 2007). Hence, the third element of the analytical framework looks at

the changing dynamics of the networks or interrelationships in the various stages of carbon market. At the international level, from being Kyoto's 'unexpected child' to arguably its most meaningful and tangible component in the first commitment phase, the change of CDM's role and influence in global climate governance is dramatic.

Similar changes also happen at national and local level. In the case of China, it is notable in this research that the macro political and economic environment changed dramatically both at national and local level. Along with these structural changes, CDM's 'micro' market condition has also undergone a dramatic change since 2005, when the first Chinese project was registered with the EB. The CDM market, though initiated with strong political orientation, has been developed into a very mature and standardized business (Beneck et al, 2007, Bumpus and Liverman, 2008). Many lessons were learnt both by the public and private actors which changed their motivations, perceptions, interests and ultimately the way they communicate with other actors. Some actors have withdrawn from China's CDM market completely, while new actors have jumped onto the stage with new governance inputs. The growing prominence of state-owned enterprises in the CDM market in China is a crucial example of these changes. In this regard, the analytical framework reveals the magnitude of these changes at the project implementation stage in order to make sense the dynamic and fluid nature of CDM governance in

China.

The final sphere of the analytical framework aims to clarify the multiple implications of how CDM is governed at the project level. The impact of business-centered networks, coalitions and conflicts to the overall performance of CDM are explored. In this regard, the dual goals of CDM, as providing both cost-efficient mitigation options and sustainability benefits, are used as major benchmarks for the assessment. Analytical focus has also been given to understand the impacts of operational networks or coalitions to the regulatory framework and formal policy process of CDM at both national and international level.

In general, the analytical framework presented in the chapter combines structural and agential factors of how business actors emerge as on-the-ground governors of CDM. I argue that the uniqueness of China's political economy and complex nature of regulated carbon transactions require an analytical framework with considerable explanatory power in revealing the nature of cooperation, conflicts, changing dynamics and implications of a private-public governance structure centered with business power and influence at CDM's operational level. Therefore, the ultimate goal of this framework is not merely to present the power resources of business actors in China's carbon market. Rather, it intends to investigate how power operates at the project level, among the private

and public actors, and what are the limits and constraints of this power operation in terms of shaping the governance arrangement and the performance of the CDM. In the following paragraphs the four basic building blocks of this analytical framework, known as business networks, conflicts, changing dynamics and implications, will be elaborated in detail.

3.2.1. Business cooperation and networks in a transitional economy

Mol and Carter (2006) point out that since China embarked on marketised reforms in early 1980s, the environmental governance system has been transformed from a command-and-control approach to a more diversified direction, which includes the involvement of non-state actors and market mechanisms into the governance arrangement. To Mol and Carter, the broad shift to a more liberal model of environmental governance is set in China and the only question is the extent and speed of such transition (Mol and Carter, 2006). In this regard, the introduction of an internationally defined market mechanism such as CDM into a previously centrally planned economy can serve as a meaningful assessment of how business actors are elevated as the new source of environmental governance. In order to understand business actors' motivations and strategies to ally with the traditionally powerful state actors and other

newly emergent private actors, two types of networks are differentiated and elaborated in the following section.

At the heart of various forms of cooperation are the hybrid networks between public and business actors. Knill and Lehmkuhl (2002) argue that non-Annex-1 governments in the initiation phase of CDM are essentially the active promoter of a multitude of partnerships with private actors. This is mainly because they often lack the resources and capabilities to implement the international rules in their political purview. In addition, the rules of CDM in the Marrakesh Accord in 2001 are no more than a set of umbrella principles and guidelines. Many regulations, methodologies and procedures were only gradually crafted out of a budding market. Hence during this stage, most of the CDM actors are simultaneously the subject of the regulation and proactive advisors on policy change when they see fit (Beneck et al, 2007), leaving huge potential for public-private cooperation.

3.2.1.1. Public-private cooperation in CDM market

The public-private cooperation in the CDM market can be described as the classical form of 'Private Public Partnership' (Beneck et al, 2007). In general, business actors seek state allies because the latter can provide the legitimacy and accountability that are crucial to encourage the engagement of stakeholders of CDM projects. State actors, however, lack

financial resources or project expertise to translate international commitment into a global treaty into local actions (Streck, 2004). As a result, alliances are built when both parties share a common desire to support CDM project implementation on the ground. The capacity building programs at the early stage of market development in China are typical examples of such private-public cooperation, when central or local governments often act as official organizers of these programs while private companies are the real sponsors. The common aim of these programs, however, is to discover and realize CDM potential in the local area. Another example is the EB accredited DOEs who are essentially private companies but have been delegated authority from the UN to evaluate the environmental performance of CDM at project level.

3.2.1.2.A transnational, cross-sectoral and multi-level game

One of the prominent features of these public-private partnerships is that they are transnational, cross-sectoral and operate in a multi-level scale. Streck (2004) and Beneck et al (2007) use UN's Prototype Carbon Fund as the example to illustrate how international organizations are actively involved in this innovative model of public-private cooperation. According to Andonova et al (2009, pp. 56), '*transnational governance occurs when networks operation in the transnational sphere authoritatively steer constituents towards public goals.*' Since the creation

of CDM has a climate goal (cost-effective options for GHG emission reduction), steering the market growth of CDM has by nature a strong intention of providing a public good. In this regard, most of the capacity building efforts in China can be categorized as a form of transnational governance when joined by many Annex 1 parties. In the same vein, the operational authority of DOEs in the validation, approval and verification process is largely believed to increase the accountability of the mechanism (Backstrand, 2008), since most of these validators are essentially large multinational corporations normally with high reputation in their specialized fields.

The public-private networks in CDM are destined to be cross-sectoral because eligibility of CDM activities is open to market actors. As long as an appropriate methodology is proposed and approved by EB, the project type is then allowed in the CDM family. The field study reveals that at the earlier stage, developing and designing the methodology, was often a highly challenging but lucrative work that sparked off many ad-hoc cooperations between private companies, academic institutions and government agencies. The output of such cooperation is those newly developed methodologies that can be used as updated standards and norms of carbon accounting for the future projects. The effort for joint methodology design can be considered as another form of temporary governance arrangement even if these networks are often spontaneously

established, and the networkers are profit driven.

The governance of CDM presents a multi-level feature in China when local governments, though not directly involved in formal decision making process, are actively engaged in the promotion of CDM projects in their administrative purview. Schroeder details how hybrid institutions were established at different localities in the name of CDM centers, which is just another example of local public-private cooperation in governing of CDM activities at sub-national level (Schroeder, 2011). According to Schroeder, the hybrid nature of local governing institutions indeed encourages more market-oriented local policies in favor of promoting CDM projects after local government put a stake in the CDM business and when they are closely allied with business interests (Schroder, 2011). The local states have become a crucial stakeholder of CDM activities.

In general, the function of hybrid networks in the carbon market is often to promote capacity building or setting the implementation rule of CDM projects. The motivation of business actors in promoting or sustaining these networks is rather self-interested. Businesses seek legitimacy from their state allies for the profits of CDM business since such allies often help them to secure a decent market share or effectively deter potential competitors. That is the main drive for the accounting companies to apply

for a DOE certificate, or the project developer to join a capacity building program. However, the outputs of these networks are also often public goods, such as new rules, norms and procedures, which gradually build up the foundations of operational governance in the carbon market.

3.2.2. Conflicts and confrontations in the CDM market

In general, conflicts and cooperation are two sides of the same coin in neo-pluralist politics (Meckling, 2011). The major features of carbon networks in China's CDM market can also be observed when looking at business centered confrontations, as they are also transnational, cross-sectoral and play in a multi-level fashion. In this research, both public-private conflicts and private-private conflicts over CDM regulations and are examined to understand the constraints of business power in the market.

The first set of conflicts is to be observed between the business centered operational level of CDM and their regulators in the form of hierarchical governance processes at international level. The complaints of the business actors about the lengthy and bureaucratic process of approving CDM have been well documented (Figueres and Streck, 2009; Michaelowa 2005; Schroeder, 2009). Although the conflicts between the regulated and regulator are often inevitable in any given market, the challenges from the private sector is believed to be helpful to enhance the

accountability, transparency and predictability of the formal decision making process around CDM, at least at the international level.

However, some complaints from the market actors can be hard to justify. For example, it is noted that a common claim of the business actors in China is that the data and information required for the EB are too standardized. Some of these data are simply unavailable. The project developers therefore request more flexibility in the carbon accounting and baseline determination process. ‘Adapting to the real situation’ is the often heard request from the business community. Such requests, though sound reasonable from time to time, but may lead to a deterioration of the whole integrity of the system if satisfied. Because the reality of CDM shows that EB is *de facto* the only party that upholds the quality of the carbon credits generated from CDM projects. Other parties, including both Annex 1 and non-Annex 1 governments, CER buyers and project developers, all have strong interests in loose baselines and convenient CER production. Hence the conflict between the operational level and regulatory body represents the opposite positions between pro-market and pro-integrity policy approaches. In such conflict situations the role of project validators, or Designated Operational Entities (DOE), has become utterly critical, because their business strategies can induce a direct impact on the result of the contestation mentioned above.

Another set of confrontations emerge when CDM governance has to be integrated into a broader domestic regulatory framework in the host countries. CDM is a highly fragmented market which is embedded in many existing economic sectors. Most CDM activities are essentially industrial activities with well-established regulatory arrangements either at national or local level. The introduction of carbon business in the host countries will inevitably collide with those existing rules and regulations, where contradictory, incoherent or overlapping policies can be found once these projects are augmented with a CDM label. On the surface, these inter-ministerial conflicts belong to the public domain that should be coordinated by the state actors alone. Yet in reality, state officers often lack political incentives to settle the newly emerged institutional conflicts, which leave the ground open for the business lobby. Business actors who have close connection with officialdom are often seen actively visiting government offices to give out their opinion and advice in settling some bureaucratic frictions at the project implementation level. In China's carbon market, some large carbon companies have established dedicated teams to communicate with the state officers in order to, according to one interviewee of this research, advance their political strategy and search for favorable policies or policy makers in the regulatory maze around CDM activities.

However, some regulators can be too powerful to be influenced. Taking

the financial and energy sectors as an example, these two industries are both heavily regulated in China and they are closely related to CDM projects. Most CDM projects are energy projects that are often capital intensive investment and need financial support at the beginning of construction. However, it is noted that CDM activities have little effect on the existing regulatory frameworks. Although calls for changes or efficient policy integration have been escalating among CDM projects, developers and CDM officers, the CDM rules are at present carried out in parallel with energy or finance regulations. The regulatory contradictions or incoherence are left untouched at the institutional level and only dealt with on a case-by-case basis, which may constrain the carbon coalition centered with business interests.

The last form of conflict is among the private actors, since divisions of business community may cause conflict that constrains the overall leverage of business (Cox 1997). Once CDM had been developed into a functional market, more private actors began to be aware of the emergence of CDM as a new business opportunity. Companies like carbon fund, consultancies, and project investors are lured into the market to tap the potential of CER profits. The inter-business conflicts arise as a consequence of intensified competition.

In this research, the analytical focus is given to the conflicts between

international and domestic companies, and between companies from various economic sectors (See Chapter 6). CDM is believed to be a policy innovation mainly crafted out by Annex-1 governments. Hence Annex-1 companies often have stronger expertise and capabilities compared to the domestic companies. The latter are often believed to be mere rule-followers in the market. However, domestic companies' advantages lie in their familiarity with local business culture, political institutions and social norms. The division has not only changed the CER transaction pattern as a result of power interactions between the buyer and supplier, but has also led to opposing attitudes and leverage strategies towards domestic policies and regulators.

As for the cross-sectoral conflicts, although there is almost unanimous support for carbon offset and CDM among business actors, the interests and motivations of actors from various economic sectors are rather different. For example, it is noted during this research that banking sectors are not very keen to be involved in financing CDM transaction. In addition, the distribution of CDM projects is rather unbalanced. Renewable energy projects have taken up the lions share while other important GHG emission related sectors are largely underrepresented in the portfolio. There are some project types that are technically difficult to be packaged into CDM. Lastly, there are constant disputes between DOEs and project developers over validation or verification processes and

conclusions.

Although most of the confrontations among private companies are project based and aimed only at the producing private goods, they combine to produce powerful on-the-ground norms or informal standards for developing CDM projects in China. For example, the reluctance of the banking sector to finance CDM activities has led to a transaction model that has largely deviated from the original design of CDM as multilateral investment projects. The confrontations between DOEs and project developers over a given project may lead to the change of on-the-ground validation or verification procedures. At last, companies from under represented sectors may question the performance and justification of the CDM and challenge the favorable discourse on market instruments or the benefits of offset. In general, the inter-business conflicts may lead to change of carbon coalition and networks mentioned in the preceding paragraphs.

3.2.3. Evolution of the CDM market

Both networks and conflicts presented in the preceding paragraphs lead to the reconfiguration of power dynamics and shape the evolutionary dimensions of the CDM market. Hence the market development is viewed in the research as an organic process rather than a linear progress of market size or scale. In order to capture the changing dynamics of the

market, three elements of evolution need to be carefully examined. Firstly, the constituency of actors in the market may vary at different stages. Companies may choose to enter or to quit a market according to their corporate strategy, but here the analytical focus has been given to the observable change of attitude or behavior pattern of a given group of private companies in their CDM related operations. For example, the entrance of large state-owned enterprises in the carbon business when CDM is gaining ground in China has been analyzed in detail in Chapter 6. I argue that the motives and interests of the new entrants are very important indicators of whether and to what extent CDM has deviated from its original purpose.

Secondly, in addition to the actor dynamics there are the substitutes and transformations of institutions in terms of their functions and operational norms. Some public-private networks vanished from the market completely and some changed their purpose in a maturing market. Beneck et al (2007) foresees that the public-private-partnership model of market steering in the initial stage of CDM development will inevitably give way to the transaction focused inter-business interactions once the market starts to function. This research finds ample empirical evidence for such arguments. For example, most bilateral capacity building programs at the initial stage are no longer necessary to continue once CDM business has become a fully legitimized market. Some programs,

such as the EU-China CDM Facilitation Project, have been formally finalized and other bilateral programs have changed its CDM focus to a broader climate purpose other than the CDM market. Hybrid institutions that have been established at local level to promote CDM activities, namely the local CDM offices, also need institutional change since CDM has become such a well-known idea in some localities that a promotional agency is no longer required. Some of these offices hence adopted a more marketised orientation and have established commercial wings in order to compete with other private project developers and tap CER benefits (Schroeder, 2012).

Beside the notable trend of marketization among these cooperative networks or hybrid institutions is the observable tendency of localization of the mechanism as a whole. CDM is essentially created in accordance with Annex-1 parties' limited experience in carbon offsetting. The rules, procedures and norms are crafted at international level without careful consideration of local reality. This gap has been gradually filled as large amount of projects implemented on the local level. For example, many DOEs started to recruit local auditors and validators not only because they are notoriously short of staff, but also due to their realization that local knowledge plays a crucial role for competent validators.

In addition, the emergence of a large number of local project developers

or consultancy companies also helps to bridge the communication gap between Annex-1 buyers and local project owners. The local voices started to be heard at the international level and changes have been made in the formal governance system. For example, project developers and local project owners are now allowed to attend the EB meetings to explain their situation, or to express their complaints and concerns about existing CDM rules or the EB's decisions on certain projects. CDM is becoming a truly international game, even if its initiation was based on western experience.

The involvement of local inputs and integration of local interests into the CDM system leads to another form of challenge to the status quo. At the initial stage of market development, CDM was promoted as the typical example of 'win-win' solutions between the developed and developing countries and their companies. Government officers, academics and market participants endorsed this imported discourse repeatedly at various occasions. However, it should be noted that such framing of discourse is created at international level when the mechanism was firstly designed. The purpose is to dissipate strong suspicion and criticisms of the idea of offset mainly in the Annex-1 countries. However, CDM as a win-win solution was soon gaining prominence in China. It faces little challenge, when China's marketization reforms have been carried out so successfully in the past two decades. CDM was unanimously supported

mainly because of its brand as ‘market’ instrument.

However, many contesting voices emerged once local interests were integrated into the mechanism. The most obvious criticism is that the CDM revenue is often too small, too difficult to achieve, and arrives too late for the real project construction, so it has little effect on investment decisions. Many project owners expressed their disappointment in CDM and some of their complaints began to be picked up by mainstream media. Their complaint echoes with the Chinese government’s ambition to establish a domestic cap and trade system. Officers consequently started to downplay the significance of CDM in China’s strategy to curb carbon emissions and promote clean development. In addition, it is generally believed that China’s time of being a carbon credits supplier is numbered. As the world’s largest GHG emitter, the country will eventually take up a binding emission reduction target sooner rather than later. In such a case, the once dissipated concern, which argues that international offset programs like CDM would exhaust China’s most cost-effective mitigation options and therefore increase its costs to meet its future emission cap, has crept back into the public discourse and is swiftly regaining ground.

In general, there are observable changes in market actors, institutions and the dominant discourse as the CDM market matures and becomes

functional. These changing dynamics are an important element to understand the complicated nature of the internal power interface in the CDM market and their consequences. It also presents the evidence of how the carbon market is hugely influenced by external political and economic factors in a broader social context. In this regard, the evolution of the market is shaped by combined internal and external forces and factors, which also have profound implications in terms of the governance of international carbon markets in developing countries.

3.2.4. Evaluate the implications of business power in CDM governance

The changes in China's CDM market, explained in the preceding paragraphs, produce a combined impact on the performance outcome or overall quality of CDM as the first international carbon offset mechanism. Strange (1996) pointed out that power is often impersonally and unintentionally exercised by market actors in profit making activities such as searching for new deals, negotiating prices, and lobbying officers. Hence it is more 'power over' than 'power from' that matters (Strange, 1996), because just like state power does not belong only to one ministry or political party, business power does not belong to any given company or industry. The main argument of this research is that business power and leverage has crept into the governance domain at the CDM market's

operational level and produced significant effects on the quality of CDM activities in China. Therefore the analytical framework should not only reveal the power resources of business actors and their confrontations and cooperation strategies in a historical context, but to examine the impacts and effects that have been produced in terms of the performance quality of the carbon market.

Identifying the governance contribution of business power, other than their regulators or policy makers, to the overall orientation of the market can be a daunting task. Most of the markets do not have a clearly defined political agenda or purpose other than the profit-maximization principle. Markets often have no common ultimate goals to be achieved rather than making money. Thus it would be difficult to identify market actors' roles in shaping the overall orientation of the market. The exceptional cases can be those heavily regulated markets with clearly public objectives, such as financial markets that provide financial stability, or energy markets that are pertinent for energy security. Although these markets are characterized with high frequency of market actors' advocacy and lobby activities as a result of public-market conflicts, the confrontations and business leverage are namely confined only at the domestic level, which is often highly subjective to the domestic political agenda and economic situation.

The international carbon offset market is somehow a different market. Firstly, it is a market with clearly defined political (environmental) purpose. The dual aims of CDM are to lower the cost of meeting emission reduction targets in the West and to promote 'more' sustainable ways of living or production in the East. These requirements for public values of CDM are served as important benchmark to evaluate business' impact on the performance of the mechanism. In addition, although the mechanism intends to incorporate local benefits and development priorities, as a part of global climate regime, CDM's ultimate goal is helping to achieve considerable climate benefits. Therefore the power of business will now have direct international rather than domestic impacts on a globally public objective: curbing global GHG emission and deterring global warming.

Yet the grand objective of CDM may or may not be in accordance with the country specific political or economic priority. Therefore, understanding business actors' positions in the spectrum between the hardcore environmental value and mere money making opportunism, and toward which direction they are, either intentionally or spontaneously, pushing the carbon market, can be a crucial analysis of the outcomes after delegating the authority to the market forces in fighting climate change.

In such a case, environmental integrity is the most important criteria to

evaluate the impact of business influence in the CDM market. In what way and to what extent business actors are influencing the integrity of the carbon credits generated from offset activities? What are their techniques and strategies in dealing with the DOE's validation and verification system or the EB's regulatory and decision making process? What are the norms and rules that have been established and enforced that eventually weaken or strengthen the credibility of the whole system? These enquiries are particularly pertinent since the integrity of Chinese projects has long been a critical focus due to an apparent contradiction of strong political support for clean development from Beijing and weak financial viability of most renewable projects on the ground. The analysis of the roles of business groups in steering the integrity of the mechanism would help to provide an explanation to this complex situation from a different angle.

Another set of outcomes that can be observed concern the local benefits. CDM promised to deliver additional finance and technology from the Annex-1 parties which may contribute to local economic, environmental and social development. Therefore the enquiries are twofold. Firstly, whether business power has an impact on the financial and technology transfer involved in the project implementation process? And secondly, the question is whether business actors can produce an impact on how these financial and technology inflows are distributed and used to enhance local sustainability? Power interactions among business actors

and DNA regarding the sustainability requirements are also crucial manifestations of business influences. The nature of their alliance with the central and local officers will provide insightful evidence of how sustainability criteria and decision making process are crafted and carried out at various levels.

The central task of analyzing the implications of business power is to make sense of business actors' efforts in striking the balance between profit making and all other social requirements associated with CDMs. It investigates their current strategic position and operational priorities in between the spectrum of environmental integrity and profit. By revealing how they established networks and confront conflicting interests throughout various development stages of the market, I hereby go further to investigate in what direction of the profit-environment spectrum that business actors are indeed pressing. I examine the constant efforts of business actors in alliance building and confrontation, and ask if there are any countervailing and constraining forces to these efforts. After all, neither a carbon market with no profit at all, nor a carbon market with nothing but the profit is a desirable outcome, as it is obvious that going to either extreme would eventually lead to a total collapse of the mechanism.

4. Methodology

The previous chapter provides theoretical and analytical frameworks for understanding the development of RE-CDM activities in China and offered rationales for an in-depth empirical study of the political economy of the CDM governance, with analytical focus on business actors and their leverage. This chapter focuses on the methodological issues of this study in order to explain and justify the research questions and research design. I first elaborate and defend a case study strategy that has served as the guideline for this research. In doing so, the case selection process, the epistemological roots, and its advantages and limitations are discussed within the context of RE-CDM in China. Then I discuss specific techniques for collecting and generating data and how they complement each other for the data analysis, with which the main results are to be displayed in the following chapters. In the third part I focus on ethical issues that have received particular attention throughout the fieldwork and analytical stages. The chapter concludes with a discussion of some limitations of this research design and implications for future studies.

4.1. Case Study Strategy: Case selection, epistemological roots, and its advantages (limitations):

Research strategies should be question-driven rather than method-driven (Wendt 1992). The research focus and questions presented in Chapter 1

aim to provide insights and understandings of the complexity of CDM governance in China, due to the rather unique position of business actors in a fast changing political and economic system. The study also challenges or strengthens previous empirical arguments and theories about regulated carbon markets by revealing and analyzing power structures, dynamic relationships, and strategic changes in China's CDM market. Hence, questions like who governs CDM in China and how, or with what implications for sustainability, can only be answered through a carefully designed qualitative case study. In addition, the research also suggests possible links between cross-scale political, economic, ideological, and other forms of power relations among various actors and the implications for climatic and developmental benefits of CDM projects. The research is hence essentially asking questions of process and context and it is believed that qualitative research approaches centered on a case study strategy will serve the research purpose well.

In this research, the definition of case study is borrowed from Yin who argues that a case study is essentially a form of empirical inquiry with the focus on a contemporary phenomenon, complex social phenomena in particular, within its real-life context in which the boundaries between phenomenon and its context are not clearly evident (Yin, 1994). This is a rather flexible definition which leaves researchers with considerable autonomy in defining the subject as the case and frame, its boundary and

scope. In Chapter 2, I provide a detailed analysis of various case studies about CDM and governance of carbon markets around the world, including Boyd et al (2009), Corbera and Brown (2010), Bumpus and Cole (2010), and Newell et al (2011). My research will follow these studies and propose a clearly defined case of China's renewable CDM market. The case study strategy is also helpful to develop or critique governance theories with more contextualized description, consistent interpretation, reliable inferences and vigilant conclusion.

4.1.1. RE-CDMs in China as a least-likely, interpretive single case

It is noted that the selection of case and observations lies at the heart of qualitative case study research (Mitchell and Bernauer, 2004). Although CDM is often regarded as an innovative and rather complicated governance tool that is applied across the national borders and many existing economic sectors and since its inception, this research is designed to be a single case which focuses only on one particular sector (renewable energy) in one geographical area (mainland China). The strict boundary of this case study is set mainly to narrow down meaningful observations and data in a manageable manner and in a realistic time frame for this PhD project.

In this research, I focus on renewable energy CDM projects, and wind

energy projects in particular, that have been developed in mainland China between 2004 and 2011. Analytical focus is given only to the actors that are directly involved in CDM related business activities and policy process. However, I also engaged with certain peripheral actors within CDM circle, such as NGOs and academics who have considerable relevance in China's present CDM reality.

There are clear rationales for such case selection. In China's CDM portfolio, renewable energy CDMs (RE-CDMs) are playing a significant role, comprising about 41% of generated CERs, among them wind energy CDM accounts for 10% (NDRC, 2013). However, the selection of RE-CDMs in China as a case is not only due to its dominant share, but rather some theoretical and empirical assumptions about its dominance as presented in the previous chapter. Firstly, critics argue that a great-leap-forward of renewable projects in China has nothing to do with CDM (Wara and Victor, 2008; Lewis, 2010). For China, development of renewable energy is an inevitable move toward diversification of China's coal-centered energy production mix. This is an unprecedented challenge to China's present political agenda which links with other political concerns such as energy security or even social welfare (Han et al. 2009, Schroeder 2009). Besides, the dominance of hydro, wind or solar power CDM projects is not surprising because these technologies comprise the majority of relatively mature and marketable renewable technologies

(Haya, 2007; Lewis, 2010).

Second, the development of renewable energy sector, wind energy in particular, comprises intense power dynamics among actors with various backgrounds (Lema and Ruby, 2007; Liu and Kokko, 2010). CDM as the new intervention scheme adds to the already complicated situation where policy processes and institutional transformations have been constantly shaped by the inter-business, public-private and global-local interactions. Conflicts between wind farm builders and grid companies, and between foreign and home investment and technologies, have the potential to reconfigure the present political coalition in the CDM market. Yet unlike other CDM activities, such as HFCs or large Hydro power, the economic and sustainability benefits of wind farm CDMs have been unanimously acknowledged. RE-CDM has been regarded as a living proof of a successful 'business case' in promoting sustainable energy system in China (Lema and Ruby 2007). The lack of obvious opposition in developing wind farm projects provides an insightful case of political coalition and unrivalled support for wind CDMs deserves explanation.

Thirdly, and closely related to the above argument, the CDM boom in China raises theoretical issues from governance perspectives. The creation of CDM was once regarded as a vivid example of new forms of networking or multi-level governance, where public and private actors

have to align closely to guarantee the success of this green-field governance project (Streck, 2004). Yet, it is observed by many that China attributes its CDM explosion largely to a traditional top-down governance where a strong and powerful regulating authority plays a crucial role in promoting and expanding activities effectively (Michaelowa, 2007; Ganapati and Liu, 2009). Is CDM an illustration of ‘governance without government’ in climate policy arena, or merely the old wine (command and control) in a new bottle? Is it merely another round of top-down coalition building or a triumph of the private actors over their state counterparts? These rather conflicting explanations need to be reconciled with solid empirical evidence. A close examination of how RE-CDM projects are negotiated and implemented on the ground, underpinned by intensive power interactions, will hopefully solve these theoretical puzzles.

China is traditionally viewed as a highly centralized government with command and control or authoritarian governance as the dominant pattern in regulating most of its domestic environmental affairs, including climate change (Beeson, 2007). The non-state actors’ incentives to establish political connections and coalition ultimately arise from the state control of key governance resources (Li et al, 2008). In this regard, the RE-CDM in China is served as a ‘least-likely’ single case to test the role of non-state actors in global climate governance. If CDM, being the

newly introduced market based mechanism, has successfully empowered non-state actors in advancing its own interests, this would provide strong confirmation for the inference of 'state-retreat' in governing global climate, which can be more likely valid in other parts of the world where state power is relatively weaker than in China. Hence it would open possibilities for future comparative studies of similar events in other developing countries, as well as other critical climate governance events in China at various historical moments.

4.1.2. Case study: pros and cons

This research is based on a pragmatic ontological view, which simply means that the choice of research methods depends purely on what the researcher is trying to find out (Silverman, 1999). The methodological strategy adopted is mainly a result of the research questions to be analyzed and the available data that can be possibly accessed, rather than any epistemological beliefs or position. Therefore, it is not my intention to gauge the epistemological roots of this research in order to discriminate against one methodological family as a way to promote another. The qualitative case study, as argued in preceding paragraphs, is believed to be the most appropriate approach to generate relevant observations, design interview questions, and construct key coding through which a vast number of documentation is to be scrutinized.

The comparative advantage of the case study is evident in addressing qualitative variables, individual actors, decision-making processes, historical and social contexts, and path dependence (George and Bennett 2005). The detailed and comprehensive contacts with instances and context of the event will stimulate fresh concepts or hypotheses (Odell, 2001). In addition, single case studies may also focus on previously analyzed events to uncover alternative views that force a rethinking of the received interpretations or generalizations (McKeown, 1999).

Governance as a process has long been a neglected issue among governance studies in general (Adger and Jordan, 2009). Case studies are also out-performing its alternatives for documenting policy processes (Odell, 2001). There are many previous studies concerning governance of carbon markets focused on governance institutions, structures and (formal) decision-making procedures (Figueres and Streck, 2008), with little revelation of the political and economic variation among host countries and actors. In addition, as structures and institutions do merge and change at multi-scales since the inception of CDM, case studies may provide the knowledge of how these changes happened within a geographical, sectoral and time frame. A thorough case study in one host country will preserve and reveal more information and provide a fuller report with richer evidence and reasoning about process and context.

It is noted that case methods also entail several inherent disadvantages. Generally speaking, qualitative research methodology involves a trade-off between theoretical parsimony and rich explanation (George and Bennett 2005), which simply means that using a few case studies could be atypical or universally valid (Odell, 2001). This problem is particularly obvious when using a ‘no variance’ single case as for the research (King et al, 1994). However, in this case study of RE-CDM in China, the in-case comparison is designed to strengthen the inferences. Observations are located both before and after project completion to understand the different power structures and their consequences. Focus is given equally to the projects before and after the verification stage, since both are important for analyzing SD benefits, as prior to the submission of the PDD the actors’ interaction is rather open-ended. The basis for this division is the PDD as the milestone document for CDM projects. Comparison is also carried out between the similar RE-CDM projects promoted by identical actors at different locations, as well as a group of actors in the same project region. For example, during the interviews, focus is given to the description of a project developer concerning their different experiences in developing RE-CDM projects across the nation. Similarly, observations are carried out on how various actors are involved (either competing or collaborating) in one RE-CDM project. Such design aims not merely to increase the number of observations but to trace the

sequential processes within its particular historical context, in order to provide a reliable contingent generalization.

RE-CDM in China as the case for this study is partially because, as explained previously, it is an innovative and even surprising tool as a result of international climate negotiations. CDM, probably for the first time in the climate negotiation history, opened the regulatory room for North-South, and private-public collaboration at the same time. Whether it is really a win-win situation is another issue, but it may indeed have set the history of global effort in combating climate change down a different track from what would have occurred without it. In this regard, a case study concerning this crucial break point of international climate governance is essentially an interpretive case study in which the researcher has to explain the event by applying one or a few existing theories to this new terrain.

Chapter 3 elaborates the theoretical framework crafted to guide the data analysis in a systematic way. However, it is also clear that the RE-CDM as a critical event may be consistent with more than one interpretation. Therefore the general risk is a biased selection of inferences to support a favored theory by subordinating evidence inconsistent with the chosen theory (Odell, 2001). This research is constructed as a neo-pluralistic approach to understand the power dynamics led by business actors around

RE-CDM's arena. It rigorously reflects on alternative theories, such as neo-Gramscian approaches in global environmental governance, with the hope to make the interpretation more robust.

4.2. Rresearch technics and data generation procedures

In this research, wind energy CDM activities are selected as a case to identify the possible links between the emergence of business power in the CDM market, the CDM's climate and development benefits, and the implications for the governance of carbon offset activities. The selected RE-CDM project(s) present variables and evidence that can be observed via various sources such as direct observation, archival documents and interview transcripts (George and Bennett 2005). The combination of these techniques are crucial in this research since it provides strong links between what people say (interviews), what they do (observations), and under what policy or institutional condition (written documents)

4.2.1. Ethnographic observations

The ethnographic observations are mainly carried out during two field trips to Gansu Provinces in November, 2010 and January, 2011. I spent 15 days with local officers and business leaders to investigate local renewable resources and visit the potential wind and solar project sites in the area. In addition, the author was often invited to participate in some informal business discussions around CDM or renewable projects during

the field study in Beijing. Research notes, totally around 10 thousand words, are taken after these observation sessions and later stored up in the researchers' personal computer.

In the 'brave new world' of CDM, everybody is the learner, including the researcher himself. It means you need to learn about a world you understand by encountering it firsthand and making some sense out of it (Agar, 1986). When looking at the stunning growth of CDM market since 2004, questions as follows emerge:

- What is going on here?'
- Who is involved and what do they do?
- For what?
- How and how often they act?
- With what consequences?

As it is obvious that these questions can be easily translated into academic or theoretical terminologies and frameworks such as agencies, context and process, which this study aims to address, the method of 'encountering the world firsthand' emerged as an appropriate and powerful technique in generating valuable data. The fieldwork for this research was carried out between November, 2010 and October, 2011, when the researcher was actively engaged with the people who take certain aspects of CDM related activities as their full-time jobs, such as

consulting, financing, certificating and validating, CER purchasing, etc. However, the observation focus has been given to the organizational level rather than individuals, meaning that the representativeness of these individuals' actions to the organization they belong is constantly checked by the researcher during the process of observation. Most of the observations were carried out in offices or working contexts rather than in private contexts, though in China's business reality, the two can hardly be strictly separated when some informal ways of business communication, such as business dinners (one important source of observation opportunities), have an important role to play when doing business.

During the field study, observation of the negotiations emerged as a useful technique since negotiation is the most common way of interactions among state and market actors in the market activities in producing compromise and consensus. The theoretical perspective of this research drives the observations focusing on which norms and rules prevail over others, who is proactive and who is inactive, in practicing these norms and what preferences and motivations can be spotted during the bargaining process. The general objective for such observation is to identify the possibility of changes in norms or rules and to see how such change may possibly affect the actor's role and capability in governance.

CDM is a surprising (and arguably premature) child of the KP, which

leaves tremendous negotiating room open to the actors involved in its policy process and project implementation. Negotiation is thus essentially a major part of the ‘learning by doing’ process which characterizes the history of CDM development. There are two types of negotiations around RE-CDM governance that received particular attention during the fieldwork of this study. First are the so called capacity building efforts that are often carried out in the name of seminars and workshops, during which private actors often lead the session and dialogue that often involve certain policy issues from time to time. It is a rather formal process of exchanging ideas, which appears to be hardly relevant for any specific project. It is also a good forum to study the representation and participation issues when examining questions like ‘who is selected to speak and on whose behalf’.

The second type of negotiation happens among the private actors (upstream and downstream of the core CDM activities, business and financial actors, to name but a few) in negotiations of the specific elements of CDM projects on the ground. This form of activity happens literally on a daily basis, during which issues such as regulation, policy compliance or political influence, were often picked up to enable or disable one particular negotiator from time to time. It is usually a good opportunity to identify some on-the-ground norms and rules among the parties. In general, the above two types of negotiations can be regarded as

two typical patterns of formal communication between public and private actors in China's political and economic context: direct lobby (for or against a policy in general) or indirect influence on a case by case basis.

As explained before, the paramount purpose of observation is to figure out 'what they do', not 'what they think (they are doing)'. It is noticed that some actors' behaviors in these two types of communication contexts are strikingly different, and the contrasts are reveal some important information on power dynamics, interests and other elements that underpin the process of governance. Beside negotiations, observations are also conducted at some informal occasions such as diner parties or public exhibitions, which happened in a less frequent manner but serve as valuable complements to the formal negotiation types of activities.

4.2.2. Document analysis

Documents are also used to serve as a supportive role for this research. In this research, 62 pieces of formal document plus hundreds of informal documents (mainly news clips, leaflets or website materials) were collected via different channels and stored in the database with the total word count of roughly 110,000 (See Appendix 2.) The documents analyzed include business correspondence and project files, policy or legal documents and relevant media coverage. The information and ideas conveyed through these documents and shared by actors provide strong

supportive evidence for the norms and rules that have been observed from the observation. Most of these documents provide ‘official’, ‘normative’ and ‘common-sense’ versions of social phenomena (Silverman, 1999) and therefore serve as background materials. Documents may also illustrate the contradiction between the norms on paper and the norms on the ground, and how such contradictions may potentially lead to a new balance in the reality of CDM governance at the implementation level. In other words, by analyzing the documents we discover the ‘hidden’ implications for the governance arrangement by revealing the gap between ‘what is written’ and ‘what is actually happening’.

Any piece of document can be regarded as a consequence or evidence of ongoing interactions between social actors that are somehow related to it. Therefore, many interesting questions can be asked about the documents, as illustrated below:

- How are texts written?
- How are they read?
- Who wrote them?
- Who read them?
- For what purpose?
- On what occasions?
- With what outcomes?

- What is recorded?
- What is omitted?
- What is taken for granted?
- What does the writer seem to take for granted about the readers?
- What do readers need to know in order to make sense of them?

Source: Hammersley and Atkinson, 1983: 142-3

The aim of addressing these questions is not just to review the format and content of the texts, but to reveal the causes of its publication as well as the decision making process associated with its completion (Silverman, 1999). For example, China's *Measures for the Operation and Management of CDM Project in China* (NDRC, 2005) was an important policy document, which reveals, at least partially, how interests of various government ministries are organized to generate this policy, what is on the agenda and what is not, how the business actors are expected to behave as a response to the policy, etc. The revised version of this policy, published in 2010, however, revealed some crucial changes in these variables and provides valuable insights in understanding the dynamics of political and economic context around CDM arena from a historical perspective.

In the meantime, business documents such as a company annual reports, company websites, or auditing reports of public listed companies are a

potential goldmine for the investigation of interactions of the targeted company with other actors such as financiers, investors, competitors, regulators and the public stakeholders. These documents also inform the researcher about the companies' official standpoint towards CDM, to what extent they are involved in CDM activities and what role CDM is playing for its business strategy. In addition, it also tells a story of how and for what the decisions are made within the organization, and can reveal some interesting statistics and proceedings that are crucial in understanding CDM activities at an organizational level.

Besides official documents such as policy papers or company profiles, a large number of unofficial documents are also examined. These include email correspondence, memos, internal reports, media coverage, etc. The ethical issues and access resources of these documents will be explained in detail in the following paragraphs. The content of these documents is often project focused, which provides fertile sources to investigate project-based, on-going power dynamics among the actors when negotiating or doing a particular project. In addition, these documents often present a vivid picture of how policy is landed on the ground and dealt with by the non-state actors through their day-to-day practices via emails or meetings. Analysis of documents within the qualitative domain is all about detecting how social reality shapes what is said or written in the documents (Grbich, 2007). The unofficial documents can be treated as

the records of these social actions that take place on a daily basis, through which the norms, rules and patterns of behavior can be detected.

In general, this research examines the documents produced at multiple governance levels, ranging from the policy (national) level, the organizational level, and then down to the specific (project files) level.

Like much document focused research, it starts with an investigation of linguistic coherence or contradictions in presentation, understanding and interpretations of the texts. Then the researcher seeks the explanation and implication of these contradictions by asking questions such as: how it emerged and by whom? Whether and in what way it is reconciled? The ultimate purpose for doing so is to understand through what process the normative realities are depicted and transformed by actors' intended or unintended actions, rather than examine the validity or 'true or false' the statements. The documents do not speak for themselves and it would be naïve to take its content for granted as transparent representations of the reality of the world of CDM. Yet, as Atkinson and Coffey (1997) argue texts are important social facts that should be approached for what they are used to accomplish, yet should not be treated as firm evidence as there is a clear division between what is recorded on the paper and what happens in reality. Therefore, documentary sources shall not be treated as surrogates for other sources of data.

4.2.3. Interviews

The decision to use interviews as the main data generation technique is based on the reflection of the research needs. Qualitative research interviews intend to reveal ‘subject perceptions’ of the research themes (Kvale, 1996). In the research, the private actors’ perceptions on CDM development, its critics and its contribution, and their relationships with other social actors, are important elements to understand the political economy of carbon markets and their governance process. Interviews may disclose some hidden ‘facts’ of the speaker’s identity and power status in the CDM circle, and reveal how different actor groups are trying to make their voices heard, identity established, and interests legitimized in the governance process. Interviewees’ narratives may contradict what they do or what they should do, which provides fertile ground for in-depth investigation. More importantly, it helps to clarify interviewees’ understanding of their own CDM related actions, or ‘what they think they are doing’, and hence bridges the gap between ‘what they do’ (from observation) and ‘what is written’ (from documentation analysis). Interviewees’ detailed accounts may produce convincing explanations of the observable differences between written texts and on-the-ground activities, so that questions like ‘why and how these deviations happened’ can be answered.

During the field work, altogether 40 formal interviews were conducted between November, 2010 and October 2011 (see Appendix 1. for the interviewee list). The interviews often last from 40 minutes to over 3 hours, with most of them are recorded. It should be noted that the CDM structure is particularly complex in terms of the sheer number of various actors groups involved in the project cycle. Therefore the focus of interviews is given to those actors groups that are directly relevant to its governance structure. Among them are the officers both at national or municipal level, business managers of wind CDM project developers, bankers and financiers who underwrite project risks, on site engineers who tackle project implementation and maintenance barriers, project validators and consultant companies, and NGOs who depend on their involvement in the project. Due to the complicated nature of CDM governance, interviews with line-ministerial officers, local academics, journalists and community stakeholders are also included on an *ad-hoc* basis.

The language used for interviews was normally Chinese as the first language of the both parties. However a few interviews were done in English because the informants are expatriate carbon managers in China who are not confident to use Chinese as interview language. Choosing expatriates in China originated from the intention to keep the informants as diversified as possible to get balanced views. In the same vein, I also

interviewed former CDM experts who already left CDM business, for various reasons. Their account of CDM project development in China provides significant information and insights.

According to Kvale (1996), it is crucial to make sure the relevance of the research topic or themes to the interviewees' life and experience. This research mainly use open-ended and semi-structured interviews because it is unrealistic to attempting 'standardized interviews' with undifferentiated questions and procedures when engaging a wide range of actors in the interviews. Although all the interviewees are somehow involved in CDM activities on daily basis, their different jobs and expertise split them rather significantly in terms of being capable to answer certain questions. For example, when talking about the implementation risks of the CDM project, a buyer may be interested in the probability of CER delivery; whereas the banker may worry about the security of the loan repayment, and the policy maker may be mainly concerned with the negative impact of a failed project to the successful registration rate with the EB in his political purview. Therefore, interview questions were carefully crafted to suit participants' various backgrounds and experience, even though the purpose of the questions or focus of the issues to be investigated remained coherent throughout the interview study. For example, although different questions concerning 'environmental integrity' were designed for DOE people and project owners, the purpose was essentially the

same: understanding peoples' perception of 'business as usual' way of doing CDM project and its implications for 'additionality' issue.

In order to keep the subject on track, the researcher made the theme and purpose of this research clear at the beginning of each interview. The process of the interviews was manipulated more like a 'naturally occurring' conversation where the interviewee was encouraged to be open and conversational. From time to time, I required the informants to comment on some existing CDM related criticisms or arguments with their own experiences in order to get deeper insights. For the same reason, I also picked up some key words, phrases or ideas that I think are related to the research themes and questioned the informants for further explanation or clarification. For example, one of the informants kept using the word 'cheating' during the interview. I picked up this word and asked him to elaborate what he really meant by cheating. He then presented a fantastic story of his disillusionment of CDM after seeing this mechanism deviating significantly from his original ideas.

Ambiguity is another issue when informants might sometimes be vague and inconsistent in their expression (Kvale, 1996). Although this may due to the faulty communication or even informants' particular personality traits, it is more often a manifestation of how interviewees make sense of the genuine contradictions in the real world (Kvale, 1996). Yet, treating

such kinds of self-conflicting statements is always tricky, because if the researchers keeps on asking the questions over the contradiction elements of the statements, the informants may realize these inconsistencies and ‘fine-tune’ the previous statements or perceptions, which is not always welcomed by the researcher. In such cases, I usually encouraged the participants to use other stories to explain a situation that appears to be self-contradictory or unclear to me (though not necessarily to the informant), rather than raise the contradiction directly and ‘force’ informants to have a second thought about it.

Being open minded and sensitive to the potential of change or need to modify interview questions or procedures is also needed. The need for change may be due to various reasons. For example, during this field study there was an increasing worry about CDM’s future, which led to significant changes in peoples’ perspectives. New policies issued during the same period may also lead to the similar issues. People will respond to these external variables and develop new ideas or insights that need to be reexamined if possible. In this research, I tried to revisit some informants when they changed their roles in the business circle (i.e. from DOE to consultancy, or vice versa) in the hope that the change of duties might have led to a change of perspective. This assumption was proved largely valid and most of the revisits became important conversations of this field study. In addition, the interview procedures were also modified

to best suit interviewees' convenience. For example, in the later phase of interviews, I often suggested interviews to be taken in unofficial settings such as in a quiet café or tea house, because I noticed most of the informants feel it more relaxed and open in these places, rather than sitting with a tie and suit in the office.

All of the interviews were recorded with prior consent of the interviewees. The use of digital recorder is essential because it allows the researcher to document the non-verbal details of the conversations, such as pauses, overlaps and the like, which may reveal some interesting information. Besides, note taking during the conversation has two distinct negative effects. Firstly, it distracts the researcher who may be busy writing down the notes but ignoring some important words, phrases and even expressions that should be picked up for further questions. Secondly, interviewees may not feel very comfortable with someone sitting in front of him or her, and trying to taking down every single word he is saying, hence the flow of the conversation can be severely interrupted. Although some informants may feel uncomfortable at the beginning with the recorder, after a few minutes they normally become used to it and continue talking in a more relaxed manner.

So far I have described document analysis, observation and open-ended interviews as the three ways of gathering data in this research. Then what

about credibility? As I explained previously, these techniques are used mainly to understand ‘what the actors should be doing’, ‘what they are actually doing’ and ‘what they think they are doing’. In order to make the inferences reliable, triangulation is necessary to carry out ‘cross examination’ between these three sets of data. Triangulation is a method whereby different methods are used in order to remove bias in single method-oriented research and thus achieve the validity and reliability of the research findings. Denzin (1970) as an early advocator of this method argues that a field strategy should simultaneously combine multiple sources of data collection as a method of triangulation process in order to overcome the partiality of data and present a complete picture. Later supporters of triangulation also hold the assumption that different methods should lead to the same findings and if it is not the case, certain measurement must be ‘flawed’ (Moran-Ellis et al, 2006).

The limitation of this argument is clear when various research methods can also lead to erroneous research results (Fielding and Fielding, 1986), while different results may not necessarily be due to a flawed measurement, but rather a factual difference between social reality, people’s perceptions and a normative statement. Hence in this research, both convergence and divergence are actively sought after since the former may suggest a coalition in presence, while the later reveals conflicts and contradictions. It is believed that both can provide

interesting evidence for a comprehensive understanding of the research issue, as long as they are grounded in disciplined theoretical perspectives.

4.3. Research Ethics

The ethical clearance of this research was issued by School of International Development at University of East Anglia prior to the field work in November, 2010. However, there were several ethical issues to be taken into serious consideration throughout the various stages of data collection phases. Among them the most important issue was the confidentiality problem of those informants that are involved in the observation and interviews. There is a “disclosure risk” in this research in which people reveal things of a sensitive nature (e.g. on power relations with other social actors, or non-compliance of national or international CDM regulations.) Thus, the informed consent and confidentiality is important. Consent was gained in advance for every informant in this research and the researcher only recorded the interviews with the prior consent of the participants. The informants were also required to sign the consent form, which is in English. Since all the informants have no difficulties to understand written English as they have to deal with English written CDM project documents on daily basis, translating the consent form into Chinese was deemed unnecessary.

All the informants preferred to remain anonymous so that securing their anonymity and privacy was the researcher's top concern (see Appendix 1 for the complete list of interviewees). All the names of participants were coded anonymously in the transcription and recording. Pseudonyms are used for any direct quoting are included in writing up the thesis or other publications. The recordings have been kept safely with password protection on the researcher's personal computers to guarantee that only the researcher himself can access to the data. Besides, some of the records were edited afterwards to cut off the names of the relevant parties or organizations. The researcher made sure that all the quotes used in the thesis aimed to identify some general features of research issues but not relate to any specific problem of individual projects or organization. The researcher discussed with the participants how to use the content of interviews, and picked out sensitive phrases that are not comfortable with the informants to be quoted, before asking for the permission to take direct quotes from the interview transcript.

Most of the documents analyzed in this research are available to the public, which can be accessed and acquired from the website, seminars and public libraries or archives. However, some project related documents, such as negotiation memos or business reports, were provided by the informants, who had to make sure that these documents were not confidential and could be exposed to the researcher for research purpose

sonly. It is noted that there are quite a large number of projects and organizations involved in the RE-CDM activities in the research area, so that the revelation of the information that concerns these activities will not lead to the leakage of the participants' and their organizations' identity.

Accessing and snowballing are other issues that are carefully considered. I have over ten years of experience as a credit risk analyst on infrastructure and energy projects in China and worked with major Chinese financial institutions and energy utilities. Some parts of this research are linked with people from organizations I once worked with closely. Yet most of the latter participants were introduced by the people who did interviews as their friends, former colleagues and business partners, and so on. In such case I always reminded the informant that if he wishes to introduce other people as potential interviewees, he must not reveal his identity as an existing informant since the identities of the informants should be back-to-back, meaning that informants would not acknowledge that there are other informants of this project within his organization.

However, it became rather difficult when several people from the same office had been invited to the interviews simultaneously. In addition, CDM presents a rather small circle with only about 2000 people who are

directly engaged in this newly emerged business. It is almost impossible to conduct purely back-to-back interviews as people might start talking about this research after being interviewed. In the later phase of field study, some of the interviewees already somehow acknowledged this research project and the researcher. One of them even made a comment like: ‘Finally, it is my turn’, when I firstly dialed their numbers to gauge their availability. In this regard, a slight ‘contamination’ due to the intimate engagement to the researched community, a phenomenon discussed once by Mason (1996), seems also inevitable for this research.

On the other hand, informants sometimes are seeking ‘expertise opinions’ from the researcher as well. For example, since CDM is facing a ‘turning point’ as the Phase I of KP will soon be expired in 2012 some informants are very worried about their own jobs and hence seeking advice from the researcher during the interviews. Another example is that when visiting a local renewable energy investment fair, the local officers insisted the researcher do a presentation on renewable policies in front of all the participants. It is very difficult to reject such requests from time to time, but in order to minimize the influence of the researcher on the research subject, I usually agreed to have a ‘Q&A’ session at the end of the interviews or observation sessions and answer some of the informants’ questions.

4.4. Qualitative data analysis

There are many different approaches to qualitative data analysis, but in this research I mainly used Nvivo 7 software to organize and analyze data. All the written materials including document papers, observations notes and interview transcriptions were input into the software. I did not translate the Chinese documents or transcriptions because the time constraint of this research, and I am afraid that translation would somehow reduce the originality and representation strength of the data. Therefore, I decided to translate Chinese transcriptions only when they are directly cited in the thesis. Thankfully, most of the functions in Nvivo 7 are applicable to Chinese materials too, even though I had to work out a twin set of code and nodes with English and Chinese respectively.

I began organizing the data by coding text and breaking it down into more manageable segments. I developed three overarching code categories (tree nodes) based upon the theoretical frameworks, the research questions, and the overall impression of the data. Therefore it is initially a ‘top-down’ way of dealing with data. But later I realized that this ‘top down’ process might not be capable of capturing important insights that ‘naturally emerge from the data’. So I modified and updated the tree nodes constantly in accordance with the changing analytical focus and new themes found in the data. Most of the sub-nodes were developed

from the topics raised in the data. The final outcome of the coding sets was a mixture of both inductive and deductive effort.

Using software in the data analysis process has been thought by some to add rigor to qualitative research (Richards & Richards, 1991). One of the benefits of using such software is the flexibility of being able to define and easily alter the coding scheme during the coding process (Kelle, 2004).

However, during the research I have not abandoned manual analysis completely, because there are ambiguous and synonymous terms used in the texts regarding the same idea or situation. Taking into the consideration that the materials consist of both English and Chinese language, the problem is very serious. Just taking the node 'integrity' as an example, in some cases, the integrity issue was referred to as 'cheating' or 'a moral deviation'. But some responded to the issue with 'second best choice', or even 'creativity'. The way in which respondents express similar ideas in completely different ways makes it difficult to recover all responses simply by computer software. In such a case, some manual search and inspection were necessary so that data are in fact thoroughly interrogated. In fact, during the data analysis period I had to navigate between the raw data and the coded data so that I could reveal the most relevant and important themes.

4.5. Conclusions

In this chapter, I have clarified the methodological issues that underpin the design and analysis of this PhD research. It is noted that these issues may be interlocked with epistemological or ontological categorizations, based on the divided perceptions of quantitative or qualitative methods in research. As for this research, qualitative case study is selected as a preferred research design, yet such choice is not based on the researcher's preferable knowledge tradition (epistemology) or philosophical approach. On the contrary, the researcher holds that the quantitative or qualitative research have different values and intends to answer different research questions, which require different methods for collecting and analyzing data. The bottom-up approach of this research to understand an innovative governance system or the political economy of a new industrial sector that cuts cross many existing ones indicates a set of research questions to be formulated which mainly focus on the power interactions and social processes around the CDM arena. It is this nature of such research inquires that induced a qualitative case study strategy.

Based on this strategy, three methodological techniques, namely ethnographic observation, document analysis and open-ended interviews, are identified as the major resources for data generation. Each of these methods is used to reveal certain aspects of CDM governance in China

and they are combined to illustrate the relationship between the normative, subjective and actual situations. Triangulation between these three spheres is carried out in order to make more reliable and credible generalization. It is noted that the three spheres may not always be presented in a consistent way, yet the division or contradiction can serve as a good starting point for investigating the key variables such as power, interests, and influences among the social actors involved in the RE-CDM activities.

As with most qualitative case studies, this research design and its methodical strategy has some advantages and disadvantages. On the one hand, it allows the researcher to explore the in-depth cause and context of some of the major problems that CDM claims to have since its inception. It also opens the possibility to reveal the ‘black box’ of governance as a process at CDM’s implementation level via the lens of business power and influence in the Chinese political economy. Whether the problems of CDM, if any, are due to a problematic governance architecture imposed from the top (inter-state negotiations)? Or it is just the same old story that even a perfectly designed mechanism can go wrong when meeting with domestic structures, traditions and cultures? This research’s ultimate goal is to provide some empirical evidence to this rather implicit but important debate over the cause of CDM’s inefficiencies. Because no matter what happened to CDM in the post-2012 scenario, the real causes of its

problems should be learnt to avoid similar mistakes in designing other flexible mechanisms (REDD, or CDM in LDCs) in combating climate change.

Yet, it should be noted that the findings of this research can be highly contingent for various reasons. Among them is the relatively unique political culture in China and the cross-sectoral features of CDM. Therefore the inferences delivered in this case study should be complimented with other empirical and theoretical studies at cross-sectoral and national levels. Furthermore, China is a country that has witnessed tremendous transformations in terms of its political economy, governance models and climate strategies in the past decade, which may well continue to be the case in the foreseeable future. Hence the ‘snapshots’ that are taken today for this research may not be sufficient to explain the dynamics of change in the future. Therefore, more comparative studies will be welcomed to test the generalizations established in this research by applying them in various timeframes or historical moments in time.

5. The political economy of RE-CDMs in China

In this chapter I discuss the relationship between state regulations and market activities in the RE-CDM market. I start with a section of contextual background regarding the role of various business groups in the RE-CDM activities, as well as a brief description of Chinese regulations and policies on renewable energy development and CDM. The following section presents the analysis concerning both the constraints upon state actors, and the capacity or leverage of business actors in governing Chinese RE-CDM activities. The manifestations of business power are analyzed via their strength to either promote or marginalize certain types of methodologies, project types, and contractual relations of the CDM projects, as well as their impact on creating a dominant discourse that supports and legitimizes renewable CDMs as China's efforts to combat climate change.

The third section discusses the findings based on the preceding analysis, which particularly focuses on the impact or consequences of the advancement of business power in governing the carbon offset activities. I argue that the implications of business influence and their relationship with state actors relate closely to many problems noted in the CDM market today, namely an unequal distribution of projects and CDM revenues, the integrity or additionality of these offset activities and their

arguable insignificance of contributions to sustainability. The Chapter concludes with the argument that the CDM has created a vacuum space for governance in host countries that both market and state actors intend to capture. Yet it is the market actors that eventually seize many crucial aspects of governance roles. However, they cannot achieve it without connecting closely with the national policy makers, since the latter provide not only the legitimacy input for their CDM operations, but a relatively slack regulatory framework for CDM activities. The findings of this research reinforce Breslin's conclusion that the relationship between political elites and new economic elites represent a new social class in China, which not only regulates the economy to generate profits for itself, but also allies with outsiders to promote neo-liberal projects (Breslin, 2007).

Therefore the pattern of state-business relationship in this market fix only loosely to the existing explanations of Chinese political economy, where the business do not interact with states in a typical pluralistic or corporatist fashion. Business are neither 'barnacles on a ship' nor decisive forces that can determines the policy outcome alone, as some structuralist theorists would suggest (Cox, 1987). The power of business actors revealed in this research is rather unevenly spread within the markets, and its dynamics changes constantly throughout various stages of the market development. However, business actors are arguably the major drive to a

thriving RE-CDM market in China, which are at the same time also responsible for some of CDM's most worrying deficiencies.

5.1. RE-CDM: business actors and policy framework

The CDM is often regarded as a new mode of governance since it exhibits a two-tiered and hybrid governance structure (Streck and Lin, 2008), which incorporates private and public actors to oversee both the flow of finance into the non-Annex 1 countries and carbon credits back to the Annex 1 countries (Bumpus and Liverman, 2008). It comprises of a regulatory framework at the international level and an operational framework at national level. The latter, can be viewed as a rich empirical site of hybrid networks among various non-state actors (Lovell and Liverman, 2010) that cut across almost all the important economic sectors in the host countries (See Table 5.1).

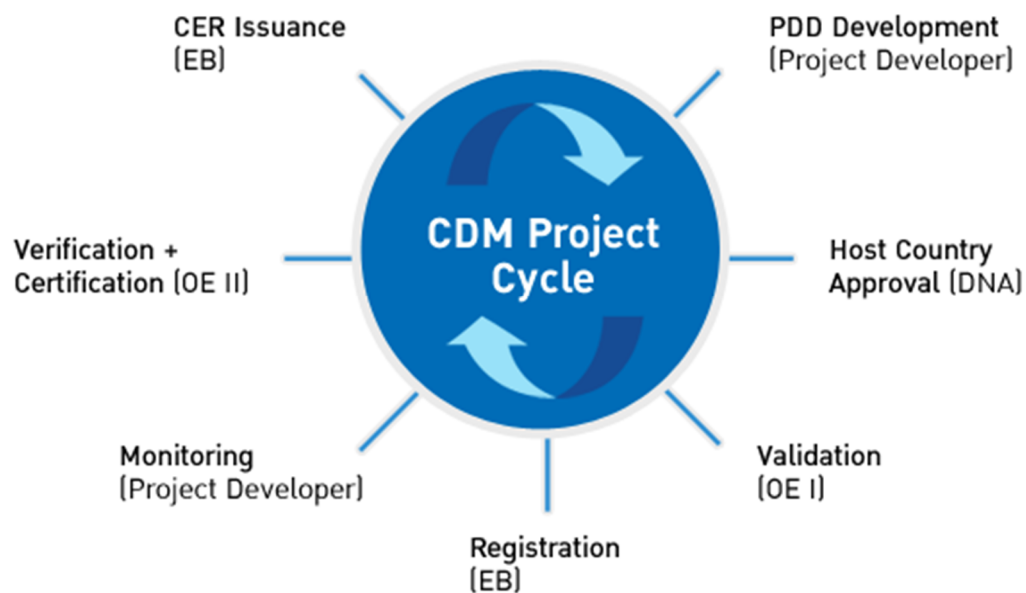
5.1.1. A new carbon bourgeois: who they are and what they do?

The current governing structure of CDM activities involves the sheer number of entities around the project cycle and a complicated role sharing system. The successful implementation of every project needs participation from formal international regulatory institutions (EB), multinational corporations (MNCs), financial institutions, national and local governments from both Annex 1 and Non-annex 1 countries,

domestic public or private companies, independent consultants, and professional validators. All these actors are generating inputs into the governance system. For such a complicated system, it is noted the interaction and collaborations of the state and non-state actor groups that will serve a crucial role in securing successful implementation of market based offset mechanism under the international treaty (Streck, 2004).

In this research, I broadly separate business actors into four categories, known as the CER buyer, CER supplier, project developers and DOEs. This categorization is mainly due to their distinctive roles in promoting and developing CDM activities. However, it should be noted that many business organizations have multiple roles in the market. For example, it is noted that both CER buyers and suppliers may own a project developer team to standardize and streamline their CDM business. The impact of integrated roles on the market development is discussed at the later part of this section. In addition, there are peripheral non-state actors that are included in the project cycle and have an important role to play, such as the financiers and lawyers.

Table 5.1: CDM Project Cycle and Role Sharing Map



5.1.1.1. CER Buyers

CER buyers are public or private entities from Annex-1 countries who wish to acquire carbon credits, either to offset their own emission caps under the KP or to trade these credits at secondary market for a profit. The buyers that are actively engaged in CDM activities include various types of organizations, ranging from public and private utilities, private companies, investment banks, government agencies, and institutional or private hedge funds. NDRC, China's CDM regulator or Designated National Authority (DNA) in CDM terminology, records 90 buyer companies that are formally engaged in CDM business in China. Most of the biggest players in the market, such as Ecosecurities, Tricorona, EDF Trading, Enel, established their offices at the dawn of China's CDM

boom between 2003 and 2005.

It should be noted that CDM is created with the primary concern of the efficiency rather than GHG emission mitigation. The rationale behind this flexible market mechanism is cost-effectiveness as they allow actions to be taken in developing countries without compromising too much economic burden for the developed countries and their companies. Therefore, the demand side of the market, or the total volume of the CERs to be purchased by Annex-1 parties to offset their own climate obligations, is more or less fixed at the international level. KP requires that *'Annex I Parties must provide information in their national communications under the Protocol to demonstrate that their use of the mechanisms is "supplemental to domestic action" to achieve their targets'* (UNFCCC, 2007). In reality, this constraint demand has largely increased the power of the CER buyers in the market. Their attitude and risk appetite determines some crucial elements of the market, such as the CER price or the favorite project types.

In addition, buyers are allowed to purchase CERs from a highly diversified project portfolio regardless of its own industrial background because CER is a standardized commodity. For example, a utility company from Annex-1 country can purchase carbon credits that are generated from any project type in China such as waste disposal projects,

or metal production facilities, besides energy related facility. This ‘freedom of choice’ has significantly enhanced the power of the CER buyers in the market as they could compare the potential profitability among various CDM project types and select the easiest options to reap CERs. The dominance of HFCs and later on RE-CDM activities in China is partly due to the buyers’ preference on this project segment, which is discussed at the later sections in this Chapter.

5.1.1.2. CER suppliers (Project owners)

On the sell-side, CER suppliers refer to project owners based in host countries. These are typically entities which own the assets that can be developed into CDM projects e.g. farms, chemical factories, steel plants, cement plants, or state-owned energy companies seeking to develop alternative power generation sources. As for the RE-CDM, most of the wind farm CDM projects are owned by state utility companies, while a large number of small hydro projects are owned by independent private power producers.

Any CDM project, whatever type it may be, is in the first place a ‘conventional commercial project’ which needs a capable investor to initiate investment plans, secure land and finance, purchase and install equipment, construct the building facility, maintain the operations, and finally benefits from the output(s). Project owners are hence unique and

important because they are the only legal entities being responsible for the sponsorship, delivery and function of the CDM project, and the only direct beneficiary for the sales of CERs as one of the outputs for their investment.

Unlike CER buyers who can simultaneously lay their hands on a variety of CDM projects, the suppliers of the CERs or the project owners are usually constrained to their core business fields. For example, the project owners of wind farms or solar power plants are very unlikely to travel into the domains of non-energy production sectors due to their lack of expertise and experience of project development other than within their own areas. Cross-domain investment is rare in China's CDM market.

As a result, the industrial strength and capacity of the project owners in a given economic sector has become a crucial determinant of a thriving CDM market in that particular sector. Chinese wind farm CDMs serve as a very illustrative example here. Most of the project owners are highly capable state-owned utility companies who are able to mobilize a large pool of finance and human resources needed for the capital investment of wind farms. Their closeness to the officialdom and familiarity of the bureaucratic procedures make them a reliable source of CDM projects.

'Our (CDM) projects seldom stopped midway. We are familiar with the bureaucratic process and if the project is stuck somewhere, we know

which government agency and which person we need to find and talk to.'

----- Interview transcript of ZNW

ZNW is speaking for his organization, a state-owned utility company whose capability in project implementation is much stronger than the average project owners. During the interviews, the buyers unanimously concur that wind farms are one of the best projects in their portfolio because the suppliers of the credits are often these large utilities which are *'reliable and capable to get things done in time'* (Interview transcript with LYR, CL and ZL).

5.1.1.3. Project developers

CDM has created fertile business ground for dedicated carbon consultancy companies who act not only as intermediary knowledge brokers between the CER buyers and sellers, but also as the technical experts who advise on project implementation, compile the required project documentation, and manage the bulk of the CDM process.

In the CDM market, project developers or consultancies are indispensable parties for several reasons. At the outset, CER buyers from Annex-1 countries rely heavily on external consultants to get access to the local market and identify potential CDM deals. On the contrary, project owners in host countries usually have very limited knowledge regarding the

CDM rules and procedures. They need carbon expertise to help them going through the bureaucratic process if they wish to materialize their potential carbon revenue. Besides, CDM is a rather 'bottom-up' mechanism since new methodologies and eligible project types are not handpicked by the decision makers at EB (Kollmuss et al, 2010). Instead, they are designed and proposed by the market actors and this task has essentially become the project developers' core duty in their daily business. Appropriate methodologies are the base for developing CDM projects. Hence the initial designers of methodologies, namely these project developers, become the on-the-ground decision maker of the appropriateness, feasibility and even eligibility of a given project type to be labeled as a CDM.

5.1.1.4.DOE

DOEs are the independent third-parties which act as the "auditors" for the CDM project. These companies have to be certified by the EB before they are able to provide validation and verification service to the project owners. DOEs main duty is to check if a project is eligible to be registered as a CDM project (known as 'validation'), and to confirm if the registered project has been properly implemented and monitored so that the project performance sustains the claimed emission reductions (known as 'verification').

DOEs are often regarded as the outreach arms of EB and the ‘watch dogs’ that guarantee the quality of each CDM project. However, these entities are usually part of business organizations and their performance is largely subject to the business logic. DOEs in China can be categorized into two groups. On the one hand, there are domestic institutions such as China Environmental United Certification Centre (CEC) and China Quality Certification Centre (CQCC) who are essentially quasi-government organizations. On the other hand, many foreign DOEs are also operating in the Chinese CDM market. Institutions like Det Norske Veritas (DNV) and Energy Resource Management (ERM) are active players in auditing Chinese CDM projects. But regardless of their ownership, their auditing services were paid by the project owners rather than by EB, meaning they have to strike a balance between their reputation as an independent agency and a severe competition in the Chinese CDM market.

‘As DOE, if we say ‘yes’ all the time during the project validation or verification, EB would question our credibility. But if we say ‘no’ all the time, no project owner would like to hire us and we are out of the business. That is really tricky.’

-----Interview transcript with DW

So far I have identified the four business groups in CDM market based on their distinctive functions and roles in the project cycle. However, it

should be noted that market is never a static place and the roles and functions of the actors can be blurry, fluid and overlapping from time to time. A good example is that since 2007, both CER buyers and suppliers started to mount up their expertise and knowledge about CDM rules, and consequently setting up their own team dedicated to project development, rather than relying purely on external project developers or consultancies. Up to day, all the ‘Big 5’ state utilities companies in China, known as Guodian, Huadian, Datang, Huaneng, and Zhongdiantou, have established dedicated carbon expertise team to facilitate their own CDM business. Buyers like EDF (a French utility company) have also purchased a Chinese carbon consultant company in 2009 to strengthen its project developing capability.

Beside this notable trend of ‘internalizing’ carbon expertise in the market, the workforce among these private entities are particularly fluid when people are often seen job hopping among buyers, DOEs and project developers. In addition, there are public officers trying to tap the CDM benefits. Some of them resigned their previous public jobs and joined the CDM related business.

5.1.2. Policy and legislation framework of RE-CDM

CDM created not only new market players but also new policy domains, regulatory institutions and bureaucratic procedures at national level,

which needs to be integrated into an existing policy framework in order to make CDM work. In the case of renewable energy sectors in China, two policy documents are at the centre of the policy web concerning the development of wind energy CDMs in China. One is the ground-breaking Renewable Energy Law (REL) passed in 2005. REL and its following supplementary measures and guidelines govern all the renewable energy production projects in China and proactively promote policy tools such as feed-in tariff, grid connection, regional renewable plan, and so forth. The other document is Measures for Operation and Management of CDM Projects in China (MOMCP), which serves as the guiding policy paper governing all the CDM activities in China.

5.1.2.1. Renewable Energy Law (REL)

Renewable Energy Law (REL) was passed in February 2005 and formally enacted on 1 January 2006. It provides a comprehensive guideline and framework for developing renewable energy activities. The purpose of this law, as described in the Article 1, is to *'increase the energy supply, improve the energy mix, safeguard energy security, protect the environment, and achieve sustainable development.'* These objectives are highly compatible with the national development strategy set out in the 11th national Five Year Plans.

It is noted that REL prescribes several favorable policy instruments to

promote renewable energy. Firstly, the government will set out a mid-to-long term overall renewables target in the national energy mix. The renewable target set out for the 11th FYP (NDRC, 2007) is 10% for 2010 and 15% for 2020 in the total energy consumption (NDRC, 2007). Yet it is noted that the 2010 target of 10% has not yet been achieved despite the massive development of renewable projects (see table 5.2). The second policy element of REL is the compulsory synchronization requirement for the national power grid. This policy aims to protect renewable power producers by increasing their bargaining power with monopoly like grid companies (only two are in operation at the moment, known as State Grid and China Southern Power Grid).

REL also allows government to intervene in the pricing system for renewable energy production. According to Measures for Price Management and Cost Distribution on Renewable Energy Power Generation Projects, issued by NDRC in 2006, there are two types of interventions. The fixed floor price (feed-in tariff) is set out by NDRC, which have a legally binding effect for the power purchasers. It applies to all the biomass, solar, wave and geothermal power projects that are not developed through the government controlled national bidding system.

Table 4.2: Total Consumption of Energy and Its Composition

Year	Total Energy	As Percentage of Total Energy Consumption (%)				
		Consumption	Coal	Crude Oil	Natural Gas	Hydro-power, Nuclear
	(10 000 tons of SCE)				Power, Wind Power	
	2001	150,406	68.3	21.8	2.4	7.5
	2002	159,431	68.0	22.3	2.4	7.3
2003	183,792	69.8	21.2	2.5	6.5	
2004	213,456	69.5	21.3	2.5	6.7	
2005	235,997	70.8	19.8	2.6	6.8	
2006	258,676	71.1	19.3	2.9	6.7	
2007	280,508	71.1	18.8	3.3	6.8	
2008	291,448	70.3	18.3	3.7	7.7	
2009	306,647	70.4	17.9	3.9	7.8	

(Source: National Statistical Bureau, 2013)

The other type of intervention is called the guideline price. It does not have any legally binding effect for the power purchasers. Guideline prices apply to wind farms and most of renewable projects that go through the national bidding system. However, in 2009, NDRC decided to apply four categories of feed-in tariff for its onshore wind projects according to the quality of wind resource among various regions. Areas with better wind

resources will have lower feed-in tariffs, while those with lower outputs will be able to access more generous tariffs (ranging from RMB 0.51 Yuan to 0.61 Yuan). As for the incremental cost occurred by purchasing and synchronizing renewable energy into the grid facility, REL establishes a cost-sharing mechanism so that the accrued cost will be shared among utility consumers (about 0.63\$/kw since 2009).

5.1.2.2. Measures for Operation and Management of CDM Projects in China (MOMCP)

This document was firstly issued in 2005, and was revised in 2011. The analytical focus is given to the 2005 version because it is the document that was in force throughout the years when the majority of the CDM projects were developed. However, comparative analysis is also carried out to examine some new elements of the updated version.

In general, the measure is a protective and restrictive document in a number of ways. It reiterates the dual purpose of CDM as ‘to assist developing country Parties in achieving sustainable development and in contributing to the realization of the ultimate objective of the Convention as well as to assist developed country Parties in achieving compliance with their quantified GHG emission limitation and reduction commitments.’ (Article 2)

China, like many developing countries, was reluctant to support the CDM

at the initial stage, in the fear that it would quickly exhaust the nation's most cost-effective mitigation options (Qi *et al*, 2008). In addition, the government worries that developed countries would use CDM payment as a part of compensation for their historical and financial obligations under the convention (Zhang, 2006). Therefore, the measure is to 'protect Chinese rights and interests' (Article 1) and make sure the CDM revenues are additional to any ODA loans or financial programs under the convention (Article 9). For the same reason, only Chinese companies with majority ownership can apply for the CDM (Article 11). All these protective regulations, together with unofficial rules such as a floor price requirement, reflect a cautious yet supportive attitude of government officials towards the CDM.

The measures also shows the government's intention to integrate the CDM into its national development strategy by promoting specifically three project types, namely energy efficiency improvement, development and utilization of new and renewable energy, and methane recovery and utilization (Article 4).

The measures declare a joint ownership between the Chinese government and project owners, while the Chinese government collects a 65% share of CER revenue of HFC or PFC projects, 30% for NO₂ projects and 2% for projects within priority areas or forestation projects (Article 24).

Article 24 states clearly that *'whereas emission reduction resource is owned by the Government of China and the emission reductions generated by specific CDM project belong to the project owner, revenue from the transfer of CERs shall be owned jointly by the Government of China and the project owner.'* However, realizing that such regulation may conflict with the Property Law, adopted in 2007, the 2011 version changed the wording and only insists on a joint ownership on CER revenue, but not the state ownership of the emission reduction resource as a whole.

In 2007, the Energy Bureau under NDRC published a compiled regulation for renewable energy sectors and altogether 18 regulations have been included in that edition. This research does not provide detailed analysis for all these regulations but instead I argue that prior to the arrival of the CDM, China already has a complicated policy framework to regulate its renewable energy sector, together with a large number of existing law and regulations for electricity generation. Behind this complicated legal framework is the web of institutional or ministerial interests that CDM has to be accommodated. An old theme of the Chinese politics hence emerges here in the CDM market: the difficulties for inter-ministerial coordination and the problems of too much regulation, or a 'fragmented authority at the central level' (Lieberthal and Lampton, 1992; Lieberthal and Oksenberg, 1998), which will be analyzed in detail in the

following sections.

5.2. RE-CDM with Chinese characteristics

The previous section presents some contextual backgrounds for the development of China's RE-CDM activities by illustrating the key business actors in the market and in which policy or regulatory framework these entities are operating their carbon business. This section analyses the relationship between business and policy makers in order to shed some light on the following puzzles. Firstly, what is the major drive, either public or private, that is responsible for the massive development of RE-CDM activities in China? Secondly, what leverages that business actors possess in shaping the process of how CDM is governed? Or, does the business have a say in 'what is to be governed' at the project implementation level, and how?

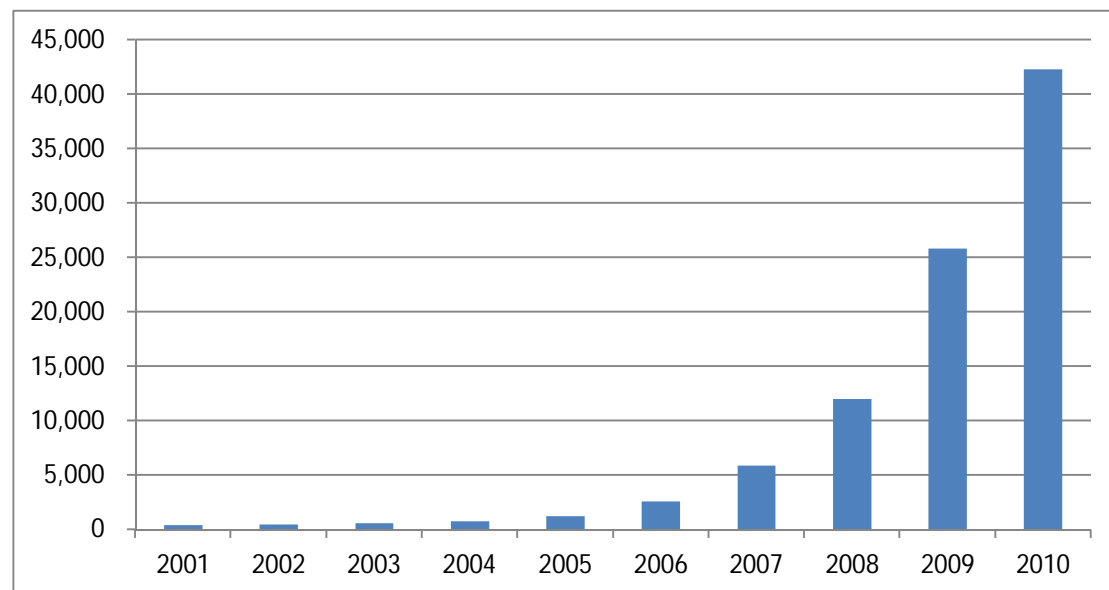
5.2.1. State's interests and power in developing RE-CDMs

The prevalence of China's 'top-down' or strong state intervention in its industrial and development policies is often treated as a 'taken for granted' explanation for a thriving market (Nee, 2010). This logic has been applied to analyzing CDM market development in China in previous studies, whereas a strong state support and institutional capacity of the regulators, such as a powerful Chinese DNA, has been identified as the main drive for the CDM boom in China (Ganapati and Liu, 2008). This

argument is echoed with both mushrooming RE-CDMs and an equally astonishing expansion of renewable energy sectors in China (see Table 5.3 and 5.4), indicating that CDM policies can effectively address the ‘market failure’ problem by shifting market’s interests from ‘low hanging fruits’, such as HFC23 projects, to activities with more sustainability benefits and strategic importance, namely the renewable sectors (Lewis, 2010). The fieldwork of this research reveals a somehow different story on the ground with some of the findings elaborated in the following paragraphs.

In general, it is argued in this research that new political institutions and regulatory capacities are built up mainly to serve the interests of expanding regulatory power from a particular regulatory institution via CDM development. In this regard, the institutional power of the states is therefore enabled by, rather than enabling, market development. Without market expansion there would be very limited CDM activities to be regulated and hence no regulatory power for the CDM officers. Secondly, although there is clear evidence that state actors intend to occupy the governance vacuum created by CDM, their effectiveness to implement these policies is often affected by business actors who enjoy the freedom either to comply or to get around these policies.

Table 5.3: Total installed wind energy capacity (MW) in China

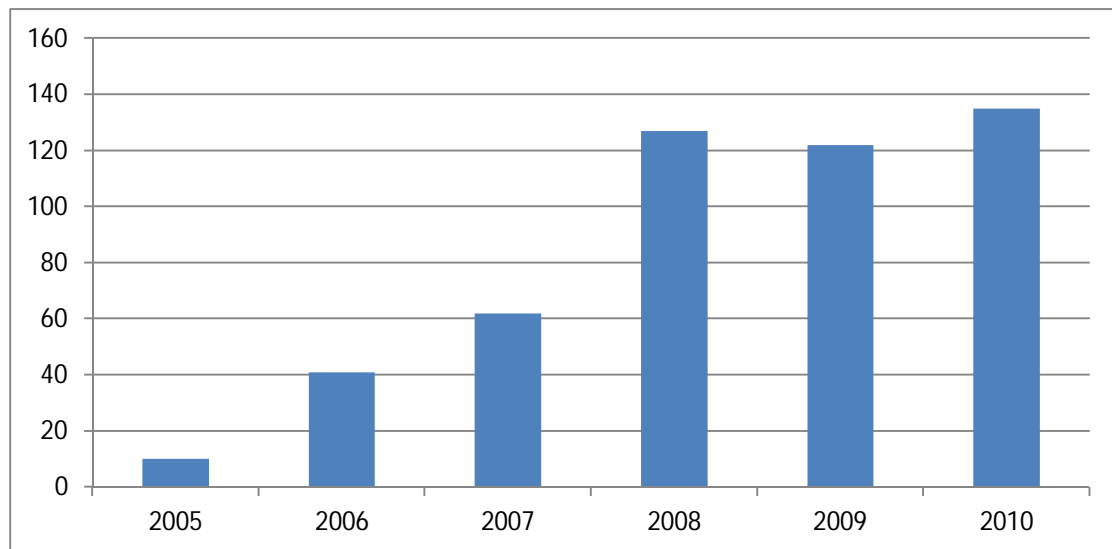


Source: Global Wind Energy Council, 2011

Moreover, it is not just the market actors that constraint the capability of CDM regulators. The existing bureaucratic systems on development and industrial policies in China often overlap with the CDM regulations, as explained in the previous section. One of the findings of this research indicates that the expansion of the RE-CDM depends critically on to what extent the newly emerged CDM procedures can interact with existing bureaucratic rules and institutions smoothly, and avoid potential conflicts with a wide range of governing authorities within the bureaucratic system. In this regard, Chinese DNA is content to accept CDM procedures as a mere side-line process, and they impose with very slack and lassie faire attitude (explained with more details in the following

section) to the non-carbon elements of the projects, such as their social or environmental contributions, which are usually under the authority of other government institutions.

Table 5.4: Chinese wind energy CDM projects registered with EB:



Source: UNEP Risoe, 2012

5.2.1.1. Policy makers' role in facilitating CDM projects: from a market promoter to a market regulator

The officers' role in promoting CDM is well understood in the market. SZQ, a veteran project developer, provided a vivid account of the difficulties he faced without governmental support at the earlier developmental stage of this market.

'With no government approval, no credit history, no relative project experience, a young project developer came into a local entrepreneur's

office. He talked enthusiastically about UN, international cooperation, etc., and offered the entrepreneur a promising opportunity to make some handsome additional revenues. The most amazing part is that, according to the young man, there is no extra cost! The entrepreneur doesn't need to do anything, except for handing over the detailed technical data of the project. If you were that entrepreneur, what do you think of the young man? Swindler!'

----- Interview transcript with SZQ

SZQ is not the only person who has been treated as a swindler when he firstly peddled the idea of CDM to the potential project owners across China in 2005. Another informant gave me a more dramatic account of how they were investigated by the local police, who were called up by the project owner after their first meeting. These accounts revealed a unique role of state actors to enhance the credibility of market participants with its official endorsement and legitimization. Therefore many informants believe that the most important value of a series of capacity building programs initiated by the government is that they guaranteed the genuineness of the CDM and enforcing the trust among the market actors (Interviews transcript with ZL, LYU and LHL).

However, once the trust is established among the business actors the government's role in promoting CDM is significantly diminished. If the

project owners are convinced the realness of this innovative mechanism, they would then like to know how it can be done step by step. This is a question that is often beyond government officers' capability to answer. It is the business actors, such as CER buyers and project developers, that often act as teachers to enlighten project owners how to dig up potential projects and benefit from them.

'To have private companies in these capacity building activities is a win-win solution for both (government and business), because government officers only know some background knowledge, international rules and approval process around the project. But most local people want to know how a specific project should be carried out. How can we make the project be eligible as a CDM? How to prepare the documents? And most importantly, when and how can they benefit from it? Etc. A presentation of real cases is the best way to answer these questions, like what we do in most of the seminars or workshops. People then really believe it is true and workable. Consequently, they came to us to discuss more projects in the area.'

----- Interview transcript with ZL

Promoting CDM is a process of integration of mindset of all the parties from public and private domain, and both state and non-state actors have indispensable roles to play. Most of the interviewees from private

domains expressed their superiorities in terms of their expertise and knowledge over public actors, while retaining their deference of central officers during the process since official endorsement and support are an essential (yet sufficient) condition for market development.

5.2.1.2. Political needs for CDM: a constrained wish for institutional power

China's DNA is arguably the most efficient DNA in the world, which has approved more than 3400 projects since 2005. NDRC is a mammoth ministry in China's political system and often referred to as the 'mini state-council' among Chinese people. However, one often overlooked fact is that NDRC was only formed in 2003, and its climate change division was then a relatively small agency. Its administrative power is limited comparing those regulatory institutions that oversee the energy industry, electricity production, and renewable energy policy in China. During the interviews, many market participants mentioned the growing institutional power of this office along with China's CDM boom.

“In the earliest days, nobody knows what a CDM is. Neither did they know who governs it in the government. We visited various government departments until we are told that it is the Climate Change Office in NDRC who is in charge. It was an office with only 4 or 5 officers and temporary employees, and it has no formal bureaucratic ranking. ”

In a hierarchy political system, bureaucratic ranking is considered as a

very important evaluator for the state office's institutional power in China. It is noted that Climate Change Office was upgraded to a full-fledged bureau-level institution (*Ju Ji Dan Wei*) only in 2008. The argument is that it is the fast growing CDM market that enables its regulatory institution, not vice versa. Market participants' perception strongly echoes with this observation. When asked about DNA's incentives in promoting CDM activities in China, the need to expand extra institutional and regulatory power has been raised by many informants as the crucial incentives for government officials in supporting the CDM (Interviews with LHL, LX1, and MZM).

GJ, one of the senior managers of a major CER buyer in Beijing mentioned during the interview:

'On the one hand they (officials) have to create a supportive environment for developing CDMs, by organizing capacity building activities and passing favorable policies and so on. On the other hand, they also create constraints for the market participants via certain procedures, such as creating an internal evaluation committee. Their argument is that without such checking procedures the rate of successful registration at EB would be even lower. That's not convincing. EB, DOEs, CER buyers and projects developers are the ones who are responsible for the quality of CDM, not DNAs. Why they are doing that? Climate officers are among

the most powerless in NDRC, now suddenly there are thousands of projects waiting to be approved by them. They would never let go of this opportunity.'

However, DNA's intention to intervene the market practices is obvious. The declaration of CERs as a 'state property' in MOMCP is a vivid example, and a biased CER sharing system according to preferable project types is another. The government also insists on a Chinese ownership majority for the CER suppliers. Beside these written regulations, there are some unspoken rules too. NDRC intervenes in the carbon price by approving only those projects above a floor price of 8 Euros. It also prohibits project developers to share CERs revenues with project owners. These written or tacit rules are manifestations' of state's intention to seize a rather open ground of governing CDM activities.

Eventually, these policies have seen largely ineffective in changing markets' perspectives and their day-to-day practices as the market actors have invented new moves to outpace these regulations when they see fit. For example, business parties often sign two set of contracts. One is for the approval procedures, the other, which is *de facto* carried out on the ground, stipulates the real CER price and revenue sharing mechanism between project owners and project developers. The Chinese ownership majority requirement can also be breached by artificially changing the

shareholding structure of the joint ventures. In general, the regulative power of these policies is not as strong as they appear on the surface.

'In the carbon market, policy follows the moves of business. Because they (governments) have no idea what are we (business) going to do next. We invented some new moves, and then they start to think of how to regulate it.'

---Interview transcript with KWW

It would be simplistic to describe this relationship as a cat-and-mouse game, rather the development of the CDM market provides another vivid example of the triumphs of those 'bottom up' initiatives over the 'top-down' intervening policies if they fundamentally contradict the overall market interests (Chen et al, 1992; Johnson, 1988), as illustrated previously.

5.2.1.3. Regulating RE-CDMs: managing the policy overlaps and vacuums

The regulatory power of DNA is also confined according to the pre-existing regulatory system that governs various industrial or development activities in China. Taking wind energy projects for example, according to the Measures for Management of Implementation and Development of Wind Energy Projects issued in 2011 (NDRC, 2011), the wind farm builders have to provide the following documents to make their projects

approved from the Energy Bureau of NDRC, a different bureau that regulate overall energy project activities in China:

- Evidence that the project is in accordance with national, provincial plan for wind energy production, which is set out by government institutions at various levels;
- Chartered provision or preliminary approval from the government for conducting pre-construction works
- Feasibility studies complied by an eligible independent research institution
- Land use permission from land use authorities
- Environmental impact assessment and approval from environmental ministries
- On-site security evaluation by concerned government institutions
- Preliminary opinion from grid companies or province level energy authority about the grid connection and power transportation
- Letter from financial institutions for preliminary agreement to finance the projects
- Other documents

This list presents some basic requirements for any potential wind farm investors. However, if the investor wishes to accredit its project with a CDM label, it needs to get another approval from DNA from the Climate Change Division of NDRC, which checks the following aspects:

- Eligibility of the project participants;
- Documents necessary to implement the projects (including application form, feasibility studies, PDDs, environmental assessment, etc);
- Methodologies
- Calculation of CERs
- CER prices
- If the funding for purchasing CERs is additional
- Technology Transfer
- Estimated transfer period of CER
- Plan for monitoring and verification
- Sustainable development contribution

Intra-ministerial conflicts or relationship is not the main area to be investigated in this research. However, the above approval procedures reveal several crucial elements of how RE-CDM is governed on the ground in China. At the outset there is a clear separation of governing RE-CDM activities in terms of its physical element (renewable energy production) and carbon element (CER production), which follow parallel tracks of decision making process in different regulatory arenas. Secondly, since any given wind farm CDM is essentially a project that comprise both physical and carbon element, there are obvious overlapping items that are double-checked by the regulatory bodies.

For example, the request for a independent feasibility study and financial plan is required twice for the RE project approval and CDM approval respectively. The Energy Bureau under NDRC wants to check if the project is financially viable, while the CDM regulators try to identify the additionality of the project, an indeed opposite direction to look at project's potential profitability. Hence the field study indicate an innate conflict for such double-check process. If a project presents a rosy picture of its profitability, it may be accepted by the Energy Bureau as a good project but tends to be rejected by DNA since its additionality claim is dubious. On the contrary, a non-profitable project would not likely be approved by the Energy Bureau in the first place, even if it can pass the additionality check by DNA. Although in theory the project owners can argue that it is the potential CDM revenue that helps turning an unprofitable project into a profitable one, so that their projects can be approved at both occasions, in reality few policy makers and banks would accept such argument (a situation that will be fully explored in later paragraphs).

For the same reason, environmental and social impacts are also double-checked under this parallel approval system. Any RE project with Energy Bureau's approval is self-evident of its positive environmental and social impact because these impacts were on the checking list. The challenge of project's sustainability effect is essentially challenging the credibility the

Energy Bureau. As LYR, a senior manager informed the researcher during the interview:

'As buyers we believe that all of our projects are delivering sustainability benefits, otherwise they would not be approved by the Chinese government in the first place.'

--- Interview transcript with LYR

Therefore, DNA's sustainability check for its CDM projects is reduced to a mere procedure on the paper. In order to carefully shun the potential conflict with other governing authorities, the sustainability check of CDM is largely conducted in a laissez-faire manner (Newell, 2009). The result is a highly 'efficient' DNA which is able to evaluate more than 35 projects in a one-day evaluation meeting and each project participants only have two minutes or so to present their projects at these meeting. One can hardly expect any serious challenges from the regulators.

As WAW, a project developer who often attends these meetings, comments during the interview: *'It's just for procedure purposes and the evaluators seldom raise tough questions. They sometimes pointed out spelling mistakes or format problems in the reports.'*

----- Interview transcript with WAW

5.2.2. Business leverage in governing the RE-CDMs

In previous sections, I illustrate that policy makers are largely constrained in governing a new market instrument such as a CDM. Their relatively insufficient knowledge of ‘on-the-ground’ CDM practices, such as the methodology designs, as well as the existing domestic political framework make their strong intention of direct intervention to the market activities a difficult task to be achieved. Therefore, the reason why certain projects type is particularly popular in the project pipeline cannot be taken for granted as a result of ‘a strong hand of the state from above’. In this section, I turn my focus on business actors and argue that RE-CDM’s dominance in China’s CDM portfolio is mainly due to a market logic and self-governed filtering system, due to the fact that business actors have notable structural power in advancing their preferred methodologies, financial pattern, and a favorable image of RE-CDM in China. All these efforts have become major causes for a thriving RE-CDM market.

5.2.2.1. Methodologies: all CERs are equal, but some are more equal than others

As explained in preceding paragraphs, one of the distinctive features of CDM’s governance is that the methodologies and eligible project types are proposed by the market players rather than handpicked by the policy makers. Nevertheless, China’s DNA prescribed renewables, energy

efficiency and methane recovery as the nation's most favorable project types. Hence the state priorities may collide with the business ones as the market focuses only on the easiest option in order to expand their business quickly. There are obvious synergies between state and market interests. Taking wind farm projects as an example, it can be easily packaged into the CDM due to its simple methodologies for calculating CERs. These methodologies are reliable and hardly challenged by DOEs or EBs and hence welcomed by project developers. Among 559 registered wind farm CDMs from China, only three methodologies are ever used. 544 projects choose methodology ACM2, which is '*so simple even for college students.*' (Interviews transcript with MQF). The wind energy CDM hence become a project type that can be massively copied in a very short period of time.

On the contrary, methane recovery and energy efficiency projects, though supported by the state equally to the renewables, are not that lucky to win business' favor. Methodologies concerning these project types are much more complicated and needs more tailor-making efforts for each project design and development. Therefore the interviews indicate that most of the project developers are less enthusiastic to put forth these projects. In China's CDM pipeline today, methane recovery and energy efficiency projects only account for 6.28% and 8% in respective, comparing to an 81.16% share of renewable energy projects (NDRC, 2013). The empirical

data shows that market forces are in effect much more capable in promoting their favorable project types than their state counterparts by filtering unwelcomed projects through their day-to-day practices.

Falkner (2008) points out that companies possess ‘technological power’ because they are able to direct technological innovation and diffusion, and such technological knowledge renders business with privileged position in the environmental governance. The findings of this research reinforce this argument by illustrating the indispensable role of individual private companies to create accounting standards for the entire market.

5.2.2.2. Financing the projects: material power

Financial arrangement is the core issue of any industrial project. According to KP, Article 12, *‘The clean development mechanism shall assist in arranging funding of certified project activities as necessary.’* But until today, there are no regulations or rules, either from international or national level, on how should CDM project be funded and financed. The underlying assumption is that the market will sort it out by itself. In reality, this open ground of governance has been eventually taken up by the business actors to advance their own favorite pattern of financial arrangement.

Theoretically, CDM is designed to encourage Annex-1 parties injecting capital or technological investment in the project activities with potential

GHG emission reduction effects in developing countries. Once these investment projects are implemented, Annex-1 parties can reap the CERs generated by their own projects, either to offset their own cap, or trade them for a profit in the secondary market. However, this direct investment model is not favored by the business actors due to tremendous risks associated with equity investment. There are many uncertainties with a highly capital intensive project such as a wind farm. The project owner may run out of funding, the cost of the equipment may rise sharply, the bureaucratic procedure can wear out even the most patient investors, local residents and officers can be hostile, and the energy purchasers may breach the contract. The list of risks can be endless. Therefore, the Annex-1 parties prefer to take up another business model that eventually changing the whole picture of CDM from an ideally bilateral investment scheme to a mere CER trading floor. Instead of investing and produce carbon credits in the host countries, they started to purchase these reduction units directly from Chinese project owners (shown in table 4.4 and 4.5).

As LYR explains during the interview, *‘As a carbon fund, we are only interested in carbon assets, not the physical investment of the project.’*

-----*Interview Transcript with LYR*

This finding echoes with Lutken and Michaelowa’s (2008) striking

argument that it is essentially the developing countries that finance most of CDM projects to meet developed countries commitment under KP. But set aside the fairness issue of this arrangement, it has led to some significant underlying assumptions about the quality of the CDM. One of them is that only those project owners that are capable of securing large amount of bank loans will eventually take up the lion's share of CDM revenues. Local finance becomes a crucial manifestation of business power and determinant for the carbon market development, because without finance there would be no physical projects, and consequently no CDM. The key to a thriving market depends on how project owners in the host countries can successfully arrange adequate funding needed for project implementation (Lutken and Michaelowa, 2008).

Figure 5.5 CDM activities as bilateral investment projects

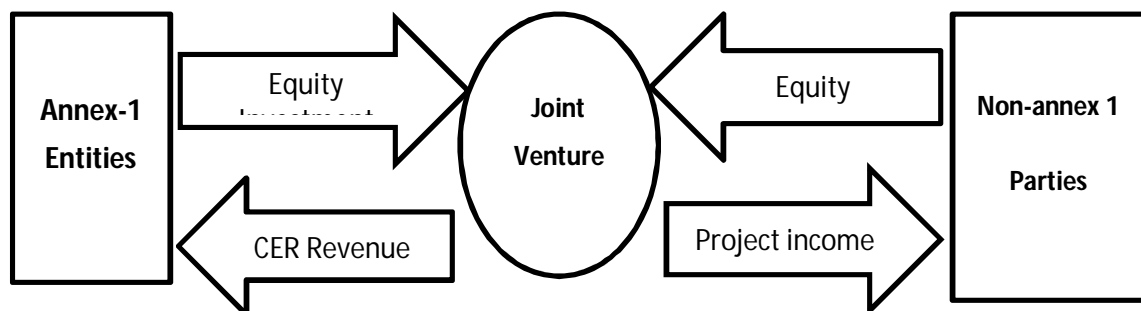
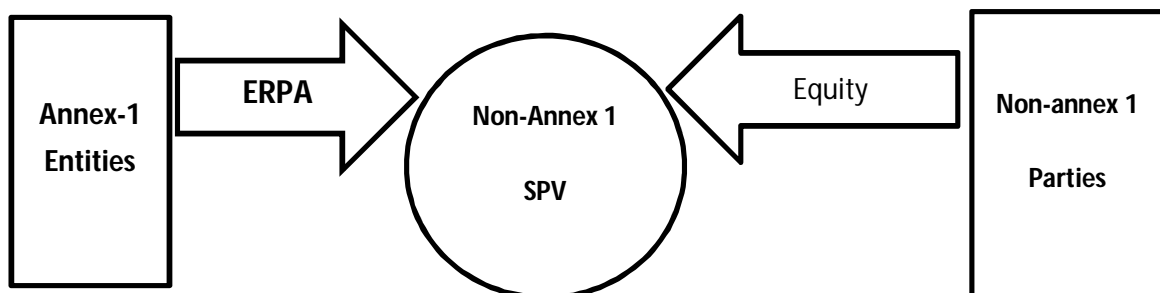


Figure 5.6 CDM activities as CER trading scheme





The empirical findings of this research justify this assumption as it is noted that CDM projects have been concentrated on those large corporations with strong capability to arrange capital intensive investment such as wind farms. On the contrary, those who are less capable to arrange funding for projects implementations on their own, are found often being marginalized in the CDM system.

‘The key (of CDM) is not the sales of carbon credits. That is the easy part. If you produce CERs someone would buy it anyway...The most important thing is the project itself, you have to set it up first, that is the most difficult part for average project investors.’

-----Interview transcript with LHL

According to LHL and other project developers, a large portion of failed projects they once developed are due to project owners’ incapability to implement these projects in the first place. But for large corporations it is a completely different story. For example, Longyuan group, a renewable flagship entity under the State Power Corporation, is the largest state-owned wind farm builder in China (fifth largest in the world). It has now

100 CDM projects registered in EB (over 1/5 of total Chinese wind CDM projects), with an overall generation capacity of 5,505 MW. In the company's annual report in 2010, Longyuan proudly announced that the credit line granted by its banks exceeds 100 billion RMB Yuan (15.87 billion USD), an unimaginable figure for ordinary small or medium sized companies who have difficulties to secure an even small loan from the banks. As a result, it is the giant companies like Longyuan that have become the dominant CER suppliers in China.

SZQ, a veteran wind farm CDM project developer, refers to the advancement of state-utilities into the CDM arena as '*the aircraft carriers rushing into a swimming pool*', since the financial and political strength of these giant companies are simply overwhelming that they have changed the outlook of the CDM market completely. As for the CER buyers, the emergence of powerful project owners is a desirable situation. Their preference of being a carbon traders rather than equity investors, explained in preceding paragraphs, means that they have to ally with strong domestic companies who are able to get the projects done independently of foreign financial or technological assistance. To this regard, the alliance between the buy-side and sell-side provides solid rationale for advancing wind farm CDMs as a strategically preferable segment because of its fitness to advance a trade-dominant mechanism rather than a bilateral investment scheme.

5.2.2.3. RE-CDM as a green label: discursive power

The above observation leads to an obvious paradox in the CDM market: if only strong and capable project owners are favored by Annex-1 parties to cooperate with, and if the project owners are indeed those highly capable companies who can arrange adequate finance, override domestic bureaucratic hurdles, and mitigate or hedge all kinds of project risks, then these project owners must be the most financially robust players in a given economic sector, just like the ‘big five’ utility companies in the power generation market. Their investment projects should be among the most profitable ones as well. In such a case, why do these successful companies bother to engage in CDM activities, particularly when CER revenues are trivial comparing to their profitability, and highly contingent due to a complex bureaucratic procedures imposed by EB, as illustrated in previous studies (Lewis, 2010; Schroeder, 2009)?

For example, Longyuan’s annual report indicates that the group’s CDM revenue only accounts for less than 2.75% of its total income in 2010. There are obvious non-economic reasons for its active involvement in CDM development. The company’s website reveals a clue, where CDM business has been labeled as environmental friendly activities as the company states that:

'Green Movement and carbon credits development: Longyuan Group actively develops the carbon credits generated by its renewable energy projects, facilitating its partners in meeting their compliance or voluntary target of emission reductions.' (Cited from Longyuan Groups official website, 2012)

This is a typical example of how CDM's role has been carefully fine-tuned from a cost-effective mechanism into a perfect example of utilizing market mechanism as an innovative tool for the environment governance in China. RE-CDM, in particular, is regarded as the most suitable project type for CDM as these activities provide 'win-win-win' solutions for the economic development, environmental protection and social benefits in China.

Since the benefits of RE-CDM has been taken for granted, the participants of wind farms CDMs are therefore labeled themselves as *'the promoters and pioneers of low carbon development strategy'* (cited from a major carbon fund's website), which enables business actors larger power in suppressing any contesting voices from other corners. A vivid example is the rejection of 10 wind CDMs by the EB in December, 2009, which sparked off enormous criticism from Chinese CDM officers and business organizations through media and press conferences. It is the business actors, most of them are strong utility companies mentioned in

the earlier paragraphs, that efficiently organized the press conference and released a joint statement with the Chinese government to challenge EB's decision and demanding a re-evaluation of these projects.

The press conference was held before the COP 15 (Copenhagen) and therefore caught huge amount of media attention. Most of the media reports united this issue to a general dissatisfaction of developed countries sluggish efforts in combating global climate change. However, beside the impressive capabilities of business actors in generating supportive public opinions in this occasion, this event also indicates a strong coalition existing among public and private spheres.

A senior NDRC officer was invited to have a strong opening speech at the press conference, questioning the transparency and decision making process with the EB. In addition, in their joint statement to the EB, the project owners praised Chinese government's effort in helping dissipate the suspicion from the EB.

'EB raised a question (mainly concerning the pricing system of China's off-shore wind energy project) that is eventually beyond any individual project developer's capability to answer... The Chinese government already presented a formal report in a highly responsible and sincere character (referring to The Report on Development of China's Wind Energy and Its Pricing System, issued in Nov, 2009)...Who else is in a

better position, other than the host government, in answering these policy oriented questions?’(Quote from Sina News, 2009)

However, the ‘government report’ referred in this statement was not compiled by any government entities, but rather by China Renewable Energy Industries Association (CREIA) and the Chinese-Danish Wind Energy Development Programme (CD-WED), both are quasi government sponsored entities. But set aside the nature of this report, the business’ leverage in sustaining and defending a favorable image of RE-CDMs by allying with state and quasi state actors is more than obvious.

5.3. Implications and discussion

Section 4.2 presents the argument that although state actors have strong intention to seize the open spaced created by CDM, their capability to achieve this goal is largely constrained. On the contrary, business actors have some unique advantages in advancing their preferable project types, financial models and supportive discourse in the public, making them important ‘governors on the ground’. The dominance of RE-CDMs is essentially driven by market players and their interests, rather than the policy makers. Yet, it should be noticed that business cannot achieve their goals alone and they have to seek alliance with state actors, who are also benefited from a fast growing market in terms of a continuously increasing institutional power throughout the years. But the obvious

question is: no matter who is the dominant driver of the RE-CDM activities, as long as these activities are providing genuine carbon reduction credits and promoting national clean development, things are going on the right track. Are they not?

This section provides some implications and consequences of a rather market-oriented governance model as explained previously. I argue that the present market-led model of governance in RE-CDMs is largely responsible for a number of significant failures that have been observed in the CDM arena today, namely the unequal distribution of CDM benefits domestically, a profound misunderstanding of projects' additionality, and an often exaggerated statement of CDM's contribution to the host countries clean and sustainable development (at national level).

5.3.1. CDM revenue: too small, too late and too pro-elite

Many previous studies referred to CDM as 'the icing on the cake' (Schroeder, 2009), meaning that the CDM subsidiary are rarely the reason of a project to be developed in the first place, because the amount is too small in scale in comparison to the total capital investment for the project implementation (Lewis, 2010; Schroeder, 2009). In this research, I echo these findings and advance my argument further that CDM revenues are not only too small in size, but also too tardy for the investors. As a result,

only big players can benefit from it. Since those big players are mostly profitable organizations even without CDM support, the mechanism is eventually subsidizing the strongest players who are arguably not in need of any financial assistance in developing projects with GHG mitigation potentials. As for those small sized activities which do need additional CDM boost, they are often not favored by the market and eventually marginalized and filtered out of the project pipeline.

I hereby use a wind farm project to illustrate how CDM support is insignificant to an investment project. According to UNFCCC, the most recent registered Chinese wind project is a 30MW off-shore wind farm in Heilongjiang Province (Project No. 5173). According to its PDD, the total static investment for the project reaches 264 million RMB Yuan (or roughly 40 million USD). The annual expected CER is 73,260 tons of CO₂ equivalent. As the present carbon price stays at around 4.2 Euros, the annual CER income is about 0.3 million Euros or 0.4 million USD. According to the present market practice in China, CER buyers are often willing to pay around 20% of the expected annual CER value as the upfront fee to the project owners. So the project owner is estimated to receive only around 80,000 USD as a CDM ‘symbolic finance’ in the construction phase of the project. For a project that needs 42 million USD capital investment, this 80,000 USD boost is a tiny figure and certainly would not have any meaningful impact on investors decision.

For the same reason, banks are also reluctant to lend to the projects based on the additional CDM revenues. In theory, such revenues would significantly enhance the attractiveness to the financial institutions. In reality, no banks would change their minds if they simply look at the NDRC's official website and realize that the rate of successful registration with EB stays only at 50.5% at the moment, not mentioning an even more miserable rate of successful issuance (less than 20%) of CERs (NDRC, 2012).

One UNEP report documents this problem as it noticed that '*many project developers identify lack of access to financing as one of the key reasons why numerous CDM project concepts never materialize*' (UNEP, 2008. pp. 3). The result is that capable CER suppliers are concentrated on those who can develop projects without CDM support, which is a fundamental threat to the legitimacy of the whole mechanism.

5.3.2. **Additionality: how complex can it be?**

Additionality is the crucial criteria to evaluate the integrity of CDM activities. If projects are believed to be built anyway without CDM support, then the CERs generated from these activities and used to offset Annex-1 entities' liability are *de facto* allowing Annex-1 countries to increase GHG emissions, rather than reducing them. But proving additionality is never easy, simply because any argument 'that without a

given condition something would never happen' is logically impossible to be fully tested. But beside this innate philosophical challenge, another difficulty is that what set of benchmarks that can be applied to judge if there is a change of investor's decision to carry on a project (with CDM) or give it up (without CDM).

The most often used benchmark in present CDM evaluation system is the profitability level of the project (or IRR), which means that if a project developer can prove that CDM revenue would turn an unprofitable project into a profitable one, then the additionality argument is by and large valid. The underlying assumption is that profit-seeking investors are always rational and would never take up unprofitable investment, because it is simply against their nature of profit maximizing.

In reality, large state-owned businesses in China do invest in non-profitable projects from time to time due to various non-economic reasons. In the preceding paragraphs I demonstrate that CER suppliers have been concentrated into a handful of big companies based on strong market logic. How to evaluate the additionality of the projects developed by these powerful companies raises new challenges for an already over-burdened checking system.

Let me again use Longyuan Group as an example. The company in 2010 has a newly installed wind capacity of 2054 MW across the country and

the total profit of 2.77 billion RMB Yuan. But it would be naïve to suggest that each project developed by Longyuan must be a profitable one. Some wind farms would be unprofitable as they are meant to be, but consequently eligible to be developed as CDM projects. The additionality argument is valid on a project by project basis, but somehow questionable if the analytical focus is shifted to the overall operation of the company as a whole, because without CDM support, organizations like Longyuan would probably carry on these unprofitable projects as long as its overall profitability can sustain these ‘bad investment’ activities.

As an anonymous manager in Longyuan revealed to the researcher, the head office evaluate its branches all over China by three key indicators, among which the most important indicator is the newly added installed capacity of the year. The potential capacity for the next year is the second most important criteria. As for the profitability, it serves only as the third and arguably least important indicator to evaluate its managers’ performance. This internal policy clearly indicates the group’s strategic priority of capacity over profitability, posing a big question mark to the legitimacy of subsidizing the company’s non-profitable activities via CDM.

Longyuan is not a special case because most of the state-owned utility companies are fighting hard in market share and therefore exhibited some

level of tolerance for the negative-profit projects. Hence I would argue that the present tool-kit in checking CDM project's additionality is at least too simplified to make sense of those non-economically driven activities developed by highly profitable business organizations, as can be seen in China's RE-CDMs. There are life-saving CDM supports, but there are also cases of 'icing on the cakes'. One obvious failure of CDM is that the former has been diminishing while the latter has become the major trend in the market. Understanding how to integrate these rather different scenarios into the CDM checking systems will largely determine the ultimate level integrity of the mechanism as a whole.

5.3.3. Governing CDM for sustainability?

The research findings in the preceding sections also provide new explanations for CDM's inefficiency to promote sustainability benefits for the host countries. Firstly, due to the nature of CDM as domestically financed industrial projects, instead of a bilateral-investment mechanism, the sustainability contribution of these projects is indeed a domestic issue. The Annex-1 entities, as mere CER buyers rather than direct investors, do not have any contractual or legal liability to safeguard CDM's social or environmental impact, simply because they do not own those projects. Attributing a lack of sustainability in CDM projects to the advancement of international business interests (Bohm and Dhabbi, 2009) is therefore

not a valid argument at least in China's case. Rather, if CDMs indeed creating negative environmental or social impacts, it is mainly due to a weak but pre-existing domestic regulation or enforcement on these issues.

In addition, DNA's *lassie faire* attitude towards sustainability benefits is not the main reason for CDM's weak contribution to SD. Although DNA is the responsible institution to safeguard CDM's sustainability benefits according to the official CDM procedures, its intention to do so is significantly constrained in the pre-existing bureaucratic framework. The guarding authorities that supervise various industrial activities such as electricity production or renewable investment often have specific social and environmental requirements for the investment projects they oversee. CDM is after all a supplementary procedure and its regulators chose to shun away from any direct confrontations with other powerful institutions such as the Energy Bureau under NDRC.

The activities' lack of sustainability has nothing to do with the mechanism or its DNA itself, but have a deeper political and economic root. There is a strong political preference for economic benefits of industrial activities over their social or environmental impacts in China's overall development strategy. Huge number of previous studies revealed how environmental protection or social welfare sectors are subdued to the economic development for the past 30 years in China (Economy, 2004

and 2006; Jahiel, 1997). Such tendency, though needs to be addressed urgently and properly, is not likely (and probably should not be expected to be) cured only by the introduction an international carbon offset program.

5.4. Conclusion

In this chapter, I present the analysis on the relationship between business actors and their state regulators in the CDM market in China. I argue that CDM created new space for governance that both state and private actors wish to take up. However, due to a numbers of constraints that state regulators face and some privileged power that business actors possess, it is the business actors that eventually grab some crucial elements of how CDM is governed on the ground. The thrive of RE-CDM, the favor of trading rather than investing, the favorable public opinions are all attributed to business actors endeavours through their day to day practices. Yet such findings are not suggesting a ‘retreat of state’ in carbon governance, business cannot achieve these tasks alone and they have to build up strong alliance with the state actors and a public-private coalition is obvious in China’s CDM market.

Such public-private alliances have multiple implications. Firstly, the range of project types and capable participants of the CDM activities have been significantly reduced. Powerful companies with abundant

financial resources have become, paradoxically, the major sources of CER supply and beneficiaries of CDM revenue. The integrity of the projects is hence questionable, even if these activities are truly additional on the project level. At the organizational level, some projects are obviously non-additional since they are to be built anyway. Finally, given the pro-development or pro-profitability priority of state and market actors, the sustainability contribution of these activities is largely ignored. To what extent the CDM projects are contributing to SD actually depends on various political or economic roots that are essentially outside the governance sphere of CDM itself. In general, at the national level, subtle inter-ministerial relationship and close state-market alliances are two major responsible reasons for the main features of China's CDM market today.

6. CDM at localities

In this chapter I discuss the influence of business actors in local climate politics and governance in China through the lens of RE-CDM implementations. China's environmental governance has long been characterized with ambitious political rhetoric at central level and ineffective policy implementation at the local level (Economy, 2004 and 2006; Schroeder 2012). This central-local gap indicates profound setbacks of 'command-and-control' way of governing environmental crisis, particularly when aspirations for economic growth are at the top of the local political agenda over environmental issues. In order to address this problem, several market-based instruments were borrowed from developed countries since late 1990's (Economy, 2006). China's early experiment on market instruments confines within several sectoral and local contexts with mixed consequences (Stavins, 2000; Tao & Mah, 2009). CDM, however, provides the national-level introduction of market instrument for environmental governance for the first time in China. The advancement of CDM hence opens up the possibilities of business influences for the first time in the local governance system for environment and climate issues.

The chapter is divided into three sections. I will first discuss the economic incentive and capability constraint of local governments in

promoting and regulating RE-CDMs activities. The second section provides detailed analysis on how business actors take up the governance vacuum at the local level. The following section reveals some implications of business influences and local state – market relationships. The chapter concludes with the argument that CDM has somehow transformed the local environmental governance model from a typical ‘command and control’ one into a multi-level, hybrid governance system with highly fluid and ad-hoc nature (see Figure 5.1).

6.1. RE-CDMs: incentives and constraints of local policy makers

CDM is designed as an international market mechanism according mainly to experiences of OECD countries, but has been imposed on transitional economies like China (Schroeder, 2012). In Chapter 4 I illustrate that although Chinese national policy makers tried to intervene in the market for their own political purpose, their efforts have been largely constrained. It will be interesting to see if these constraints are also reflected at the local level and whether these constraint allows business actors to creep into the local policy and governance domain via the implementation process of CDM projects.

The investigation of local political and economic dynamics is crucial for various reasons. At the outset, any CDM project, whichever type it may be, must be grounded in specific localities and local political support

plays a vital role to guarantee successful implementation of project activities. In addition, the dual goals of the CDM are to allow industrialized countries to earn emissions credits from emission reduction projects and to promote sustainable development in developing countries. While the former is vigorously checked by EB and its accredited auditors, the latter, however, is arguably only to be justified at local level where the projects are to be erected. Hence the dynamics of local governance not only determine the quantity of CDM projects to be successfully developed in the political purview, but also the social and environmental qualities of these activities.

6.1.1. Economic return as a political incentive

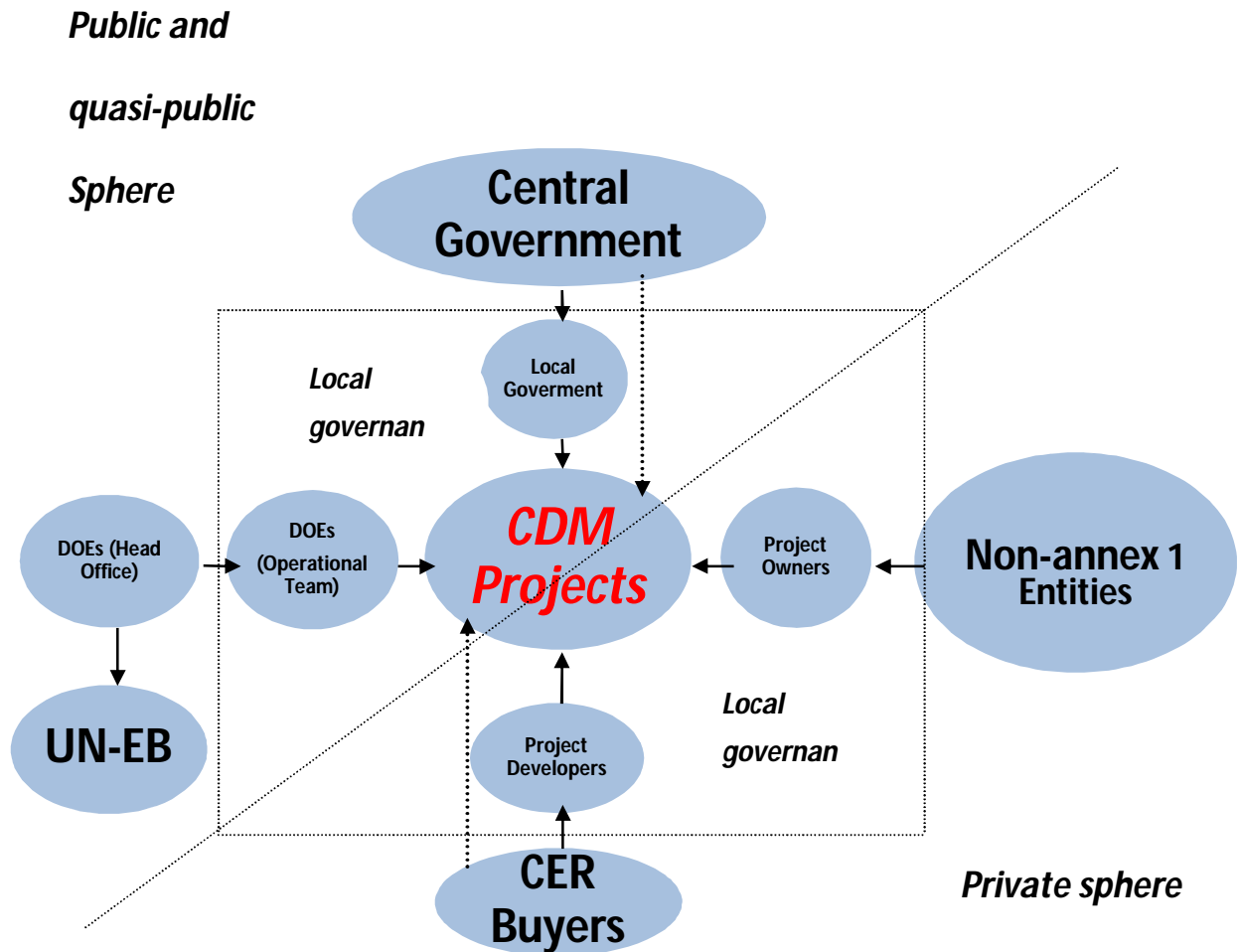
China's economic reform in most-Mao area is distinctively committed to economic growth since it is regarded as the main pillar of legitimacy of Communist Party's rule (Schroeder, 2012). Oi (1996) argues that China's economic miracle can be termed as 'local state corporatism' because 'local governments treat enterprises within their administrative purview as one component of a larger corporate whole' (Oi, 1999; pp.170) and various localities compete fiercely with each other for economic resources and benefits such as large profit-maximizing corporations in the market.

6.1.1.1. Climate governance and Local entrepreneur states

Like many environmental issues, climate change has not been a priority for local governments in China because climate change mitigation and energy consumption reduction efforts were believed to work against local interests since these efforts could slow economic growth (Pan, 2003). A typical illustration of local governments' ineffective implementation of national climate policy is a massive round of power cuts in many provinces by December 2010, when the local governments tried desperately to meet their energy saving target set out in the 11th Five Year Plan in the last few days of the year. In addition, climate change has been treated primarily as an international issue to be dealt with by the central government and well beyond the jurisdiction and responsibility of local governments (Qi et al, 2008).

However, the introduction of market mechanisms for climate governance into the local economic system, such as CDM, is particularly welcomed by local officers, who regard this new instrument as a tool to boost economic development and thus become a zealous promoter of CDM activities within their administrative purview. Most of the interviewees from the business circle claim that emphasizing the monetary benefits of CDM is the best way to communicate with the local officers and get their support for CDM.

Figure 6.1: CDM: A multi-level and hybrid governance system



“The local governments’ major incentive to promote CDM activities are rather monetary, because they see it as an additional channel to attract capital investment in the area, which helps to develop its economy. The air can be traded for money, so money is more important (to them) than the environmental concerns.”

----- Interview transcript with ZJJ

Unlike central NDRC officers who have direct decision power over CDM projects (by evaluating projects and awarding LOAs) and hence promote CDM activities mainly to expand their institutional power, the local officers do not have any direct regulative power over CDM projects. Their role is mainly to summon and encourage local enterprises to get into the CDM pipeline. It should be noted that during the reform, local officers' administrative autonomy has been substantially increased than in the Mao's planned economy, after a 'retreat of the central state' from local economic affairs (Oi, 1999). The local entrepreneurs and business managers rely heavily on the patronage of local officers, whose support for the CDM activities has become a strong boost for market development.

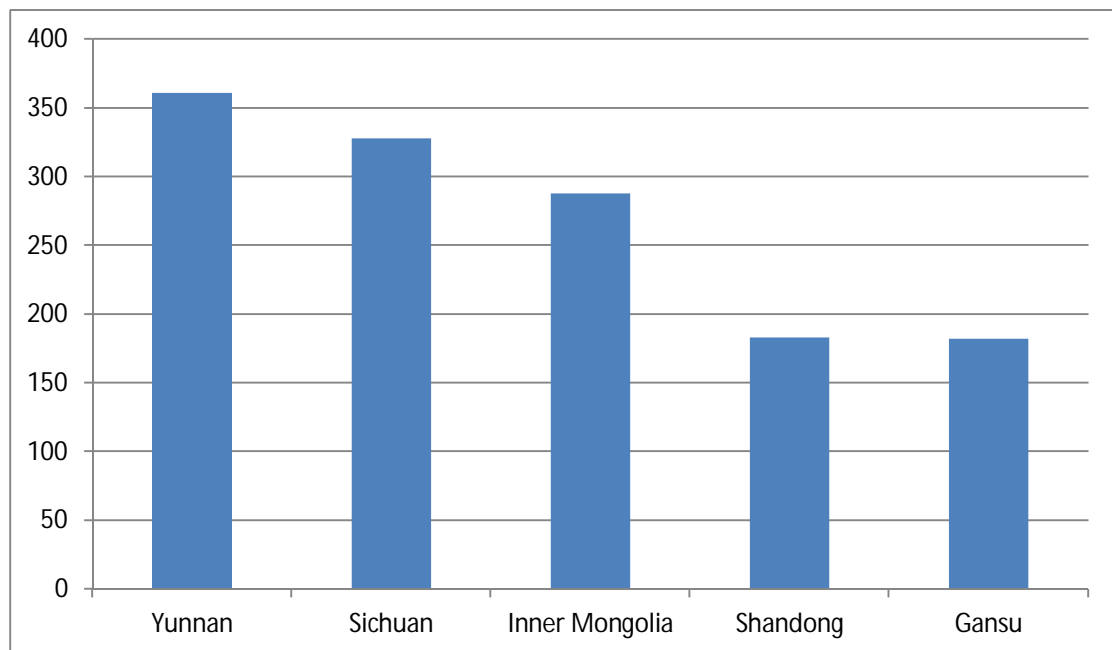
As LX revealed during the interview: *“Those who have close connections with local DRC or MOST offices has a clear advantage in promoting CDM deals at the earlier years of market development. The officers would simply call up the heads of local enterprises for a one-day seminar, during which we (the project developers) make a live case show and educate them how to exploit CDM resources. Sometimes, at the end of the day, we could even reach the deals and sign the contract on the spot.”*

----- *Interview transcript of LX*

6.1.1.2.A craving for CDM investment

In China, the majority share of the CDM projects is located in the relatively underdeveloped regions of Northwest and Southwest provinces due to their abundant wind, hydro and solar resources. As illustrated in Figure 6.2, among top five CDM host provinces, three of them (Sichuan, Yunnan and Gansu) are also among the poorest provinces in China in terms of the GDP per capita in 2010 (NBSC, 2011).

Figure 6.2: Top 5 CDM Host Provinces in China



(Resource: NDRC, 2012)

The local officers' desire for economic development in these relatively underdeveloped areas is arguably stronger comparing to their wealthier Southeast coast counterparts. However, since most of these provinces

lack robust industrial basis for the rapid industrialization and economic development, they eventually focus on the newly burgeoning renewable sectors as the most valuable potential engine for local economic take-off. During the field study, I paid a visit to four poverty-stricken counties in Gansu province along with a group of senior business managers, who were invited by the local governments to investigate local economic resources. During the trip, all the local political leaders unanimously pointed out their rich wind, solar and biomass resources as the strategically important areas to attract external investment and stimulate economic growth.

The existing party cadre management system in Communist party also has a key role to play in shaping local officers motivations to support renewable energy and other relative instruments like CDM. The cadre performance is usually measured by the 'hard targets' of local economic growth (Liu et al, 2006), which often award the leaders in the fastest growing localities with more promising promotion prospects. Taking Gansu for example, one of the senior provincial leaders, Li Jianhua, was promoted from Jiuquan locality in 2011. Since 2004, Jiuquan has been developed into the largest off-shore wind base in China with an estimated total wind capacity of 20,000 MW by 2015. The fast growing wind sector helped Jiuquan surpass Lanzhou, the capital city of Gansu province, to be the top GDP contributor in Gansu province. This achievement is rather

rare because most of the province capitals in China are the largest and most industrialized city in the province. Many local officers thus believe that the main reason for Mr. Li's extraordinary promotion to the provincial leader is Jiuquan's 'wind success'. Li's legendary story has made him as the role model for other local officers, who wish to copy 'Jiuquan' model of development by attracting large amount of capital to materialize their renewable potentials. Considering that copying neighbor's successful development model is rampant at Chinese localities (Breslin, 2007), the regional fervent of renewable energy investment is hardly a surprise.

As a result, many localities have prescribed a number of favorable policies to attract renewable investment in Gansu. As the county leaders informed the researcher during the field study, policy tools such as further tax exemption (as long as ten years), refund of land lease fee (in the name of local awards) and governmental assistance in land clearing are in place to encourage investment.

'We have provided all our efforts to support the growth of this key sector and I believe the investment environment is the most favorable among all Gansu localities at present stage. In short, the local government has constructed the perfect nest for the golden phoenix to settle down.'

----- *Transcript of a county leaders' speech*

To sum up, the field study indicates that due to the strong entrepreneurship nature of the local governments in governing its economic affairs, their motivation to support renewable energy development is predominantly economic driven. For the same reason, the local officers' incentive to facilitate CDM is motivated by the assumption that this innovative instrument would serve as a supplementary but important financial resources for those renewable projects in their political purview. It is hence not a surprise to observe that the most active and experienced CDM centers in China are indeed those from poor provinces but with abundant renewable resources, such as in Hunan and Ningxia.

6.1.2. Constraints faced by the local governments

In the preceding paragraphs I argue that the local states in China has been transformed from the agents of the central state to the heads of local entrepreneurs during post-Mao economic reforms, and hence welcome CDM as a new business opportunity or additional financial instrument to develop its renewable potentials. Therefore, their support for CDM should not be regarded as the natural consequences of a top-down or hierarchical governance system, because the logic and motivations of local officers to embrace CDM are very different from those of central officers in NDRC (see Chapter 5).

However, the local states' intention and efforts to encourage CDM are largely constrained for several reasons. At the outset is the lack of expertise and knowledge of governing a highly technical and sophisticated market instrument such as the CDM. In addition, the on-going economic reform and industrialization has continuously expanded the autonomy of financial institutions and state-owned business actors in the key economic areas, enabling these actors to escape the supervision and interference from local officers, and behave more independently for their own interests and strategies. Consequently, as economic actors instead of agents of the central government, local states' financial and institutional power to directly fund and support favored sectors, particularly capital intensive sectors such as renewable energy, has been shrinking considerably comparing to the earlier stages of economic reform in the 1980's and early 1990's. Lastly, the fierce inter-localities competition for economic resources at all municipal levels has created further constraints on the local officers in regulating economic affairs as they are forced to adopt more pro-market regulations for the business actors. The creation of local CDM offices and their largely self-regulated status is a typical example for such pro-market policy inventions (Schroeder, 2012).

6.1.2.1. Expertise and knowledge as the new challenge

Oi (1995) raise the concern that the sustainability of China's local corporatist state model is questionable, since most of the local industries require little expertise and start-up cost at the earlier stage of development, but along with a deepening marketization and reforms there must be more sophisticated sectors emerged, imposing a severe capacity challenge for the local officers if they wish to remain as CEOs of local business. The introduction of CDM provides a dramatic example of this argument because it is a highly complex and technological intensive mechanism that suddenly landed at local officers' doorsteps, waiting to be governed.

During the interviews, many interviewees revealed an appalling shortage of knowledge and experience among the local officers in governing this fashionable carbon market.

“They (local officers) could not even tell the differences between CDM and CDMA (a 3-G wireless communication system), and often misuse CDMA at various CDM capacity building seminars or promotion events”.

----- Interview transcription with LZ1

Unlike governing other traditional local industries, where local officers are capable of ranking most capable and profitable enterprises and determine the level of supportive assistance accordingly, the newly emergent CDM business provides little clue as to which type of projects are most suitable to be packaged into CDM suite. Neither are they able to estimate the prospect and potential of CDM market within their administrative areas and set out suitable plans for its long-term development accordingly. Moreover, even the information assets that the local officers hold due to their expansive connections with senior officialdom, a once prominent advantage of local party cadres to be the corporatist leaders (Qi, 1999), no longer exists in the CDM arena, because climate change related issues is an area that they have very limited experiences in communicating with their senior officers.

LHL, a former carbon consultant, accounted for their first CDM experience in Shandong province: *'At first, some local NDRC officers do not even know who is the contact point of CDM affairs at NDRC's headquarter in Beijing. And it was us who told them to whom they should speak to... Later the local officer called me claiming that he got troubles in writing reports to the central officers regarding this CDM project. I provided the information as they requested, but they still do not know how to process these information, so eventually they just stamp on my story and send it to their senior officers as their final report.'*

----- Interview transcript with LHL

Consequently, although local officers are still capable of using their administrative or bureaucratic power to facilitate CDM indirectly, such as by enhancing local awareness or organizing CDM seminars, the degree of their involvement in the governance process is largely waning comparing to other traditional economic sectors. As one informant admitted in the interview: *'local officers are by and large the brokers of CDM deals whose main role is only to encourage local enterprises to get in touch with potential CER buyers or consultancies, so that to help local business to tap into the CDM resources.'*

----- Interview transcript with MC

6.1.2.2. Institutional and financial capacity of localities

Another constraint of the local officers in steering and overseeing CDM activities comes from the insufficient institutions and funds at local level. Probably, the most important institutional change in the local CDM governance is the establishment of provincial CDM centers since 2002, which are responsible for promoting and developing CDM projects in the local area. However, a closer look at these institutions reveals that these centers are not formal government institutions but rather hybrid actors with mixed ownership structure, rules and organizational strategies (Schroeder, 2011). Some of the CDM centers are essentially wholly

private owned institutions, while other centers are with quasi-public features. The governing authorities that oversee these centers are also different from one province to another. Some of these centers are affiliated to local Bureau of Science and Technology, while others were supervised by local Development and Reform Commission or Environmental Protection Bureaus. This rather messy picture of how local CDM promotional institutions are established and governed indicates a strong tendency towards lack of top-down regulation and local officers' strong intention to outsource their regulative power over CDM to private sectors.

Another related institutional change is the ongoing restructuring of SOEs, large state banks, as well as local credit institutions in China since mid-1990s, during which a new strategy called 'grasping the big and letting go of the small' (zhuada fangxiao) was carried out. The result is that more than 85% of the small and medium sized SOEs were merged, restructured or sold out by the end of 2003 (OECD, 2005), but large SOEs of key economic sectors (yang qi) started to bulge and be regulated directly by central government (a phenomenon to be explained in the following sections). Meanwhile, the state banks are being commercialized and starting to strengthen the supervision of the operations of their local branches, which once were largely controlled by local officers prior to the reforms. These industrial and financial reforms since late 1990's

significantly reduced the localities' material power in supporting its economic activities and funding favourable industrial sectors. Therefore the establishment of hybrid and private sponsored governance institutions such as CDM centers around China can be understood as merely another illustration of local officers' waning authority over industrial activities during this period.

One DOE validator revealed that: *'I haven't met any local officer that is not supporting CDM projects. But my observation is that their support is rather symbolic. Before validation most project developers would come to the project site and meet local officers to teach them how to respond to our questions. Local governments want these projects to be done, so they are happy to listen to these project developers. We as DOEs can't do anything about it.'*

----- *Interview transcript with DW*

SZQ also mentioned that local officers are not able to help securing kick-off finance needed for his CDM project. *'I have all the supportive documents from the local government, but the bank manager won't look at it because he believes the financial outlook of this project is not robust enough to give a green light for the loan.'*

----- *Interview transcript with SZQ*

The bank manager's view represents an often overlooked fact in the CDM market that the local government support's is a necessary but not sufficient condition for accessing adequate finance for the project implementation, a situation that could hardly be imagined prior to the 1990's reform, when local leaders had a critical power to influence local state bank's lending decision.

6.1.2.3. Inter-localities competition as a further constraint

In 2010, I joined a business delegation to investigate the renewable resources of Dingxi prefecture in Gansu province. The trip was organized by Dingxi government, which was by that time desperate to attract outside investment to materialize its wind and solar potential in the region. During our two days visit, the neighboring prefecture, Zhangye, acknowledged our visit and its government leaders insisted that we visit their prefecture too. He sent designated chauffeur who drove over 370km from their city to our hotel. *'Our leaders are expecting all of you. Zhangye is a wonderful place for the investors.'* The chauffeur tried his best to persuade us to go with him.

During my field trips to Gansu, this is one of the few anecdotes that provide vivid account of how localities in the same region compete with each other for economic resources and investment opportunities. Renewable industry is obviously another newly emergent lucrative sector

that every locality wishes to have a larger share. Previous studies illustrated that the intense inter-locality competition has its pros and cons (Bai et al, 2004; Zhou, 2004). On the one side, it encourages local officers to embark on creative policy experiments in stimulating economic development, which arguably serve as a major engine for economic growth. On the other side, it deters the possibility of inter-governmental networking, coordination and cooperation. Taking wind farms as an example, ‘lack of integrated regional plan for wind farm construction’ is claimed by central officers and many Chinese scholars as the main reason for a rampant growth of wind energy production in the last decade, which eventually leads to NDRC’s new regulations in 2010 that requires local provinces to provide detailed development plans for local wind energy development as a prerequisite for any new project approval. The local development plans will be approved by NDRC and only those wind projects in accordance with these development plans could possibly be approved (NDRC, 2010).

However, the causation between inter-localities competition and a further constraint of local governments in governing its economic affairs is an overlooked issue. One of the few studies concerning this topic is by famous Chinese scholars, Weiying Zhang and Shu Li (Zhang and Li, 1998), who argue that the intensifying competition of the local politicians leads to a rapid expansion of private business sector. The interviews in

this research also indicate that the institutional barriers resulted from local competitions that restrain the local capability to support CDM, as provincial CDM centers have to restrain their business within their geographic domain. One senior manager at Ningxia CDM centers revealed to me that: *‘Ningxia is a small and poor province, so if we travel into other provinces to deliver CDM related service, it may not be welcomed by the locals, who have their own promotional units for CDM. Therefore we established another fully private organization, a de facto limited company, which is based in Beijing, to expand our business in other provinces.’*

----- *Interview transcript with SZQ*

This account indicates that hybrid or private institutions are in a better shape compared to the government institutions in terms of getting over the local protectionism and market barriers at least in the CDM arena. That is arguably another reason why local governments prefer to outsource some of its governance responsibilities to ad-hoc, quasi-public organizations in dealing with CDM, other than supporting it directly with more official channels.

6.2. Private power at local level

The constraints of the local governments in overseeing CDM activities, as explained in the preceding paragraphs, are in reality the strongholds of

private actors. Comparing to the local state actors, private actors possess greater financial resources that are needed for the capital investment and project implementation, they are better informed with EB's highly complicated and constantly changing rules of CDM and national climate policies and regulations, and lastly, they enjoy greater autonomy to execute activities across various political domains in China. In the following section, I would analyze how business actors are using these advantages to influence the local climate governance dynamics in order to sustain their strategic preferences in the CDM market.

The analytical focus is given to three sites of local public-private interactions concerning CDM governance. The first set of observations looks at how large centrally controlled SOEs (*Yang Qi*) conduct their CDM related business at local level. The second focus is given to the validation and verification activities of DOEs at local project site, since these activities comprise some major elements of DOEs daily job as CER auditors. Lastly, the analytical lens shifts to project developers or consultancy companies, whose duties require them to establish and maintain effective communication channels among all the parties associated with CDM, both at local, national and international level.

6.2.1. The rise of centrally controlled SOEs

One of the findings explained in Chapter 4 is that CDM itself does not

automatically create new investment or new project activities in the host countries, as the monetary incentive of CERs are too small and contingent to encourage investors to embark on highly risky projects (see also Lewis, 2010; Schroeder, 2009 for the similar conclusions). Consequently, the market will automatically identify the most capable actors, who can usually carry out a large number of industrial projects independently, as the most reliable CDM project resources. In such a case accrediting the projects developed by the strongest players with CDM as added value becomes a common practice in China's CDM market. Based on this logic, the centrally controlled SOEs, emerged as the most suitable non-annex 1 partners in the eyes of both CER buyers and carbon consultants.

6.2.1.1. Financial capabilities of centrally controlled SOEs in renewable energy sector

According to the State-owned Assets Supervision and Administration Commission (SASAC), a specialized bureaucratic institution governed directly by State Council, there are 117 SOEs altogether that are directly controlled by the Chinese central government via SASAC (SASAC, 2011). Most of these enterprises are monopolistic players in key economic sectors that are believed to be of strategic importance to the country, such as telecommunication, power, natural resources, heavy or military machinery and transportation.

Probably in contrast to an often taken for granted assumption that most of China's state-controlled companies are becoming less important in the national economy since the marketization reform starts, the centrally controlled SOEs are actually growing dramatically in terms of their total assets, output and profit during the latest phase of economic reform (see Yasheng Huang, 2008 for a detailed account of this phenomenon). The reasons for central government to support of these giant companies are two fold. Firstly, there is a political reverse to the conservative thoughts after 1989 incidents from a marketization orientation to the old mentality of rigid state control. Secondly, Chinese leaders wish to cultivate a number of competent state-owned companies to explore the overseas market. In 1992's congress report, the then Chinese president Jiang Zemin claimed that China should adopt a so-called 'going out' strategy, meaning to encourage Chinese companies' overseas investment or international business operation. Strengthening and fostering a 'national champion team' of SOEs is deemed as the most important preparation for implementing this strategy.

However, once these companies started to grow they believe there is an easier option for profit making and business expansion, which is 'going down (to the localities)' rather than 'going out (into the global competition)'. Since late 1990's these giant companies started to expand their business across various localities in China, and soon become the

most welcomed investors by the local politicians due to the massive amount of credits these companies promised to supply for the local economic development (Zhang et al, 2008). Zhang et al (2008) also pointed out that in early 2000s, ‘linking up with centrally controlled SOEs’ has become a common development policy at local level.

The on-going renewable ‘great leap forward’, typically in wind and solar energy field, is another example of this political trend. Taking Longyuan group as an example, the company has established over 100 branches, subsidiaries and SPVs for its wind energy projects all over China. The local managers of Longyuan revealed to the researcher most of these projects received little financial assistance at the local level, as the group or its parent company, China Guodian Corporation, has ample credit line to sponsor its investment activities (Interview transcript with ZNW).

The financial power of companies like Longyuan is recognized even by environmental NGOs. A senior campaigner of Greenpeace in China commented during the interview *‘I can’t imagine a picture of a rapid expansion of renewable sector and carbon market without the contribution of the BIG 5 utilities SOEs in China. They may not do it voluntarily, but I can’t think of any other group who have the comparable capability to do so.’*

----- *Interview transcript with LY*

There is no official data of the centrally controlled SOEs' market share in Chinese wind energy market so far, yet the estimate can reach over 70% to 90% of total installed capacity.

6.2.1.2. The institutional power of centrally controlled SOEs

One of the key roles that local governments used to perform in governing local industrial activities is to fill up the communication gap between the senior or central public officers and local market players. As Oi (1999) observe that networking with senior officers over specific investment decisions or project approvals has become a daily routine of local officers, whose diaries are filled with trips to higher municipals or even directly to Beijing. However, such role has been significantly diminished along with the expansion of centrally controlled SOEs at the local level, as these organizations usually have closer contact with the central officers than the local state officers. Hence most of the local states in the end delegate the networking functions with their senior officers to the managers of these large SOEs.

A project developer informed the researcher, *'the necessary bureaucratic procedures and approval process are mainly carried out by the project owners since they are SOEs. They know the rules. CDM has a centralized approving system and need to go through many parallel ministries in Beijing. Local governments would assist us to prepare the documents or*

gather information and data at the local level. We believe such an arrangement is more efficient because SOEs are also based in Beijing and know the system much better than others.'

----- *Interview transcript with KWW*

Therefore, the centrally controlled SOEs become essentially the intermediaries of central-local communications via the issues around project development and implementations (see figure 6.2). On the one hand, a large part of the updated policy related information is transmitted from central to local via SOEs rather than the officially established hierarchies, often due to SOEs' closeness to the central officialdom. On the other, local states are not reluctant to give up part of their governance roles in order to trade for the central SOEs' 'political resources' in Beijing. However, the only 'side effect' is that their control of the project activities has been largely reduced during this process, because the project entities at the local level are *de facto* integral parts of the parent companies, whose operational strategy can hardly be affected anyway by the local governments (see Figure 6.2).

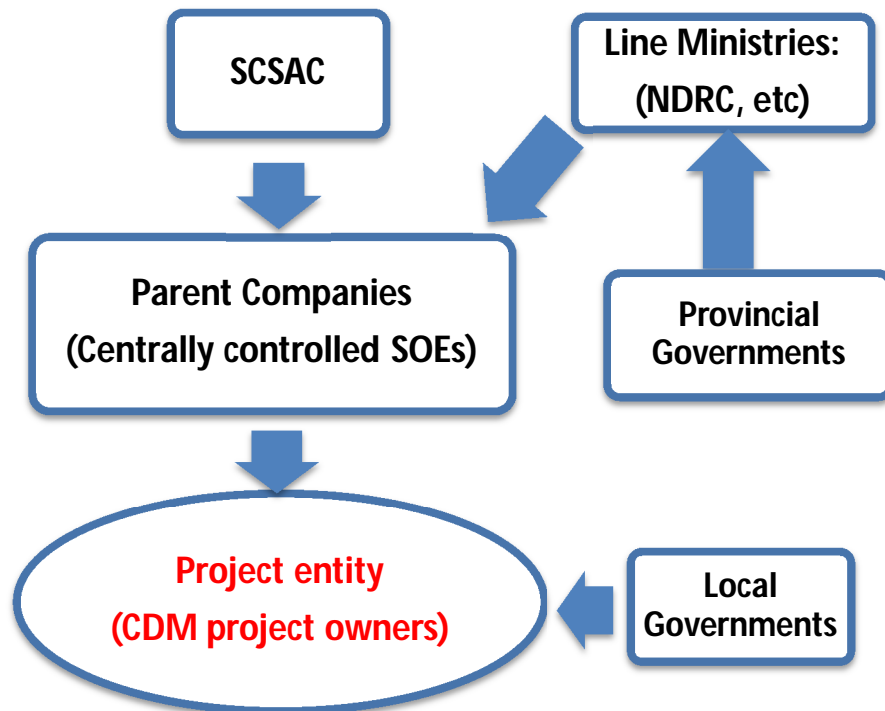
As a project developer comments in the interview: *'Local governments are more interested in how many wind farms can be built up rather than how many of them can be packaged in to CDM. They know once the projects are done, SOEs would deal with the CDM element by themselves*

(explained in Chapter 5) even without any local help. To be frank, if companies like Guodian and Datang (big 5 utilities) could not make it (going through project approval process and CDM procedures), neither could the local officers.'

----- Interview transcript of LHL

In this regard, the CDM has not changed the general feature of how industrial activities are governed in China at the local level.

Figure 6.2: Governance of CDMs developed by centrally controlled SOEs



6.2.2. DOEs at project sites: 'carbon judges' on the ground

DOEs are theoretically the only actor group that are capable of putting sands in the wheel of a fast growing CDM market. As independent auditors appointed by the EB, DOEs main job is to ensure the overall quality, rather than the quantity, of the project activities in the market. On site validations and verifications are the central tasks of DOE employees whose diaries are full of trips to visit remote project sites around China. They are the on-the-ground decision maker of whether a project is eligible as a CDM, and whether the CERs generated by these project are genuine.

'The power of DOEs actually ties to its capability to say "no". When we give green light to the projects, they will still need to go through the EB. But if we give out a negative review of the project, the project is essentially dead on arrival. That's the situation that most project developers and project owners do not want to see. We are the first level boss, particularly when we are standing at the project sites and asking tough questions.'

----- Interview transcript with HP

However, what makes DOEs an important source of governance input is not only their power to reject a project, but their capability to point out possible solutions for the problematic CDM projects in order to get it approved eventually. The incentive for DOEs to do so is obvious as their job is *'making sure the CDM is going the right way at a right speed, but not stopping the vehicle completely. Questioning a project to its death is only too easy for DOE validators, and unfortunately there are many young validators trying to do so. But we have to resist such temptation and be more constructive.'*

----- *Interview transcript with HP*

As a result, DOE validators are often seen as another source of expertise at the project sites. They provide the most updated insights of EB's rules and regulations and explain how these rules are to be carried out for individual project inspections. They sometimes use other cases they once validated as illustrations of how to make an improvement. They request local officers and project developers to seek alternative data resources that can be used to evidence projects' eligibility as a CDM, and essentially they help to standardize the project development processes according to their own handbooks of validation and verification.

'EB's rules and requirements are not always easy to be applied directly in China, we have our rather unique context and characteristics. For

example, some data required by EB are simply non-existent in China. So DOEs can be a bridge between international rules and local context. Sometimes, by asking questions, we are de facto educating them on how to do things right and how to find the supportive evidence. As time goes by, our questions are becoming more and more streamlined, and so are the solutions.'

----- Interview transcript with HP

These are the clear advantages that local states do not possess because most of the officers lack either sufficient understanding of the international rules, or some comparable CDM experiences outside their political purview that can be learnt or even copied as their own practices and strategy for developing CDM activities. The field research hence indicates that DOEs are using their leverage of 'saying no' to influence the governance system by prescribing and promoting the best, or at least most standardized, practices of CDM projects in the market, such as what data can be used as supportive evidence, where to locate them and how it shall be interpreted according to the international rules.

6.2.3. Project developer as a policy intermediary?

If DOEs are *de facto* the transmitters that help to translate international regulative rules into on-the-ground codes of practices in the CDM market, then the carbon consultancy companies or project developers are

the interpreters for national policy and international market trends to the local municipals. A massive growth of carbon consultancies at the earlier stage of CDM development can be described as one of China's distinct features and their important contributions in the early capacity building activities have been well recognized by the policy makers at all levels.

As ZL, one of the CDM technical expert, explained during an interview: *'Most local people want to know how a specific project should be carried out. How can we make the project be eligible as a CDM? How to prepare the documents? And most importantly, when and how can they benefits from it? Etc. Only a presentation of real cases can possibly provide convincing answers. People then really believe it is true and workable. Consequently, they came to us to discuss more projects in the area.'*

----- Interview transcript with ZL

Similar remarks have been noticed in several interviews with people from the private sector (Interview transcript with LHL, LYU and KWW). It is revealed that local officers rely heavily on experts from business actors for disseminating practical knowledge and on-the-ground skills, which cannot be obtained from central government or high level academics. Hence business actors are playing an important role in filling the governance gap between policy and practice, making them an emergent power in governing China's CDM market.

These observations lead to a rather general argument, that in China's political context, the most effective tool for local environmental governance are based not only on the increase in local officers' knowledge, awareness and regulatory capability. Rather, its success lies in the extent to which it can change local leaders' perspective on carbon offset activities as a new tool to address environmental issues. According to Oi (1999), local leaders' dual identity as a political and business leader, means that they will only respond when 'sticks (political pressure from the top) and 'carrots' (economic benefits from the market) co-exist as a joint incentive. China's CDM success lies in the fact that they offer both in one delivery. On the one hand, local officers need political legitimization from central officers to confirm that there are 'cakes falling from the sky'. On the other hand, they also require economic legitimization of the mechanism to confirm the economic viabilities and benefits of CDM, or 'the availability and taste of the cakes', a task that arguably can only be implemented by the business actors.

Moreover, large carbon consultancy companies are often seen not just promoting specific CDM deals, but actively involved in discussion with local officers of the local 'low carbon' development model and plan. During the field trips in Gansu, I noticed that a carbon consultant manager had been enthusiastically educating the local officers on how to transform local industrial parks into 'low-carbon flagships' by installing

solar PVs or other energy efficient facilities for the main buildings inside the parks.

When asked the purpose of such effort, he said: *'if we only focus on the CDM deals we can hardly win the trust of local officers. We have to show our capabilities to deliver solutions for the local 'low carbon' development, a task that local officers has not yet quite sure how to implement. If our suggestions can be absorbed into the local development strategies, it may help to secure more CDM related deals.'* Hence, CDM has opened the possibilities for the carbon consultancy companies to get involved in a broader range of carbon related governance issues at local level, and allowed them to become the 'on-the-ground' advisors to meet the local challenges of climate policies and governance.

6.3. Impacts of local political economy to the performance of CDM

Based on the analysis of local states' constraints and business actors' advantages and leverages in governing RE-CDM activities on the ground, this section turns to the discussion of how can we make sense of this local state-business relationship and understand its impacts on the performance of CDM as an innovative instrument of local climate governance.

6.3.1. Hybrid governance in a fragile coalition

At the outset, I argue that the traditional division between public and private actors is not helpful in grasping the real picture of how carbon market is governed on the ground in China. Most of the actors involved in the decision making process, either formally or informally, have a hybrid nature. For example, local governments are highly entrepreneur and they treat CDM as another financial resource to develop a fashionable renewable sector. The SOEs are often controlled directly by the central governments and use their political resources as a major arsenal to negotiate and arrange their deals at local level. The DOEs as independent auditors also have distinctive private nature who does not only respect the quality of individual projects but are also concerned with the economic return of their overall operation and their market share. Validation and verification works, in this regard, are business.

The hybrid nature creates a blurred public-private boundary that needs to be carefully examined before reaching the claims of either a ‘dispersed state authority’ or a fundamental change of ‘role sharing system’ between the state and other social actors (Eckerberg & Joas, 2004; Pierre, 2000).

6.3.1.1.A marriage of local states and SOEs

The preceding analysis supports the assumption that local state actors have been delegating some of its major functions to business actors due to

their lack of capabilities and expertise. The paramount objectives of local states and business actors are highly matching in the CDM area, which provide a common ground for the local state actors to consent business actors to perform some of its roles. Local states' dependence on business actors to lobby senior officers in Beijing over certain projects is an obvious example. Because, just as one SOE managers revealed to me that: *'After all we are all state entities and serve the same big boss, who is the party state, we have the same goal.'*

However, it should be noted that such delegation is purely benefits driven and hence highly momentary and contingent in principal. This emerging role-sharing mechanism is inevitably subject to the political and economic status of the local states and business, which are changing constantly throughout China's 30 years of economic reforms. As both the entrepreneurship of local states and the political power of SOEs may be weakened along with a continuing marketization reforms, this sweet marriage between SOEs and local states in the renewable sectors and CDM market may face some fundamental challenges.

6.3.1.2. Knowledge is (infinite) power?

As for the project developers' influences to the local polity at the earlier stages of CDM development, this originates mainly from a profound knowledge gap between international, national and local levels. Once

CDM started to move towards a mature market their advantages may significantly decreased.

SZQ, the senior carbon manager, informs the researcher that: *'our company has weekly internal meetings and seminars about most updated regulations and rules of EB, we discuss the possible influence of these rules to our business practices and strategy. CDM is such a fast changing sector that you need to constantly update your knowledge system. I assume that's something most of the government officers won't do.'*

----- *Interview transcript with SZQ*

But like many other interviewees, SZQ also admit that the local officers are catching up the gap and some of the local officers do have a very clear vision of how to develop local carbon market and low carbon related sectors. *'Most of the project developers are now based in Beijing plus a handful of Shanghai based companies. But I assume that there will be more and more local carbon consultancies in the near future. Local provinces already have CDM centers, which can be effectively packaged into local flagships of carbon business.'*

----- *Interview transcript with SZQ*

But it is not only local states' knowledge about national climate policy and international mechanism that has been significantly increased, the

national policy makers and international buyers' knowledge of local context has also been largely augmented along with the market growth. Many large CER buyers have build up dedicated expertise to expand local connections and develop new CDM projects. The knowledge gaps between the various levels are dramatically narrower, and so is the influence of the dedicated project developers in the CDM governance.

6.3.1.3. DOEs at the centre of contestation

DOEs have been a center of criticism since the inception of CDM and their low efficiency is viewed as the bottleneck of a fast growing market (World Bank, 2010). In China, both NDRC officers and market participants claims at various occasions that DOEs have a severe shortage of capable auditors and expertise to support a fast growing market and call for more home grown DOEs. But according to some DOE managers, at the heart of these claims are the conflicts of the stringent checking process and aspirations for market expansion, which are not likely to be reconciled unless one side could make significant compromises.

'I think DOE is a largely marginalized group. It is not because we do not have enough auditors, or the verification or validation process can be painfully long though I admit that is true. But the real reason is that DOEs' role is basically in conflict with everybody's interest to expand the market. Nobody likes a 'brake hitter' in such situation, but that's

something we have to do.'

----- *Interview transcript with DW*

Some auditors also revealed that DOEs are now actually being pressed by both sides. While EB are constantly pulling the string and sometimes questioning the credibility of DOEs' operation, the markets are requesting them to speed up the process. *'This is a job that will offend someone inevitably.'* Argued on auditor, who also mentioned that: *'Project developers and investors will often meet up at the project sites prior to DOE's visits for validation. They will work out the standard answers for our inquiries.'*

----- *Interview transcript with LXI*

One dramatic case is the lawsuit between DNV, the largest DOE operated in China, and a CDM project developer in Shanghai. The later claimed that DNV's inefficient work had caused considerable damages for its business. The lawsuit highlights the contestations of market participants in the CDM arena. But probably the most worrying fact is that it is far from certain to which side DOEs are more likely to compromise, either to their nominal superiors at EB, or to the market forces who paid for their works. The field work indicate a divergent opinions from inside DOEs employees in this regard, as one auditor of a foreign DOE clearly informed the researcher that: *'The decision makers in our head office*

often question our auditors' performance in Beijing as they believe some of the reports are too positive. They don't want to put their DOE license at risk, but sometimes they worried too much.'

----- Interview transcript with HP

However, how these two contrasting views are evolving will largely determine DOE's future role in the governance system of CDM.

6.3.2. Hollowing out the local states?

Another significant implication of the local political economy to the governance of CDM market is the hollowness of local decision making process in the CDM arena. As it can be seen from figure 6.1, most of the actor groups that are directly involved in the implementation works of RE-CDM projects are not local entities. The technical, financial and even political supports for the CDM projects are either directly or indirectly from central government, or the business actors that are based outside the locality. Local officers have been left with little decision power over CDM activities inside their political purview, and hence have little control of the benefits that these activities are expected to produce. I argue that this is the most unstable factor that may fundamentally challenge the already fragile coalition of RE-CDM market, as it exacerbates the local-central tension over institutional power as well as the public-private tension over economic power. The manifestations of

these contestations are already obvious, as revealed in the following paragraphs.

6.3.2.1. Administrative permission for CDM

In NDRC's 2011 revision of CDM Measures, it for the first time delegates some of its administrative permission to the provincial DRC offices. However, these offices are not given the power to reject any CDM application, and all the applications have to be reviewed and approved by the central officers as it used to be. Hence it is believed that the bureaucratic authority that has been delegated to the local level is rather nominal.

'I think it is only a gratitude gesture from the central government to award local officers for their support of CDM, who have put tremendous efforts in it but have little direct benefits in terms of the decision powers. Some of the local leaders already expressed their upset. So sharing the approval authority with the local institutions is indeed an attempt to gain the continuing support of CDM at the local level.'

----- Interview transcript with MC

Another interviewee, however, offered another interpretation of this policy: *'The Climate Change Bureau at NDRC becomes more and more multi-functional nowadays, and CDM is only a small part of its regulative*

operations. So the central officers are willing to hand over some of administrative authorities to the local level so that they can focus on more urgent tasks.'

Interview transcript with GJ

Whichever the explanation can be closer to the true motives of NDRC, the assumption is clear that at present stage local states have little meaningful decision power over the CDM projects that are to be implemented at their door steps. Although the major incentive for local officers to promote CDM is rather economic, it is evident that they have also been actively bargaining with central officers for the institutional power. The bargaining process is even more intensified as the CDM revenues are not as appealing as local officers once estimated, which is arguably the real reason for NDRC to concede some of its authorities to the local politicians.

6.3.2.2. The empty promise of CDM benefits

Another noteworthy article in the revised CDM Measures is the protection of centrally controlled SOEs as these companies (altogether 41 according to NDRC) are allowed to surpass local states to make CDM applications directly to the central NDRC offices. This policy not only clearly indicates the prominent statuses of these companies in the CDM area, but also suggests a growing tension between these organizations and

the local officers, as explained in the preceding paragraphs. As more and more local officers realized that the massive wave of developing renewable projects and CDMs have not achieved the economic benefits that they once expected.

For example, there are many complaints from both large SOEs and local officers and the confrontational focus are the issues of the local tax and local protectionism. In May 2011, the largest wind energy base in China, Jiuquan government, passed a local policy that require all the wind farm investors in Jiuquan to purchase only the local equipment. Such outrageous protectionism sparked off SOEs intense rejection and the disputes were only eased when the Energy Bureau in NDRC issued two specific announcement to declare Jiuquan government's policy an 'inappropriate' decision. The signal of this incident is that the alliance between local officers and SOEs is far from stable.

'The most obvious benefits for the local government are the tax income from these projects, but most wind energy projects enjoy tax exemption treatment. Local governments provide the wind resources and land almost for free but their tax revenues are highly instable, which ultimately change their attitudes towards these large SOEs massive investment for wind farms.'

----- Interview transcript with MQF

This remark is evidenced by a local newspaper report concerning Yumen city's wind farms in Gansu, which claims that the over 2,000 billion RMB investment in local wind energy sector only produced a tiny amount of tax revenue of 73.44 million RMB in the last 16 years (Netease News, 2012).

In addition, the direct economic benefits for CDM and its promotional effects to local renewable development are substantially lower than local officers' expectation. In Chapter 5 I present the empirical evidence to echo the argument that CDM has a very limited role to promote additional projects (Schneider, 2009), particularly in the renewable energy sector (Lewis, 2010), which make more and more local officers realize that the once believed the causation between 'wind or solar rush' and CDM boom is simply non-existent.

In wind energy sector, the materialization of CDM revenues is further limited by the fact that actual energy outputs from wind farms are often much lower than their designed capacity. The massive construction of wind farms in the last decade has far outpaced the expansion of connected grid system, and hence put severe pressures on the stability and the safety of grid networks. Although Renewable Energy Law (REL) requires grid companies to take all the wind power by force, in reality the grid companies often curb the output of wind farms in order to maintain the

reliable permanence of their grid networks (see Chapter 7). The ‘rejection of wind energy’ has become a common situation in large wind bases since 2008, which significantly reduce the potentials of CERs delivery of wind CDMs in these areas.

Lastly, the enduring bureaucratic process for verification and uncertain prospect of CER issuance also wear out many local officers’ patience. Currently the complete validation and verification process can be as long as 18 months and only less than 20% of the approved projects have actually delivered CERs successfully (NDRC, 2012). One project developer informed the researcher: *‘Sometime I really feel bad to go back to the failed project site. The local people have done a great deal of works and to cooperate with us in the hope of CER revenues, which in the end never materialized. Of course, there are many reasons for the non-delivery of CERs and we, as project developer, are not wholly responsible for this situation. But you can feel local people’s upset and their dubiousness of this mechanism.’*

----- Interview transcript with LXI

6.3.2.3. Local attempts to regain control

The strategic coalition in the carbon market, particularly in RE-CDM arena, is created and sustained when various social actors agree to compromise some of its autonomy in order to make alliance with other

actor groups to achieve a shared goal. Previous paragraphs illustrated that local states decided to give up some of its previous governance roles as a trade for the economic returns originated from a rapid development of local renewable sector and carbon business. However, as these benefits are not materialized their enticement to support this ‘carbon’ coalition is significantly weakened.

The manifestations of local officers’ changing attitude towards RE-CDMs are obvious. Firstly, local government has seen less supportive for wind energy projects and CDM activities since 2008. For example, in 2011, the government of Inner Mongolia, as one of the largest wind resource base in China, enacted several local measures to essentially constraint its wind energy development by substantially increasing the entrant barrier for its new wind projects (Inner Mongolia DRC, 2011). The document also provides evidence of local government’s determination to strengthen its control of local wind sector by reducing the number of wind energy producer to a large extent (from more than 60 entities to 25). As Inner Mongolia is the leading host locality for wind energy projects, these documents are believed to have further impact on other provinces which are in the similar situations.

As for the CDM and climate governance, local officers also started to shift their focus to other governance domains such as provincial local

environmental protections and promoting ‘low-carbon city’ campaigns, in which they could retain much larger administrative authority comparing to the present CDM system and a highly centralized renewable business.

‘Most of the local officers are not as enthusiastic about CDM as they were in just 5 years ago. They shift their interests to other low-carbon activities. They believe there are larger benefits for them in those areas other than sticking to CDM only. I’m not saying that they are no longer supportive of CDM, don’t get me wrong, they just look a bit apathy to it now.’

----- *Interview transcript with KWW*

Another observable effort of local officers to strengthen their governing roles is to start cultivating local expertise both in carbon and renewable sectors in the hope of being less dependent on ‘outsiders’. During the field trip many interviewees informed the researcher that local governments are enthusiastically encouraging ‘home grown’ enterprises to recruit ‘best brains’ from the renewable SOEs and carbon consultancy companies.

The local states’ effort to regain its governance authorities in handling RE-CDMs related sectors can shed some light on one of the often overlooked aspect of CDM, namely the local sustainability contributions of these activities. Previously, the relentless pursue of economic returns

drives local officers to align with business actors, and consequently depend on their expertise and political resource to expand large scale, capital intensive renewable investment, which eventually become the dominant project type of CDM in China. However, when the illusion of RE-CDM starts to dissipate and local states try to recapture some of its governance autonomy, it will be interesting to see if they wish to shift its focus to small sized and diversified project types that often have larger sustainability potentials and can be supported by local financial or political resources.

The Inner Mongolia's new policy on its wind resources provides a clue of such shift. For the first time local officers exhibits a somewhat different attitude towards small-sized, distributed wind energy production and large scale wind farms investment. The former has obvious stronger sustainability effects as the generated power is mainly consumed locally. Schroeder (2012) raised an important argument that the lack of integrity and sustainability effects of CDM is mainly due to an almost undisputed perception among various social groups, including local governments, which treat CDM as a mere business opportunity. From the earliest dominance of HFC23 to the present 'wind-rush', the development of CDMs in China clearly followed the market logic of reaping the 'low-hanging fruits', or the cheapest and easiest options to produce large amount of CERs (Castro, 2010; Narain & Veld, 2008). But now the local

states realized that these low-hanging fruits are not as tasty as they appeared and decided to reach for the higher branches.

The strong entrepreneurship of local states is not likely to be changed in the foreseeable future, and their alliance with the market players in governing this newly emerged market mechanism is unlikely to be completely disbanded. But a waning local support for the capital intensive renewable investment would at least open up the possibility to focus on those marginalized project types that can produce genuine sustainability effects for the local people.

6.4. Concluding remarks

To sum up, in this chapter, I argue that the local states' incentive to develop CDM is mainly economic driven due to CDM's potential benefits for local economic development, particularly in promoting a rapid growth for the renewable energy sector. However, during the process local officers often lack political, financial and knowledge resources that are needed for regulating and developing CDM activities. Some of their governance roles have been delegated to the business actors, who become essentially the 'on-the-ground' decision makers for the RE-CDM related affairs. A strong social coalition is hence established under the form of a hybrid and multi-level governance system.

Yet this coalition is highly contestable as local officers' role has been

hollowed out and their delegation of power is not sufficiently compensated by the economic returns they once expected. In such a situation, in the last couple of years, they have been attempting to strengthen their roles in governing both carbon and renewable sectors through passing new policies, expanding new climate related domains, and cultivating local expertise, as the efforts of regaining some of its authorities. As the previous coalition has largely failed in terms of promoting non-economic benefits of CDM projects at the local level, the struggle of the local states to re-enter the stage could have potential impacts on the overall architecture of CDM governance and its performance on local sustainability.

The question is therefore how business will respond to such contestation over the existing coalition in the carbon market. As one SOE manager mentioned: *'We understand the localities received less benefit than they expect from these projects, but that's a structural effect rather than a problem of individual cases. Given the existing international system and national policies, it would be pointless to just ask for more benefits from us since we just do what profit-maximizing organizations should do.'*

----- *Interview transcript with MQF*

The findings from the field study of this research highly reinforce the above statement. Most of the inefficiencies observed in renewable CDM

market today are manifestations of some deeply rooted incoherence of governance system within China, rather than the problems of market mechanism itself. The lack of integrity check and meaningful sustainability contribution at the local level, as observed in this research and many previous studies, is primarily due to the distinctive features of the local political economy, where non-economic incentives are almost non-existent among the local leaders, and the power structure and role sharing system between public and private spheres are (and will likely remain to be) blurry, overlapping, and even self-contradictory. In such case, any attempt to enhance the mechanism from top-down reforms can have little effect, if any at all.

7. Inter-business conflicts in CDM market

In the previous chapters, I argue that the dramatic development of CDM activities in China, and the dominance of RE-CDMs in the project pipeline, is due to a strong social coalition that has been forged to endorse the carbon offset as the major solution to tackling the severe challenges in China's climate governance. Business actors emerge as one of the pillars of this coalition due to their privileged position compared to the central or local state actors, mainly due to its abundant financial resources, political connections at bureaucratic system, as well as their knowledge or technological expertise at project implementation level. The rise of business actors in China's climate governance along with the introduction of the CDM produces significant impacts on the overall quality of CDM projects in terms of their environmental integrity and sustainability effectiveness.

However, the neo-pluralist approach of this research requires not only investigating the resources and manifestations of business power to sustain and expand carbon market, but also exploring their limitations to achieve and maintain their strategic preferences. Falkner (2008) argues that business power and interests are constrained by both external and internal countervailing forces so that it does not itself determine the outcomes in either domestic or international policy processes. Indeed, if

business interests always prevail in climate politics, there is no need for any form of lobbying (Meckling, 2011). In chapter 5 and 6 I have illustrated the state-business relationship in China's CDM market and I argue that business rely on state actors in many occasions in order to acquire and maintain its governance legitimacy. Business actors hence do not confront state regulators openly. They instead seek to create a 'win-win' situation with the officialdom. However, set aside the state power, there are also obvious conflicting interests among the business groups that shape the overall capabilities of the business community of influencing the governance of the CDM market. In this chapter, I shift the analytical focus on the countervailing forces among business actors in order to reveal the tensions and conflicts that may weaken their leading positions of governing CDM in China.

At the outset, the analytical purpose of this chapter rejects the notion of treating business communities that engage with the CDM projects as a 'monolithic bloc'. Rather, I disaggregate the business actors in the CDM market to analyze the constituent parts of the business community. I argue that in order to understand the governance system in a given sector, neither the state actors nor the business actors shall be viewed as a unified group as the dominant interests of the groups as a whole have to accommodate different and often competing business interests in a given economic sector or policy domain.

In order to present the countervailing business interests in the carbon market, two elements of business conflict will receive particular analytical attention in this chapter. At the outset is the division of international and the domestic business actors in the CDM market. Previous studies on business interests in a globalized world economy suggest that international firms are often more likely to support international rule setting, and they focus mainly on integrating their business into national and local regulation frameworks (Vogel, 1995). As for the CDM market, international companies are believed to possess greater expertise than domestic ones in terms of the rules and norms at UN. In addition foreign companies like CER buyers often possess unique identity as Annex-1 parties, which also provide a *de-facto* monopolistic advantage over domestic companies.

Compared with international companies, domestic companies often enjoy a more comfortable connection with the local political system. The interview data reveals that they are sometimes skeptical about the carbon credits as a viable or stable source of revenue. In addition, the dubious prospect of this mechanism in the post-Kyoto era becomes a big concern among domestic players. They are often convinced that the CDM is essentially in the control of the ‘Westerners’, namely the ‘Annex-1 parties’. Therefore, even if domestic companies are not in direct competition with foreign companies in the CDM market, they have

distinct concerns about the future of the CDM market and the role of offset in China's climate governance. Whether or to what extent these mentalities are translated into the policy influence will be explored in detail in Section 1 of this chapter.

The second but closely related element of business conflict arises between actors in various economic sectors that are related to the CDM. The carbon market is not an independent economic sector but rather embedded in various existing industrial sectors. Hence, it is very difficult to establish a 'union'-like organization to represent the carbon trading industry as companies in various sectors may engage in carbon trading for different purposes and priorities and adopt different strategies in approaching the carbon market. Coordination among business actors with various sectorial background is almost impossible even for a powerful government ministry like NDRC. However, the dominance of renewable projects activities in China's CDM portfolio, as explained in the preceding chapters, indicates that other important sectors related to climate change or GHG mitigation are at least to some extent neglected by the present system. The unbalanced development of the market hence cultivated dissident opinions and countervailing forces to the existing coalition of the CDM market. The manifestations of these conflicting interests will be analyzed in Section 2 of this chapter.

Lastly, there are ‘periphery’ actors that are not formally involved in the CDM governance circle or decision making process, but have tremendous influence on the successful implementation of the project activities. The domestic financial sector is a typical example and its (lack of) endorsement of the carbon market has been largely overlooked in previous empirical studies regarding the governance of the CDM. As explained in earlier chapters, the present CDM system relies heavily on the domestic financial capabilities to invest or sponsor potential carbon offset projects. I hereby argue that the risk appetite, lending policies and internal procedures of Chinese banks and insurance companies has a determinant effect on how the projects are to be implemented on the ground in China. Therefore these actors’ interests and strategies have some strong implications on which direction the carbon coalition in China will be evolving in the future.

The chapter concludes with the argument that CDM governance in China is an open-ended policy process with both pro-development forces and pro-market elite forces constantly challenging the existing coalition of the carbon market that was established only a decade ago. Although in China’s case the overarching strategy of this coalition focuses merely on accumulating economic benefits from this newly imported carbon market, how this strategy is to be defended and sustained, and in what direction this coalition is evolving remains largely uncertain at the present stage.

7.1. International and national business actors in the CDM

market: division or integration?

After comparing the different strategies of transnational companies and domestic industries on ozone layer protection, Falkner (2008) reaches the conclusion that transnational companies are more willing to support the international restrictions on ozone-depletion substances, because these restrictions are in general rendering them a competitive advantage over domestic companies in the host countries. Vogel (1995) argues that international firms often promote higher environmental standards in order to compete with local companies, and consequently nations have to adopt standards of their greener partners, a so-called ‘California effect’ or the shift of environmental regulations in the direction of stricter regulatory standards. Similar findings can be observed in the financial sector, whereas the Equator Principles were adopted by most of the global commercial banks for their project finance’s environmental and social integrity in developing countries (Wright & Rwabizambuga, 2006) and financial institutions in the developing countries were pushed to follow these principles (Industrial Bank is the only ‘Equator’ bank in China so far, which is only a small sized regional bank who wishes to use ‘Equator Principles’ to enhance its green identity). It would be interesting to see if a similar trend can be observed in the newly internationalized carbon offset market.

International companies are the pioneers of the Chinese CDM market. NDRC's website documented 91 CER buyers from Annex-1 countries that have been actively engaged in China's CDM market (NDRC, 2012) since 2003. The majority of these buyers are carbon funds or trading companies who purchase CERs only for trading purposes rather than to offset their own emission reduction obligations under the KP. Unlike other sectors where international companies have to compete with local companies in terms of the market share and economic resources, the buyers from Annex-1 parties enjoy a non-competition status since no domestic companies are allowed to purchase and trade CERs for a profit according to the CDM Measures.

Dividing international and national firms in the studies of business influence in environmental governance is not a new analytical trend, yet the purposes of such division are often two-fold. On the one hand, multinational corporations, along with the ongoing economic globalization, are often viewed as the major force to steering and supporting supra-national forms of governance over some most challenging global issues such as international trade or a changing climate (Vogel, 1995). Transnational firms are active agents that advocate and incorporate the international rules, norms and regulations into the national regulatory context. On the other hand, although local companies do not always oppose those new mechanisms or instruments imposed from the

international level, they are often highly dependent on their traditional business model and political protectionism and hence have different strategies and preferences regarding the newly introduced international regulations (Child and Tsai, 2005).

Therefore, in this research, I argue that both the integration of the carbon coalition from international level and domestic contestation from below need to be investigated simultaneously in order to understand the power dynamics among business companies in the host markets of the CDM. The analysis of the business conflicts between the international and domestic companies in the carbon market focuses simultaneously on the integration process of the so-called transnational carbon coalition (Meckling, 2012) into the Chinese context, and the Chinese companies' reaction to this tendency and their struggles to maintain their own strategic advantage in the market.

7.1.1. Internationalization of market instruments and its scepticism in China

Many previous studies have identified the case of carbon trading as a manifestation of the broader policy trend in developed countries that favors market-based instruments over traditional 'top-down' or 'command and control' ways of governing environmental issues, such as a carbon tax or a pollution penalty system (Boyd et al, 2007; Meckling,

2011; Newell, 2009; Paulsson, 2009; Schroeder, 2011). The fetishism of market mechanisms is deeply rooted in the dominant and pervasive neo-liberalist beliefs and policies in capitalist societies in the past decade (Newell and Paterson, 2010), and there is strong empirical evidence of the coalition-building process around market mechanisms in many Western countries such as in the UK and US. This transformation is notably supported and sustained by major business actors in key economic industries such as the energy and finance sectors (Levy and Egan, 2003; Newell and Levy, 2005; Falkner, 2008).

Apart from a mounting fetishism of market instruments for climate governance in developed economies, the adoption of the CDM under the KP is arguably the first attempt to integrate developing countries into this existing coalition of carbon traders. It is a process of reconfiguration and integration of these previous individual national alliances in the West (Levy and Egan, 2003) into a truly 'global' carbon coalition, from which the business companies are found as active agents to promote the ideology of market instruments.

7.1.2. International companies: unchallenged missionaries

One of the unique advantages for international companies engaged in the CDM market is that they face no local competition because no domestic

institutions are allowed to purchase and trade CERs within China according to the NDRC's regulation. This unchallenged market status tremendously enhances the international buyers' leverage in promoting ideas or discourse in accordance with their business strategy. The idea that market instruments such as the CDM is an ultimate solution to the environmental issues is a vivid example of such influence. The benefits of this market mechanism have been reiterated through companies' websites, capacity building seminars and business fairs until these benefits have been taken for granted by policy makers and public audiences.

In 2011, the Chinese government enacted the 'Working Plan of Energy Saving and Emission Reduction during the 11th Five Year Plan Period' (NDRC, 2011) as the guiding principles of the country's climate change policy. The plan requires '*Further advancement and promotion of market mechanisms, which will internalize the enterprises' needs for energy saving and emission reduction...The task will be led by government with enterprises as the main force. It will be driven by the market with all the social actors are able to participate.*' This statement highlights the government's attitude towards market mechanisms.

'The carbon trading is a genius idea for addressing the problem of climate change. I have strong faith in market mechanisms. Government is not part of the solution, that's obvious. Just look at those environmental

disasters after all these years of poor regulations. Market solution is our only hope.'

----- Interview transcript with ZH

ZH also mentioned that when he decided to take up the CDM as a new career in 2007 (previously ZH worked as a bank manager in a state bank, an often admired job for its security and salary), he described his new job with pride in front of his friends as a 'sun-rise' industry. The firm belief of market solutions is not rare among interview participants from both public and private sectors, who regard offset instruments as well-tested governance inventions in some advanced economies (Interview transcripts with KWW, SZQ, LYR, HP and DW). Many people raised the ozone protection treaties or the SO₂ offset system in the US as the example to justify the promotion of carbon offsets and the CDM. In addition, there are extensive media coverage and officers' speeches that promote market mechanism (21CN, 2010; People's Daily, 2008; Sina News, 2013). In a country whose economy had been completely shattered by centrally planned socialism and only embarked on marketization reforms gradually since the 1980's, such advocating voice of market mechanisms is understandably easy to gain ground among both policy makers and ordinary people.

However, a notable difference between these previous mechanisms and the CDM is that developing countries can benefit from the internationalization of offset programs just like developed countries once did. A project developer commented during the interview: *'I believe that using market instruments such as CDM to tackle environmental issues is a great idea. In a perfect world it will provide perfect solutions...But I feel confused sometimes because the funding is from rich countries. It is the Europeans that give you the money, so the whole system is in their control. It is their ideas, their price, and their rules. It is more or less like donation. If they decide to stop then everything will stop.'*

----- Interview transcript with LHL

These remarks reveal a rather strange mentality among Chinese employees in foreign carbon companies regarding the internationalization of offset mechanisms. In theory the CDM was designed mainly to assist developed countries to meet their emission cap in a more cost effective manner. The mechanism therefore was designed to help Annex-1 countries rather than non-Annex 1 countries, yet the field study in China indicates a rather opposite understanding among the market actors who regard the CDM as a 'benevolent gesture' from Annex-1 entities in assisting host countries' transitions into low carbon undertakings, in other words: *'cakes falling from the sky.'*

The nature of the buyers in the Chinese CDM market provides a clue to how this transformation of perception took place. At the outset, as I mentioned earlier that most of the carbon funds operated in China do not have an emission cap and only trade CERs for a profit. In such a case, the price of CERs to be traded is the biggest concern for the buyers when a potential CDM deal is put on the negotiating table. If the CER price becomes too high for the buyer to make a profit, few would purchase these credits even if they were to be generated from high quality projects. Besides the CER price, there are other factors that force these carbon funds to be more selective. For example, the healthy portfolio of carbon funds often relies heavily on the rate of successful issuance of carbon credits, meaning that they are not very keen to reach deals with less capable CER suppliers, as the capability of the project owners will directly affect the possibility of CER issuance (see detailed analysis in Chapter 5).

For the same reason, buyers are reluctant to experiment with the ‘creative’ methodologies. As one interviewee revealed, in the earlier days of the market the buyers were essentially the first round reviewers of the newly proposed methodologies from the project developers: *‘At that time our technological experts’ main job is to explore the new methodologies, an effort often thwarted by the buyers once they believe these methodologies won’t work out in the market.’*

International buyers' highly selective attitude has left Chinese carbon credit suppliers with the impression that selling carbon credits is not an easy task. The buyer's appetite and preference hence has become the guiding principles of the market as a whole. Most of the project developers will only focus on the credit suppliers and project types that are welcomed by the buyers. The cakes are actually not 'falling from the sky': they are essentially in the hands of the international carbon funds.

Another advantage that international companies have in the CDM market is their perceived richer experience in market instruments and international rules compared to those of the domestic companies, particularly at the initial stage of the market development, even though both EU and Japan, the biggest two buyer groups in China, had no previous experience of emissions trading and most of their carbon funds were only established along with the inception of flexible mechanisms under the KP. Yet, companies like Eco-securities, Tricorona or Arreon Carbon have successfully packaged themselves as highly experienced and dedicated carbon trading experts.

These companies are also in a better position to communicate with CDM regulators, DOEs, or CER end-users at the international level. Apart from being an active force in local capacity building programs, these

companies organize regular seminars and events in Brussels, Bonn and London to present their ‘local’ or ‘first-hand’ experience and knowledge accumulated in host countries to policy makers in Annex-1 countries. Their role as a transmission belt of information is often regarded as an important alternative way of communication between Annex-1 and non-Annex 1 parties apart from the official bilateral climate negotiations or meetings among civil servants. This function can hardly be replaced by any domestic corporations in the host countries.

Yet the power relations between domestic companies and international ones would shift dramatically if this international offset mechanism is to be replaced by a domestic carbon market. The power of buyers would be waning for certain, as it can be seen today in China that few foreign companies are involved in the design of China’s ambitious domestic carbon market, which is a sharp contrast to the CDM capacity building programs where foreign companies are often the main facilitators. Today, most of these buyers, together with a large number of Chinese private carbon consultancies, are forced to expand the business into non-offset areas such as consultancies on low-carbon technologies or urban development. Hence, the domestic-foreign variance or conflicts would be largely replaced by domestic power dynamics among Chinese companies.

But that does not mean the ‘elite’ nature of the carbon market would

somehow diminish with the retreat of foreign companies. On the contrary, the political economy that explained in previous chapters indicates that large SOEs would possibly take up an even decisive role in the future carbon market for two reasons. Firstly, given the poor statistic system of industry emissions in China, most of the key data regarding the emissions are kept in the hands of SOEs who dominate most of the carbon intensive sectors. Their willingness to cooperate with the state on data reporting and monitoring of their emissions is the key precondition of domestic carbon market. Secondly, the role of the SOEs from CER suppliers in the present CDM context would change too, as some of them would eventually become buyers of the carbon credits from other SOEs. This shift of roles would intensify the competitions among SOEs across the nation, leading to new power dynamics between central and local states since most of them would utilize their political and economic power to guarantee their strategic advantage in the market.

7.1.3. Local rhetoric on the CDM: a sense of apathy

Compared with international companies, local companies are at an obvious disadvantage in terms of their CDM related knowledge and their familiarity with international rules. They are the rule takers and the mere receivers of an expanded ‘carbon coalition’ from the West. Many interviewees expressed the idea that domestic companies are particularly

vulnerable at the earlier stage of the CDM while negotiating with foreign companies (Interview transcript with YAM and MC). Besides, the market is highly competitive for local consultancy companies and project owners since the buyers can compare and purchase carbon credits across various project types but the suppliers can only produce one or two types of CERs within their core business sector.

As the rule followers, Chinese companies in general do not care too much about the overall quality of the CDM's governance structure or the future design of the mechanism as many Western companies do, since these issues are out of their control. A 'fatalistic' mentality is found common among Chinese market participants. Realizing that the future of the market is totally beyond their controllability, most domestic companies use their connections within the government institutions only for the purpose of short term benefits of individual cases rather than deter or advance a policy issue in general.

'The rules of EB are very slippery, but I think even the Chinese government can't do anything about it (regarding a reform of redesigning of CDM in the future). CDM is just a small issue in the climate negotiation after all and it is essentially a game controlled by the buyers and their governments. We Chinese can do nothing about it but to adapt',

-----Interview transcript of SZQ

7.2. Divided opinions on protectionism in the CDM market

The Chinese government has revealed a clear protectionist approach to the CDM market by introducing a number of policies that aim to protect domestic interests since the beginning of the market development. Among these policies are the declaration of joint ownership of CERs with Chinese enterprises and a tiered taxation system of CER revenues, a requirement of Chinese majority ownership for the CDM project, and an implicit floor price prerequisite for CER sales. All these policies are crafted in order to 'protect' Chinese project owners who are believed to be in a disadvantaged position when negotiating with foreign carbon credit purchasers.

Theoretically, these measures are designed to help domestic companies from being exploited by the foreign companies due to the asymmetric information and unbalanced capability. However, the field study illustrated that not all protectionist measures are disliked among foreign companies. More surprisingly, it is domestic companies that often challenge the justification of these measures and try to adjust the rules that are meant to protect them.

7.2.1. Is the floor price requirement out-dated?

Guiding price is not a rare policy instrument in China. According to the Price Law of PRC, enacted in 1998, government institutions are allowed

to set guiding prices for products and services that are crucial for national economic development, in extreme scarcity, naturally monopolized, or key to the public or social welfare (Price Law of PRC: Article 18, Chapter 3). Most of the products or services that abide by a guiding price are formally prescribed in ‘Official Regulated Price Lists’ published by NDRC or its local offices. CER is not on the list.

However, most the interviewees regard floor price of CER as an effective policy only at the earlier stage of market development, but largely outdated at the later phases. *‘Back in 2004 and 2005 when few people knew about CDM, some project owners were willing to sell their CERs with a daunting low price of 1 or 2 dollars. The asymmetric information is high between the buyers and suppliers... NDRC’s floor price really helped to protect the Chinese project owners. But now, everyone in the business knows how to check the carbon price on a daily basis. The market price is transparent and updated every day.’*

----- *Interview transcript with KWW*

KWW’s remarks represent the common feeling towards this once effective intervention policy among the business actors. However, there is a clear divided opinion among domestic companies on whether or not the policy should be abandoned. SZQ argues during the interview that there are some small project owners in remote areas who may still find this

protectionist policy useful, if the government *'can adjust its floor price more frequently and with flexibility.'*

Other interviewees believe that the floor price is becoming meaningless as its deviation from the actual carbon price is increasing (Interview with PP). For example, one interviewee revealed that their company tried hard and succeeded to convince NDRC officers to allow them to negotiate a floating CER sales contract (ERPA) with the buyer, which was essentially a significant departure from NDRC's original approach. Once asked if they would consider NDRC's floor price policy as appropriate for future CDM projects, she believes the floating price should be taken as the landmark for future policy considerations: *'it is already a very difficult moment for all the CER suppliers in China when the buyers' appetite for CERs is shrinking. We need to follow the market signals if we want to secure more deals.'*

-----Interview transcript with QY

On the contrary, international companies are (quite surprisingly) less worried about the floor price policy. The price prescribed by Chinese policy makers is often regarded as a benchmark that has only vague, if any, implications in the actual business decisions. Their confidence is rooted in the rationale that if the price gap is too high, they would renegotiate the price with the project owners regardless of the Chinese

government's floor price requirement, or simply forfeit the ERPA. Due to their stronghold on legal expertise and knowledge of the ERPA compared to the project owners, they could often achieve a more desirable price during the negotiations or successfully forfeit the contract without triggering any legal disputes (Interview transcript with PP).

It should also be noted that the current carbon price in the EU-ETS has been much lower than the Chinese government's floor price, which has already sparked off a wave of re-negotiation between buyers and project owners over the delivery price of CER. The adjustment of the floor price requirement has become an urgent issue for companies that are desperate to sell their verified CERs in the fear of a further plummeting of the carbon price. To these companies, this requirement is no longer a protection but a cumbersome rule that stops them from making independent business decisions in line with their strategies.

7.2.2. Co-ownership and CERs revenue sharing policy

Another protectionist policy in China's CDM market is the nature of CERs as a 'quasi-public' product. The Chinese government declares in its CDM Measures (NDRC, 2011) that the revenues generated from CERs are shared by state and project owners. No other entities are allowed to share the revenues from CER shares. In addition, in case the project owners fail to reach a sales contract with any Annex-1 party at the time of

project approval, the potential CERs will be transferred into the 'national account' and project owners are not allowed to sell it if the buyer is identified later without the formal consent of national government.

The revenue from CERs collected by the state is transferred into a CDM fund, which is managed by a consortium of ministries with the Ministry of Finance as the operational chief. The total funding available can reach 10 billion RMB by the 2012 according to Mr. Wen Gang, the deputy fund president, in a press interview in 2010. The fund is designed to promote capacity building efforts or increasing public awareness of climate change by either donating or lending to the low carbon projects. In 2011, the Measures to Manage CDM Fund were enacted by the inter-ministerial consortium (MOF, 2011). Yet its operational procedures remain mysterious to most of the business people who are currently involved in CDM activities.

'Nobody knows how the fund is to be used, and nobody cares, to be honest. The fund will not be big enough to support ordinary clean development projects across all over China, so the competition must be intensive. Only people with very close ties to the officialdom have the chance (to use the fund).'

--- Interview transcript with LHL

But beside the lack of transparency and accountability of how the state would like to spend its revenue from CDM projects, there are other problems originating from the co-ownership of the CERs. Among them is how the government should react when a dispute emerges between Annex-1 and non-Annex 1 parties over particular CER deals. It is often during the contractual disputes that domestic and international companies hold opposite opinions and expectations of the government.

PP illustrated this situation during the interview: *'If there are some frictions between the buyer and the project owner under ERPA, as it can be seen more frequently now in the market, buyers always want to control the issue within the 'pure commercial domain'. Obviously they do not want government officials to sit opposite at the negotiation tables. The project owners, however, believe that since CERs are co-owned by the state, government officers shall share the responsibility to defend the suppliers' right under the ERPA. They want the party cadres on their side.'*

--- Interview transcript with PP

Such comments reveal a common problem with a protectionist policy, which may expose government officers in the commercial context as the policy travels too far into the business realm. The neutrality role of state actors can be jeopardized as they have to take sides over the business

disputes as another contractual party. NDRC as the guardian authority has not yet been involved in any direct confrontation with international buyers regarding any given contractual dispute; instead its support to domestic companies is rather implicit, often by providing guidelines, presenting showcases of disputes and organizing closed door discussions with Chinese companies. But as more and more Chinese companies are seeking direct government support to deal with the emerging wave of buyers' default under ERPA or business disputes, Chinese policy makers are facing pressure to strengthen their protectionist approach, which may further discourage an already waning enthusiasm from the buyers.

7.2.3. The majority Chinese ownership requirement

The Chinese government requires that only Chinese companies or Chinese controlled joint-ventures (51% or above ownership) are eligible to develop and own CDM projects. This has been by far the most controversial and bizarre policy in the market during last decade. Schroeder (2009) argues that this policy reflects a mixed and contradictory mentality of Chinese policy makers in terms of how to deploy the CDM to support the renewables sector. A strategic priority has been given to cultivating a Chinese renewable technological advantage globally to deter, rather than encourage, foreign investment in this area.

For foreign investors who intend to invest in the project activities that

have the potential to generate CERs, such policy is the final straw that crushed their investment scheme. A UK carbon fund manager mentioned during the interview that: *'For an investor we may face many difficulties in a country like China. Particularly for the carbon projects, since the procedure to successfully sell your CERs is simply a daunting task to everyone. As long as we realized that such investment is not favored by the government, we gave up the plan of investing, and reduced to be a mere CERs purchaser as everybody else here.'*

-----Interview transcript with MC

According to MC, his company has invested dozens of biogas power projects across South East Asia, but in China, no plan of direct investment has ever been considered seriously. The political risk in China is just too high.

However, most Chinese companies view this issue in a pragmatic way. The energy production sector has long been controlled by the state for its relevance to the national security and public welfare. Even domestic private companies find it difficult to enter the market, not to mention foreign investment. But LHL believes that at least other less strategically important areas should be opened up for foreign CDM investment, such as the animal waste projects he has embarked upon, which was finally dead on arrival without sufficient capital investment (Interview transcript

with LHL).

Unfortunately, not all the buyers share LHL's belief. For example, GJ mentioned during the interview: *'It is already too late for this argument (Chinese majority of ownership). Most of the buyers in China are just carbon funds which are not capable of erecting a project from ground zero with their own hands. They will stick to the current mode even if the policy changed to accept foreign ownership in CDM projects.'*

----- Interview transcript with GJ

However, besides various opinions among business people towards this policy, some business has already learnt how to get around the policy. It is not a rare phenomenon that project parties modify the shareholding agreement to meet NDRC's requirement and get foreign controlled projects approved as domestically owned projects. It is time consuming and often very complicated for government officers to check out the real shareholding structure of a jointly invested project, if business parties intend to conceal the truth. Such move indicates that any attempt of full-scale deterrence of foreign investment in the carbon market is destined to be a rather futile effort.

Whether the policy would be changed by the Chinese government remains unclear, since most foreign entities are not keen to invest in real project activities as long as CERs can be purchased from Chinese owned

projects. As for those who are indeed in favor of direct investment, finding a Chinese local partner who is willing to ‘cooperate’ with an artificial shareholding agreement is a much easier option than lobbying state officers in Beijing over this issue.

To sum up, in this section I presented the different mentalities, attitudes and ways of influences between international and domestic companies towards international rules, and domestic policies in the CDM arena. It is noted from the data that domestic companies are less interested in the governance system of the CDM and the possibilities of its improvement. It is not because they lack communicative channels with the rule makers in the UN (on the contrary, many business companies are frequent participants of international climate negotiations), but rather, their apathy is due to a lack of confidence of the durability of the international offset mechanism. The CDM is often regarded by Chinese companies as a transitional or temporary instrument. As no decisive commitment has been made on the part of the major CER buyer countries for the second commitment phase under the KP and the possibility for China to take up a legally binding emission cap grew higher, this indifferent attitude has been gaining ground since 2008.

There are no obvious lobbying activities by either international or domestic companies to oppose or endorse the Chinese government’s

protectionist measures, even if some of them are clearly not functioning well and are rather outdated. International companies chose to press the Chinese government through business activities, such as renegotiations of the CER producers of the carbon price regardless of the floor price guidelines. Chinese companies may prefer to gain official support through closed door or back-to-back meetings. Neither group has decisive capability to determine the policy outcome concerning the future of the CDM in China.

7.3. Cross-sectoral conflicts in the CDM market

The CDM market, or carbon market in a broader sense, is not a single market that the industrial operations and commercial activities are organized and managed to produce only one set of products or services, namely carbon offset credits. Rather, these credits are merely ‘by-products’ of the existing industrial or public service operations. For example, renewable energy projects may produce both electricity and CERs (for CDM) or VERs (for voluntary carbon market), while a newly installed waste heat recovery facility in a cement factory is an integral part of the existing production lines, which produce cement, power and carbon credits at the same time. There is no carbon market that can be abstracted from its embedded sector and governed as an independent industrial sector.

The 'by-product' feature of carbon offset credits has several implications for understanding inter-business relationship in the carbon market. Firstly, the relationship among the market players of any given or closely related industries (such as various types of renewable energy production) inflict a huge influence upon how the production of carbon credits is managed (Table 7.1). The trans-sectoral nature of the carbon offset credits make the cooperation or coordination among the actors from various sectors a very difficult task due to a lack of communication channels between parallel economic sectors. There is no single representative organization for project owners with various ownership structures, production capabilities and business cultures. In the end actors from more strategically important or financially robust sectors in the national economy stand out as the representatives of the 'carbon industry'. In China, these are the energy production and heavy industry sectors.

The other implication is that some 'peripheral' actors such as financiers and legal advisors, though not directly involved in the carbon credits production process, play a vital role for the development of the carbon market since their support is almost unanimously crucial for all the key sectors that are involved in the carbon market. A change of policy orientation or business strategy in the cement industry may only affect a small number of CDM projects, but similar alteration of the bank's lending policy may produce profound impacts on all the CDM projects

that need capital injections for their implementation.

In this section I present some analytical findings that illustrate how the carbon market is highly subjective to the inter-business relationships of actors in the renewable energy sector, how the most powerful actors emerged as the representatives of the whole carbon industry when the union like organization is hard to be created in China, and how peripheral actors like banks are influencing the carbon market with their internal lending policies and procedures.

7.3.1. Wind and solar: a tale of two renewables

Wind and solar power are arguably the major two segments of renewable energy production in China and both sectors have witnessed spectacular growth since 2009. However, their representation in the China's CDM pipeline has been dramatically different (see Table 7.2), compared to 650 wind projects that are registered with EB, only 17 solar power production projects are currently in the CDM pipeline (UNEP, 2013). In the following paragraphs I explain the political and economic causes for such variation and argue that the different 'fate' of solar and wind projects is *de facto* the result of the business actors' power in the market.

7.3.1.1. Progressive vs. passive development

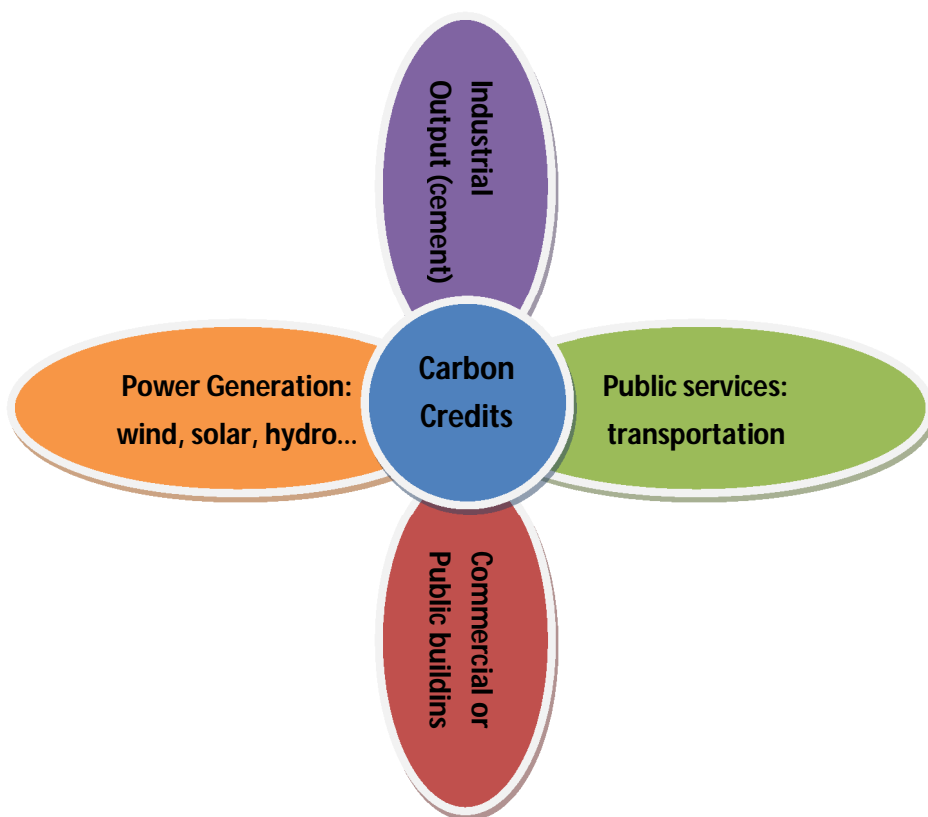
One of the distinctive differences between China's wind and solar sectors

is that most of the wind projects are conducted by state-owned utility companies, who embark on wind energy mainly to fulfill their renewable energy quota imposed by the government. In the solar power sector, most of the active companies are privately owned, medium sized companies that produce solar panel for foreign companies prior to 2008. The major cut of solar subsidies in some major European countries has put many of these Chinese suppliers on the verge of collapse. As a result, some solar panel producers have decided to look toward a domestic solar market and take on investment projects for new solar power stations. Their involvement in such kind of investment activities is motivated by the sale of solar panels and other equipment as a rescue plan in facing the massive reduction of purchase orders from Europe.

Therefore there is a tremendous capability gap between these small or medium sized private investors who once were mere equipment providers for solar power stations. They often lack experience and expertise in project financing, construction and maintenance compared to large state-owned companies that dominated the wind sectors, which are specialized in developing and investing in capital intensive energy projects. This capability variance largely determines their level of involvement in the CDM market. As explained in Chapter 5, CER buyers are only interested in projects that are being carried out by financially robust and experienced project owners. Most of the private investors in the solar

sector do not fall into this category. Furthermore, their financial constraint only allows them to invest in projects with limited generation capacity. The amounts of CERs and the potential CDM revenues that can be extracted from these projects are insignificant in these small sized investment projects. A careful examination of the solar power CDMs illustrate that most of these projects are being carried out by large SOEs, which do not represent the main tendency of the solar power market in China since 2005 (see table 6.3), where leading private companies like Shangde and Yingli have not yet been involved in any CDM deals.

Table 7.1: Carbon credits as a ‘by-product’ of various economic sectors:



7.3.1.2. Solar power: the next 'big' thing?

'What we are seeing today in the solar power market is just what had happened five years ago in the wind power sector', FJG, a senior manager of a Beijing based solar PV company, mentioned during his interview. He became an interview target because of his firsthand experience of the so called 'Golden Sun' Project, which were launched in 2009 by the Ministry of Finance in order to 'support and scale up the domestic solar PV power production as a cultivating policy for an emerging industry with strategic importance.' (MOF, 2009) The policy aims to provide subsidies up to 70% of the total investment of solar PV projects with a planned funding program amounting to 10 billion RMB per year. However, three years after its implementation, to what extent this landmark policy is able to assist private investors is at least dubious to business managers like FJG. He went on to speak frankly about how irrelevant or even counter-productive the supportive policies that were recently introduced are, at least to small and medium sized companies.

'There was a fervent pursuit of Golden Sun in 2009 and 2010 among the small and medium solar PV producers because it was once regarded as the crucial rescue plan after the 2008 crises. But now it is obvious that most of the subsidies are not in place due to a complicated bureaucratic process. The huge burden of the investors has not yet been relieved. Even

if the fund could be in place, it would not be sufficient to make these projects profitable, particularly when there is not yet any specific feed-in tariff policy for the solar power at the moment.'

----- *Interview transcript with FJG*

FJG is not the only person who questions the efficiency of this ambitious government flagship policy on solar power sector. According to the Chinese press most of the small and medium sized solar power builders believed the Golden Sun program itself would not help them much to make profitable green-field investment, a more comprehensive policy approach, such as a direct feed-in tariff needs to be introduced (Southern Weekly, 2010).

Yet instead of the feed-in tariff that the solar industry dream of, the Chinese government launched another policy tool toward the end of 2009, which had also once been adopted by the wind sector a few years earlier: a national bidding program. This familiar policy produced familiar consequences. After two rounds of bidding in 2009 and 2010 across China, foreign investors and most of the small sized private investors retreated from the market completely due to the daunting low prices offered by the large Chinese state-owned companies. That is exactly the same situation compared to the bidding programs for wind energy projects in the early 2000s. It should be noted that most of these

state-owned companies are very familiar with the CDM as they have learnt their experience on wind investment since 2005, and as a result many of their solar projects were also packaged as CDM and come into the pipeline.

Table 7.3: Solar PV projects in China's CDM pipeline:

CDM Project Ref. no.	Host company and ownership	Total Installed Capacity (MW)	Total Investment (in RMB million)
4082	Huaneng (SOE)	100	50,000
4775	CECIC (SOE)	10.28	208
4919	Ningxia Electricity (SOE)	50	12,900
4981	CECIC (SOE)	10	208
5077	Huadian (SOE)	10	163
5148	SDIC (SOE)	20	358.66
4994	Ningxia Electricity (SOE)	10	236.74
5177	CECIC (SOE)	8.68	141.25
5245	Huadian (SOE)	10	247.48
5391	CECIC (SOE)	2.2	n/a
4982	Guodian (SOE)	10	216.18
5374	Guodian (SOE)	10	202.86
5379	Longyuan (SOE)	20	389.86
5628	Huaneng (SOE)	20	404.8
5229	CPIC (SOE)	10	200.36
5677	Huadian (SOE)	10	171.1
5716	CPIC(SOE)	10	n/a
5763	CGN (SOE)	10	n/a

(Source: UNEP, 2013)

The bidding program is often regarded as the dawn of a feed-in tariff in

China, since the winning prices can serve as an important reference or benchmarks for the regulators to set out a feed-in tariff. In March 2011, just a few months after the interview with FJG, the Chinese government launched a formal feed-in tariff system, which received a polarized response by the business circle. For state-owned companies it means the start of a new era of solar rush, as what happened in the wind sector only a couple of years ago. For FJG, to use his own words in the interview (a few months ago before the launch of the policy): *'It means we would be forced back to the roof-top projects and forget about the large scale projects completely.'*

The other implication, and probably a more worrying one, is that the Chinese experience on wind and solar energy indicates that those companies that are not able to benefit from the domestic policy, are not able to take advantage of an international mechanism at the same time. Although CDM and national renewable policies are, at least in a normative sense, to complement each other, it seems that they have a similar preference or bias system that promotes a particular group of actors while neglecting others. The variance of representation of wind and solar power CDMs in China is a typical example of how powerful and resourceful business actors are emerging as the major recipients of CDM benefits despite their market share in a given sector. If the current trend continues as state-owned companies start to take over the private

led market to invest in large scale solar energy projects, it would be almost certain that a larger number of solar CDMs would come into the pipeline. But in what way and to what extent the CDM as an international mechanism is providing additional benefits to host countries' clean development is dubious not just because it is an 'icing on the cake', but rather it provides 'icing' only to those who already own the 'cake'.

7.3.2. 'Carbon' finance: the hidden master of the CDM

Carbon finance is a slippery phrase which is now used in various contexts to describe almost any form of financial service either directly or indirectly related to a GHG emission reduction project. Within the CDM context, the term 'carbon finance' also has multiple meanings. At the outset, it is used to describe the payment effected by Annex-1 parties to secure an ERPA with non-Annex 1 parties. In the host countries, it sometimes also refers to the loan facility that is arranged by the financial institutions to support an industrial investment activity that has the potential to be registered as a CDM project. In Annex-1 countries, however, the operation of a number of newly created derivative products in the secondary CER market is also called the carbon finance. For the sake of clarity, carbon finance in this research refers to the first two forms of financial operations only because these activities are bounded in the host countries and hence relevant to the domestic governance and

political economy.

Financiers are the traditionally powerful actors in project investment because their lending decisions may determine the fate of capital intensive investment. In addition, the Chinese government often relies on banks to screen out unreliable investment initiatives, requiring that only projects with a letter of lending intent from a commercial bank are allowed to go through the approving process. Therefore commercial banks are an integral part of governance in industrial sectors such as energy and infrastructure. Bearing this context in mind, two questions around CDM financing are to be explored in the following paragraphs. Firstly, is CDM finance somehow different from traditional financial arrangements for the capital intensive projects? The answer to this question would be crucial for understanding if the carbon offset mechanism has any significant enabling or disabling effect for the financial institutions in the governance domain of a given industry. Secondly, how do financial institutions' perceptions and attitudes constrain or support other business actors' interests during the project approval and implementation stages? This inquiry not only helps to clarify the role of finance and financiers in these projects, but also reveals the potential contestations that may shape the future configuration of industrial-financial power dynamics and its influence in the policy domain of the carbon market.

7.3.2.1. ERPA as a form of project financing?

ERPA is a unique project document because it distinguishes a CDM activity from any traditional domestic project investment. It also lays a contractual foundation for carbon deals between international parties. However, the field study revealed a significant gap between an ERPA's rhetorical meaning and its real function in the CDM business. Rhetorically the payment from Annex-1 parties under ERPA at the initiation stage of project development is often regarded as an illustration of how additional cash flow is provided to promote project activities. However, in reality, it is indispensable in the CDM project negotiation process only because the suppliers are suspicious of the credibility of CER buyers for the future purchase of carbon credits. In this regard, the initial payment from the buyers under ERPA is more like a down payment that secures buyers' entitlements to CERs as a future output of the project. The ERPA itself is not a financing instrument as it is neither a debt nor equity based contract. Therefore the meaning of this kind of payment to the project owners is rather symbolic. It is a mere goodwill payment, which is by and large subjected to the power relationships between the contractual parties.

'The buyers would not pay the upfront fees at all times. If the project prospect (chances to get project registered and CERs issued) are low,

they don't pay a penny to the project investors.'

----- *Interview transcript with ZL*

Another interviewee, LHL, compared the nature of ERPA with the power purchase agreement (PPA) under a power plant with the monopolistic grid companies in China;

'If you were a power producer you would be very lucky if the grid company agreed to purchase your future power and reach a PPA. But you would be very bold to ask for a down payment from the grid company. Similar things happening with this ERPA thing in the carbon market, sometimes the project owners look for a buyer so anxiously that they lost any bargaining power for the up-front payments.'

Even in the case that buyers agree to pay the down payment, the money is most likely spent by the project owners to facilitate the 'carbon element' of the project, such as paying a consultant fee for the project developers or PDD writers, rather than using it for physical construction of the project. Here comes another dilemma for the carbon finance in the CDM market. The 'difficult' projects with unorthodox methodologies, complicated baselines, incomplete data and validation procedures may cost the project owners more consultant fees than 'standard' projects like wind farms. However, these are the projects that CER buyers would not be willing to pay any down payment due to their highly uncertain

prospect of being registered by the EB. Project owners hence often have to pay the consultant fee out of their own project investment budget if they wish to embark on the CDM. In such circumstances, the CDM would only increase the initial cost of the project investment. Some project developers may agree to forfeit the consultancy fee for a share of future CER revenues with the project owners, but such arrangements are against government policy, which declared that only project owners and Chinese governments are entitled to the benefits from the sale of CERs. In addition, the sharing arrangement of CERs between project owners and project developers would only encourage project developers to focus on 'easy projects' just like everybody else does in the market.

To conclude, the ERPA mode should not be understood as a form of carbon finance since it provides no additional fund to facilitate the 'physical' construction of the project. It is in reality a down payment for purchasing CERs, which is essentially an end (and side) product of an investment project. The amount of the down payment for each ERPA is largely determined by the power relations between the CER trading parties, therefore it does not always decrease the initial capital cost of CDM investment as carbon finance is supposed to deliver.

'Let us compare the carbon market with the other sectors, say shoe making market. If Wal-Mart orders shoes from a shoe manufacturer in

China, they might pay some amount of down payment in order to show their sincerity of business. But no matter how much they pay, they won't be treated as a financier and their down payment would never be called as 'finance'. Because after all Wal-Mart is just a shoe purchaser. But in the carbon market, such business activities have a fascinating name: carbon finance.'

----- Interview transcript with LHL

7.3.2.2. The CDM and traditional project financing

If ERPA does not fall into any category of real project financing, the next question could be if the 'carbon element' of a project changes the traditional project financing model. CER is a new product and profit resource for the investment project which has theoretical potential to improve the financial return for the project owners. Projects with CDM revenue hence are likely to be more welcomed by the lenders compared to investments without CDM support. However, in reality, the profit from sales from carbon credits seldom changes the banks' lending decisions on a potential CDM project; the reasons are explained in the following paragraphs.

Three risks are particularly worrying to banks when underwriting the risks associated with CDM. First is the low rate of successful registration and uncertain prospects of validation. At present barely above 20% of

projects developed in China are registered as qualified CDM activity. The constantly changing rules and procedures from the EB also exacerbate the uncertainties of the materialization of CER sales. SZQ mentioned his experience with the banks: *'the bankers call CER a contingent income and it serves little for the credit enhancement of the project. They would usually examine the projects' viability and test the future cash flow in a non-CDM scenario when underwriting a loan.'*

Interview transcript from SZQ

The other concern of the banks is the repayment credibility of the buyers. Since most of the carbon funds are newly established businesses with a very short credit history, their capability to honor ERPA in the future is often viewed as questionable by the lenders. Taking wind farms as an example, ERPA and PPA are two similar documents that guarantee, at least contractually, the sales of end products (carbon credits and electricity). As long as CERs and electricity are produced, the investment projects are expected to make a profit. However, in a banker's view, ERPA and PPA are significantly different as the power purchasers under PPA are large state grid companies whose credit ratings are almost equal to the sovereign rate of the Chinese government. Therefore the future repayment of the grid companies under PPA can often be escrowed as the guarantee for the project owners to repay the bank loans. But the ERPA is

a different story when the credit ratings of the carbon buyers are not as good as those of the grid companies. CER buyers' contractual commitment of future payment hence cannot be used by the project owners' as an escrowable asset when seeking a bank loan.

The third risk that worries most of the banks is the mismatch between life cycles of the carbon element and physical element of a CDM project. Most of the capital intensive investments, such as the wind farms, have a life-cycle of over 20 years and loan facilities arranged to finance these activities are often within a maturity period in accordance with the life span of the project. But the revenue generated from CERs is expected to cease at the end of 2012 with the expiration of the first commitment period of the KP. In such a case most lenders would not consider CERs as an additional source of income or a risk mitigation factor if CER related income appears to be temporary and covers only part of the project's operational period. LX1 mentioned in the interview that they once persuaded a bank to consider separate arrangements for one investment prior to and after 2012, but the bank finally gave up the effort for its ' technical complexity'.

In general, the field study indicates that CDM has yet provided any meaningful financial resources for the project investment. Bankers would not underwrite the loan facility to an investment project based on the

CER revenue, which is small, temporary, and backed up by buyers with less credibility. They would often stick to its traditional financing policies and procedures regardless of if the project is likely to be labeled as CDM or not. Industrial Bank of China is known as the only bank that would like to provide loans for project owners with potential carbon assets, but according to the bank's policy, only projects that are already registered with EB can apply for a working capital loan subject to the amount of expected CERs (Industrial Bank's Website, 2012). Yet considering that most of projects are already near the end of their construction phase when it is registered as a CDM, such loans, although packaged and promoted as the flagship program of CDM financing, are also unlikely to produce any significant help for the projects investors who needs start up finance for the project investment.

However, many project investors expressed their understanding of commercial banks' perception on CDM and their persistence on the traditional risk management model. For example, LX believed that commercial banks are comparatively speaking conservative comparing to other business groups in the market.

“But I think it is only natural (banks' negative attitude) because they as bankers would like to lend to reliable projects. It has nothing to do with financial creativity or innovation. It is the problem of the carbon market

itself. The market is not mature and robust enough to change bankers' perception.'

----- Interview transcript with LXI

7.4. Conclusion and implications

In this chapter I have presented the various perceptions, preferences and internal policies among different business groups related to the CDM business in China. I argue that the CDM can be viewed as the extension of a strong carbon coalition from developed countries into the developing world. However, there is clear evidence that international companies have different strategic preferences compared to local businesses as they often enjoy greater leverage at the international policy making level and advocate a better governance structure at the international level. Chinese local companies, however, often regard the CDM as a 'western mechanism' rather than an international offset program. They are relatively indifferent to the international rules and instead prefer to change, revert or advance domestic protectionist policies for the sake of economic profit only. International companies cannot compete with domestic companies in terms of their closeness to the Chinese officialdom but their contractual advantage often allows them to defy some of the protectionist policies.

The development of wind and solar projects in China represents another

form of conflict among companies in the carbon market. The analysis identifies a policy trend in both solar and wind sectors, which have lured large state corporations into the renewables market and pushed small and medium sized companies out of both renewable energy production and CDM business. The consequence of this tendency is a swift expansion of the renewables market and a rapid drop in production cost. Yet whether this trend would be sustainable is doubtful because of a mounting complaint about the inefficiency of the massive market advancement led by state corporations, as some of their investments are obviously recklessly planned and carried out. The idea of ‘the bigger the better’ may no longer be unanimously supported by both policy makers and the market actors.

The third implication is that carbon finance as a rhetorical buzz word has little concrete meaning at least in the CDM context. The mechanism provides neither additional financial resources nor significant collaterals to the project investment and consequently the financial arrangement of CDM projects is largely identical to those non CDM projects. CER trading in this regard has yet to change the industrial-financial relationship in the realm of capital intensive project investment such as wind farms or solar power stations. If the CDM remains dependent on private finance in the host countries, as is seen today, the domestic banks would remain the crucial gate keepers and decision makers for the

development of the CDM market, which is a major constraint for most of small sized investment.

8. Conclusion and implications for future studies

China's embrace of market instruments to address its environmental challenges provide a strong case of the country's rather unique power dynamics between the state and business actors. On the one hand, flexible mechanisms such as the CDM delegated considerable authority to private actors, who help to create and implement 'on the ground' rules and shape the participants behaviour pattern accordingly (Green, 2013). On the other hand, the structural change in state-market relationships due to the China's grand economic reform since early 1980s provide critical contexts for the rise of private actors in climate change politics and governance. Consequently, although China is still regarded in many cases as an authoritarian regime, the influence of business community to the national and local polity and officialdom can no longer be ignored. As Kennedy (2005) points out almost all the business actors, regardless of their different ownership and nationality, are involved in the political process to gain a policy advantage. Hence, the traditional notion that a strong leadership dominate China's politics and command the bureaucratic control over the nation, is no longer a precise description of the political economy in present China.

Based on this understanding this research set out the task of analysing the features and performance of climate governance in China via the lens of the business power and influence in the most innovative and nascent instrument, namely the ‘regulated’ carbon market or the CDM. In the preceding chapters, I have discussed the relationships between the business actors and central as well as local governments in the CDM market. I also investigate the inter-business relationships to understand how these allied or confrontational interests can shape or constraint their influence regarding the policies around CDM or clean development.

In this concluding chapter, I would firstly revisit the research questions that are laid out in Chapter 1, and examine how the findings of this research are responding to these questions. The first set of research questions are asking about the range of actors that are involved in the governance of CDM market in China. In Chapter 5 and Chapter 6, I identified the most active business actors both at central and local level. I also illustrated the role of these actors in the governing the CDM activities. The key findings is that CDM has been developed around the strategic interests of giant SOEs who are capable of developing and wholesaling carbon credits to the carbon credits buyers from the Annex-1 countries. Therefore, the key elements of project implementation, such as the transaction pattern and favourable projects types, are largely

determined by the strong coalition of business actors rather than central or local state officers.

The second set of research questions are dealing with the business power. In chapter 5 and 6, I illustrated that business actors, particularly carbon credit buyers and consultancies in the CDM market possess unique advantages to promote market development and on the ground rules or standards. In Chapter 6, SOEs' economic and institutional power, particularly at the localities or project sites, is at the centre of interrogation. However, I also discussed the limitation of business power in Chapter 5 and 7 by revealing that business actors also needs state actors to legitimize their actions and inter-business conflicts may thwart particular business interests and priorities.

The third set of research questions ask about the consequences of business power in the CDM market. I discussed the relationship between business influence in the market and the overall performance of Chinese CDM activities. In Chapter 5 I identified that there is gap between the present additionality check of CDM projects and the reality of Chinese political economy. So the projects themselves may be unprofitable if without CDM support, yet they are to be built anyway due to SOE's rather unique business strategy as quasi-state actors. In Chapter 6, analytical focus has been given to the CDM's contribution to the local

sustainability and I revealed why local officers are not able to serve as a credible checker for CDM's SD benefits. In Chapter 7, the major argument is that it is hard to predict the future carbon trading or offset market in China since the inter-business conflicts make such task almost impossible.

After presenting key answers for the research questions set out in the beginning of this thesis, in the next section, I would like to emphasize and highlight some of the theoretical and empirical implications achieved in this research. This chapter will end with the discussion of some limitations of this research and identify the areas that need to be further explored by future studies of the role of business actors in climate governance.

8.1. Theoretical implications

This research both confirms and challenges earlier studies on Chinese state-market relationships and its environmental governance. It offers a new research approach to unify these relatively two separate issue areas and suggests the needs to change some generally accepted conceptions of Chinese environmental politics. I argue that besides the national political institutions and policies, two other dynamic elements need to be integrated into the analysis of environmental governance in China, namely the local state-business relationships, and inter-business

constraints or confrontations. Based on the analysis of these three elements of power dynamics, following implications can be drawn.

8.1.1. Not a single state, not a single market

At outset, it is clear that neither state nor market should be treated as a monolithic group. The analysis in the chapter 5 and chapter 6 reveal the contrasting interests and motivations among various segments of the officialdom of all levels in supporting the development of the CDM. Central officers wish to expand their bureaucratic power but local officers mainly look at the economic potentials of CDM activities. Meanwhile, different ministries and local government institutions that are related to the CDM regulation and policies all have their own institutional interests at stake. Lack of integrated coordination and central-local conflicts have been well documented in the previous studies of China's policy process and environmental governance (Lieberthal and Oksenberg, 1988; Wu, 2009). The findings of this research echoes with their observation that, at least at the central level, multi-sectoral coordination is particularly difficult for environmental governance.

However, the new governance space or administrative responsibilities that are created after the introduction of market instruments have not yet generated any significant bureaucratic reconfiguration or friction with the existing governing institutions. This is mainly due to the CDM regulators'

conscious avoidance of conflicts with the existing regulating agencies on renewable energy, environmental protection or energy saving domains in China. But such conflict-aversion attitude does not diminish the bureaucratic complications since most of the overt policy contradictions between the new CDM rules and existing industrial policies are simply being left untouched and are only dealt with at implementation level, often on a case by case basis. In this regard, the lack of coordination does not originate from competition over bureaucratic power but, rather on the contrary, from a tacit agreement of allocation and arrangement of the responsibilities and authorities between various state institutions. In another words, 'fragmented authority' can be either an intended or unintended consequence.

At the same time, the business community in the CDM market is also not of a piece. First of all, the different roles that business actors play in the project cycle as CER buyers, DOEs, carbon consultancies, and project owners largely determines that they have often contrasting interests and preferences over certain policies and regulations. Since CDM regulations or policies may affect all the participants in the market, there are strong incentives for the business actors to craft out relevant political strategy in order to take the policy advantage over others. In this regard, policy is business.

Secondly, the various ownership structure, company size, and nationality of the companies also shape their strategic priorities and influencing tactics in the CDM market. The analysis in the previous chapters also indicates that business in different geographic locations and economic sectors (between renewables and non-renewables) have different standpoints, behaviour patterns and political preferences for the development of their CDM business. For example, companies or CDM centres from relatively underdeveloped areas often conceal their origins when doing CDM business outside their purview. While Beijing based SOEs and consultancies often show off their superiority in experts and or political resources when dealing with local business partners and state officers. Meanwhile, it is found that wind energy sector is the strongest supporter of CDM as they are the largest beneficiary of CER sales, while other biased sectors are more cynical and critical about this mechanism, even if their voices are not often heard in the public.

8.1.2. Non-linear progression and uneven distribution of business power

The second implication is closely linked to the first one. Although the rise of business power in Chinese polity is a direct consequence of the transformation from a centrally planned economy to a more market oriented one (Kennedy, 2005). It should not be taken for granted that such

process is a linear progression. On the country, the party government never loosens its grip on key economic sectors. Since early 1990s, bands of national championship SOEs were established with relentless support of central government in each of these strategically important sectors. Foreign and private investments in these areas were pressed and sometimes were squeezed out of the market completely. The wind and solar market is the typical examples of this trend, as illustrated in Chapter 6 and Chapter 7.

Therefore, the boom of a CDM market in China largely owes to the rise of state owned utilities with ambiguous ownership statues and massive economic or financial strength. It explained why China could develop such large quantity of projects within a rather short time span, and why the project portfolio is so highly concentrated on a couple of project types, namely the renewables. The finding of this research echoes with Huang's (2008) argument that privatization process in China have been intentionally slowed down by the Party at least in major industrial sectors since 1989. Hence the synergy of public and private interests in the CDM market, as well as their close alliance in promoting CDM activities, shows that any analytical effort to distinguish the public and private contribution to the CDM development would bound to be a futile task. Hybrid actors like large SOEs or local CDM officers have crept into the governance space or the grey zones between the public and private

spheres, which challenge the claim that CDM is a triumph of market instruments or neoliberal ideology over the traditional governance mode. Yet one of the important observations of this research is that Chinese government is now subjective to the pressures and influence of these hybrid actors that it once created and supported. Large SOEs could be stronger than local officers in both political and economic resources and local CDM offices are found establishing business operations outside their political purviews to escape the supervision of the local officers. It is hard to define the nature of these relationships because it is neither pure public-private nor inter-ministerial in a traditional sense. Probably more importantly, the outcomes for such interactions are far from certain, because hybrid actors also rely heavily on state actors' support to deter competition from private or foreign business. Hence my argument is that even it is clear that there is observable growth of business influence in China's polity, this process is far from linear and steady.

In the same vein, it is also critical to notice that business influence is not evenly distributed across various localities and economic sectors. Chapter 6 indicates that underdeveloped regions are more subject to the business leverage since these areas are more desperate to attract additional investment for poverty alleviation and economic development. In addition, the overall institutional capacities in these localities are considerably lower, so the local officers rely heavily on the expertise and

knowledge of the private actors in dealing with complex issues like CDM and low carbon transition. For example, Chapter 6 illustrates that relatively wealthy provinces such as Inner Mongolia have obviously larger autonomy to manage its renewable resources than the rather underdeveloped Gansu province. Hence the economic power of the localities stands out as the crucial factor that constrains the degree of business influence in the policy process.

As for the companies, getting access to the polity does not necessarily mean having influence (Fuchs, 2005). It is noted in this research that the economic and financial strength is a crucial factor to determine the effectiveness of business influence in the policy process. Large sized corporations or the leading companies in the market are found more often to be consulted by the state officers in the relevant policy making process for the market information and propositions. Their opinions and interests are often highly appreciated by the policy makers, who will often turn a deaf ear to similar requests of small business actors. In addition, the case of CDM also illustrate that ownership structure matters in China, between SOEs and private companies, or between home and foreign companies, there is a clear policy tendency to protect and support SOEs and home companies, while bias or deter private and foreign actors in the market. The orthodox pro-market neoliberal ideology never truly prevails in China.

8.1.3. Business lobbying with Chinese characters

It is also noted in this research that economic factor is not the only source of business influence since political norms and traditions in China are also shaping state-business relationship in many ways. In this regard, newly developed CDM market presents little differences to many other traditional economic sectors. At the outset, there is the very limited role of various business associations involved in the lobbying activities. Until today, carbon market is only created a decade ago and there is no formal association established within China to represent the overall interests of major market participants. China New Energy Chamber of Commerce (CNECC) is probably the most relevant business association regarding the CDM business due to the dominant share of renewable projects in China's CDM market. However, most of the interviewees doubt the capability of this association in terms of pressing the state because it is essentially another affiliated government institution under the state-controlled umbrella institution called All-China Federation of Industry and Commerce (ACFIC).

Consequently, the dominant pattern of state-market interaction is a back to back and direct communication process between individual business and state actors. Kennedy (2005) points out that this form of interaction is rather a legacy of planned economy when regulators had to consult the

individual factory leaders about the important elements of the production plan in order to secure its feasibility. But in today's CDM market, business actors of all forms of ownership are involved in direct interaction with the officers almost on daily basis. Similarly to other sectors, SOEs always sit at the top of the hierarchy of direct interactions with the state institutions, while foreign and private companies are found contacting state officers in a less frequent manner. SOEs closeness to the officialdom is another source of their leverage, beside their economic power, to influence the regulation and policies, particularly over case-specific issues such as loans or project approvals. This research also noted SOEs capability to utilize their close relationship with the state officers to press other business actors such as DOEs from time to time, as illustrated in Chapter 5.

One of the direct consequences of such interaction pattern is the lack of transparency in the policy process. When back-to-back negotiations or bargaining became a norm in the state-market relationship, it is very hard to establish the causal link between the policy outcome and business' political investment on their preferred policies. The specific information that is exchanged between the top-level management and officers behind the closed doors is hard to trace by the public even if such direct interaction is a well-known strategy of corporate lobbying in China today. Although previous studies reveal that this form of direct interaction is

also gaining prominence in other parts of the world including developed countries like US and EU (Kaiser, 2000; Verba and Orren, 1985), the Chinese government generally faces less pressure to disclose individual business interests and preferences behind each newly passed regulations. Similarly, since the Chinese party-state is not yet a democratic system, no campaign finance can be possibly traced even if patronage loyalty fees at all levels are rampant and well-known even by the ordinary Chinese people. The CDM market is a relatively transparent domain where all the project information can be accessed via NDRC's website, yet its approving process and evaluation meetings is never open to NGOs and public. The majority of interviewees also confirmed to the researcher that they prefer to use direct contacts within the government to have their voice and preferences heard rather than via any association like institutions.

Hence the research shows that the lack of transparency has been exploited by both state and market actors to capture the benefits of the insiders knowledge of the CDM market. Such finding explains why companies tend to avoid challenging state actors' authorities directly even if the later lacks expertise, experiences and financial resources, as illustrated in Chapter 5 and Chapter 6. Therefore it is noted in this research that the common strategy for the business actors is to convince the state officers that their proposal is consistent with the regulators' own interests. In

CDM market, 'win-win solutions' is a buzz word as it captures not only the relationship between the Annex-1 and Non-annex 1 parties, or economic development and climate benefits. Instead, it describes the relationship between the government and market actors.

Although it is impossible to trace down numerous direct interactions between business and state actors, their aggregate policy effect can be somehow easily observed. In China's CDM market, business influence can be found behind most of policy making, implementation, and policy changes. In addition, for those policies which are against business interests, such as the promotion policy for coal-bed methane or energy efficiency projects, are facing difficulties in implementation without business support. The aggregate effect of business influence is also manifested in the lack of proper regulations on CDM's project financial arrangement or transaction pattern, which is the crucial element for the market development, and therefore would never circumvent regulatory supervision if without influence of business actors. The same negligence can also be found in the sustainability element of CDM projects due to the similar reasons.

In chapter 3, I explain that the research is based on the neo-pluralist approach to understand the state-market relationships in China's CDM market. Here in the concluding chapter, it is obvious that China's political

economy in the carbon sector is not strictly plural even if we categorize hybrid institutions, such as SOEs or local CDM offices, as private actors. There are multiple political economies at play in China's CDM market or carbon governance in a broadly sense. State-market relation varies from one locality to another; and from one economic sector to another. At macro level, there is no linear trend from a state-controlled governance system to pro-market one. At the micro level, business influence differs significantly due to actors' rather unbalanced economic resources and political power. Traditional political culture of centrally planned economy is still at play and sometimes local corporatism or patronage relationships have not completely vanished. Therefore, the neo-pluralistic approach is no more than a starting point, rather than the end, of analysis. In addition, I argue that none of the single existing models of state-market relationships can precisely capture its complexity and dynamics of China's political economy and carbon governance today.

8.2. Empirical implications

At the time of writing, the CDM market has been frozen almost completely in China. The EU decided that after 2012 only projects from less-developed countries would be eligible under the EU ETS, meaning that India, China and Brazil will no longer be able to sell the most common CERs to the world's largest market. CER price plunged by over

90% from 25 Euros a few years ago to less than 1 Euro today. According to NDRC's website, the newly approved projects since 2013 are mostly unilateral CDMs, meaning these projects are no longer interested by the international CER buyers. The sudden boom and death of the CDM market in China provide important lessons of how flexible instruments should be governed at the global, national and local level. At the outset, it is clear that market appetites, rather than political will, determine the flourish of the flexible mechanisms. Secondly, markets are different from one country to another, and from one industrial sector to another. They are subject to their unique political and economic context, and market forces respond to the top-down regulations with their distinct resources and capabilities. Hence, some of the problems of CDM are no more than a manifestation of individual host country's domestic symptom. It may not be universal problems yet sometimes they can be serious enough to crush the integrity and justification of the international mechanism as a whole. In the same vein, I argue that it is at least simplistic to suggest that these inefficiencies or problems can be settled by some top-down reforms or restructures from the international level. Via the lens of business power and influences, this research provides a clue of why this once applauded mechanism failed the expectation of the public in such a short duration. The empirical evidences and implications can be drawn and shed some

light on the future of carbon offset mechanism both in China and around the globe.

8.2.1. Domestic carbon market

Many companies sink as the market plunges and the hardest hit are the local carbon consultancies of CDM project developers whose core business is confined to the CDM development. Project owners, however, are less affected because, as explained in Chapter 5, most of the investments would take place even without the CDM consideration. DOEs are also less worried since verification or validation for CDM projects constitute often an insignificant section of their overall business. For most of the companies that are in deep crises, their only remedy can be the establishment of the domestic carbon trading system, which Chinese government has promised to deliver in 2015. However, regarding this theoretically world largest emission trading system in the future, there are simply ‘louder thunders with few raindrops’, meaning only little actions have been done despite its grand promise.

The success or failure of this experiment will not only determine the future of climate governance in China, but to a large extent the fate of market instrument at global level, particular after the symbolic collapse of Chicago Climate Exchange in 2010. Many scholars are hence drawn to evaluate the progress so far and challenges that lay ahead (Han et al.,

2012; Lo, 2013). In this research, the ambition and sincerity of the Chinese government to promote cap-and-trade system has been well evidenced, yet at the same time, there are worries that a market mechanism would not be well adapted into the Chinese strong statist political system (Lo, 2013).

This research on CDM would provide some crucial insights on the prospect of China's domestic carbon trading system, as they would be eventually operated in the same political and economic context. At the outset, I argue that from the CDM experience, the development of domestic carbon market depends critically on the active involvement of business actors. However, the rather sluggish pace of preparation for the trading system at present stage indicates a hesitating or even indifferent attitude of major business groups in participating in this grand program. Although ambitious state actors may efficiently create top-down regulatory frameworks, for the program to start functioning properly, other implementation elements such as measurement, methodologies, standards, data, rules, and norms have to grow in a rather bottom-up fashion. A 'learning by doing' process is thus inevitable and its success relies heavily on the private actors' willingness to 'cross the river by counting the stones' with the state actors. The CDM's story in China illustrated that it is these bottom-up factors, rather than the governance

architecture designed from the above, that ultimately determines the outcome and overall quality of the carbon offset scheme.

In addition, drawn from the CDM story, it is critical to understand the roles of those hybrid actors in the carbon market, particularly the SOEs in emission intensive sectors. On the one hand, unlike the CDM market where SOEs can earn extra profits from selling CERs, setting up domestic carbon market means that there would be winners and losers this time. The idea of 'win-win' solution may no longer hold true in many SOEs' point of view because this time they may have to become a buyer and pay a price for the carbon emission. It is almost certain that some of these giant companies would not welcome the idea of a full-fledged domestic carbon trading scheme as they once did to the CDM. In addition, they may oppose any quantified reduction target within China since without the 'cap' there would definitely no 'trading'. Given the findings of this research regarding the political leverage of these quasi state actors, I would argue that SOEs' resistance or reluctance would inevitably generate profound impact on the efficiencies of the Chinese cap-and-trade system. Besides, it is noted that many local governments lack emission data from the key sectors, some of these data can only be acquired from the SOEs who often keep the original record of their operation and energy consumption. Considering the already unbalanced power dynamics between SOEs and local governments, as illustrated in the Chapter 6,

such situation would further promote SOE's prominence in the carbon market.

That doesn't mean that the role of local states in carbon market can be neglected. On the country, in the past few years, local governments throughout China exhibited unprecedented enthusiasm regarding domestic carbon market. Many major cities around the country have applied to NDRC to establish Climate Exchange Centre within their political purview. This fervent attitude reminds people of local states' similar eagerness to develop CDM projects only a decade ago. It should be noted that behind the local enthusiasm for Climate Exchange Centre it is the same desire of promoting economic development via carbon market. In this regard, the priority and logic of the local officers has not yet changed. However, at least theoretically, there is no strong causality between setting up a carbon trading platform and promoting local economic development or additional investment. In addition, local states' capacity to promote carbon offset deals would be rather limited as illustrated in this research. It is highly probable that the role of the trading platform to promote low carbon investment within the area can be much lower than local officers' expectation. If that is the case the local state would almost certainly shift their attitudes towards carbon market in the next couple of years, and hence became a major destabilizing force for

the development of domestic carbon trading program, just as happened in the CDM market.

In general, although the Chinese domestic carbon market has received much academic and political attention even if it is still in its preliminary preparation stage, my argument is that it is unlikely to have an impressive take off as the CDM once did. This is because creating and sustaining a coalition with business and local states is a much more difficult task compared to the CDM case. Many previous case studies on carbon coalitions in the Western countries illustrated that business only embrace the benefits of carbon market when they are convinced the inevitability of imposing a quantified emission cap (Falkner, 2008; Levy and Newell, 2005; Meckling, 2012). But in the case of China, such consensus has yet to be achieved within either business or government actors. Therefore struggles or resistance to a domestic carbon market will persist for considerably long time. In a recent event, the minister of China's Ministry of Environmental Protection, Mr. Xie Zhenhua claimed that 'China's domestic carbon market shall draw upon the successful experience of EU-ETS and other trading systems in advanced economies, but it has to retain its Chinese characteristics.' (China Shenzhen Emission Exchange website, 2013) However, the CDM experience presented in this research illustrates that it is these 'Chinese characteristics' that actually impose severe challenges to effectiveness of the CDM market, and in the

same vein, these factors may probably affect the domestic carbon trading schemes in the future.

8.2.2. Global carbon market with integrity and SD benefits

A critical focus of this research is to interrogate the relationship between the rise of business power and the overall quality of the CDM market. The findings of the research reveal that business influence has profound implications for the quality of the scheme, even though these consequences are not from business actors' intentional behaviors. Some Chinese CDM scandals such as HFC23 projects or skeptical wind farm projects are clearly against CDM's original mission statement, but it is also obvious that most of the project developers and owners in China did not knowingly hurt the integrity of the system. On the contrary, their behaviors not just follow the market logic but are subject to the political and economic context that the designers of the flexible mechanisms did not fully appreciate at the time. For example, most of the SOEs in China do not always follow the golden rule of profit maximization while making large capital-intensive investment and their business strategies can be wildly different from their counterpart utility companies in the Western economies. Therefore, the existing EB's criteria to evaluate projects' additionality are completely misleading in the cases of SOEs'

CDM projects. At project level one may find these activities additional since the expected return of investment is so low, but at company level these non-profitable investments are absolutely 'business as usual'.

Cases like this illustrate the mismatch between the high-above design of the mechanism and actual reality of the market. The consequence is an observable deviation of the original purpose of the carbon offset instrument. It should be noted that there will be no quick fix for the problems like this as it is almost impossible for the international regulators to change the rules or policies only to fit a specific national political or economic context. Neither the national political economies would change even slightly to adapt to the newly created market mechanisms. This research argues that we should not expect global mechanisms like CDMs to operate independently from the host countries political reality and outperform other industrial sectors in terms of its integrity. The fact that DOEs are constantly pressed by powerful business and state actors, or the internal conflicts between on the ground validators and their senior managers in head office, are vivid examples of these struggles. In such cases, merely increasing the number and salary of validators would not help much to enhance the quality of the projects.

In the same vein, the sustainability benefits of the CDM would not be easily fixed, because it is essentially a political issue as no actor in the

project cycle has proper motivations to safeguard the social and environmental benefits of carbon offset projects. Pro-development local governments at all levels are only interested in the economic benefits accompanied by renewable investment or CDMs. Their reluctance to reject investment opportunities for the sake of environmental or social setbacks is arguably the major cause for many environmental problems in China in the first place. As long as the economic benefits are at the top priority of the local political agenda over environmental or social benefits issues, government officers would not sincerely interrogate the SD benefits of these renewable or carbon offset projects even if they are delegated the authority to do so. As for the central government, the asymmetric information between the projects participants and state officers would prevent the latter from investigating the actual SD benefits of each project even if they wish to do so in a serious manner.

Unfortunately, in the case of China, there is no other actor group that is capable of taking up the role to safeguard the SD benefits of carbon offset projects. Environmental activists and NGOs are only emerging in China and they often operate in a very limited political space (Carter and Mol, 2006). Given the appalling environmental problems in China, these often understaffed environmental NGOs have more pressing environmental issues to deal with other than monitor the problems of slack supervision on SD contribution of the CDM projects, which is *de facto* a common

phenomenon among most of the capital intensive industries in China. For the business actors there is certainly no incentive to strengthen the slack supervision of SD of their own investment. The result is that although the lack of SD contribution has been intensively discussed among academics since the inception of this mechanism, the field study of this research shows that in reality few actors within the CDM project cycle actually treat it seriously.

The implication of these findings is that lacking SD benefits and integrity is almost an inevitable consequence and it can hardly be addressed by changing either the governance structures from above, or major actors' incentives or behavior pattern from below. In such a case to exclude the CERs from China seems to be the only option to maintain the original resolution of the CDM. Yet the price of such a decision is high. Firstly, without large developing countries like China or India, the supply of CERs would be trivial. The existing model of the CDM is essentially depending on host country's industrial and financial capabilities in promoting low carbon investment, rather than bilateral technology or financial transfer. Hence few countries in the less developed countries are able to promote and invest in such large scale clean development activities by their own. Secondly, some of the problems presented in the Chinese CDM market may well be rooted in many other developing countries too, where the state-market relationships and governance

structure are considerably different from most other developed countries. The assumption that without Chinese projects the whole mechanism's integrity would be largely enhanced cannot be taken for granted.

8.3. Limitations and future studies on climate politics in China

Due to the time constraint and access difficulties of the informants in the field study, this research bears several notable limitations that shall be clarified. Firstly, Chinese academics are important source of the carbon coalition in terms of the knowledge dissemination and policy design about carbon offset and trading. They also serve as important source of consultancy to the major business actors in the field. Therefore they are essentially another group of hybrid actors that have important role to play in the CDM market. Yet due the access difficulties this element of governance input has not been investigated. But the empirical evidence from the fieldwork indicates that academics are increasingly involved in the alliance of this political and market elites in the carbon market. Academics' voice and attitudes are also crucial to shape the public opinions or discourse when government statements or business claims are not always convincing.

This research focus primarily on the business actors' influence in the domestic carbon offset market. But increasingly, Chinese companies started to extend their influence beyond borders and generate an impact

on global climate governance. On the one hand, many developing countries wish to duplicate China's successful story of renewable investment and carbon market. Many Chinese carbon consultancies are now invited to these governments to continue their project development business in their countries. On the other hand, Chinese investors in wind farms and solar power stations also started to invest globally, particularly in the less developing countries, when the domestic market saturation is imminent after a decade of fervent renewable rush.

Previously, the role and implication of multinational corporations (MNCs) in global environmental governance has been well studied (Biermann and Pattberg, 2008; Falkner, 2003; Hass, 2004; Levy and Newell, 2005). Yet few studies focus China. On the contrary, the large amount of studies on China's massive overseas investment in the last two decades (Buckley et al, 2008; Kaplinsky and Morris, 2009; Wang, 2002) have not yet captured the current trend of Chinese clean and renewable investment overseas, as well as its impact on global environmental or climate governance.

In general, I suggest that two areas can be explored in the future studies to sharpen our understanding on the role of Chinese business actors in climate politics. Domestically, other power dynamics with important impacts should be carefully examined further. The studies on business relationships with academics, media and NGOs can be strong

complementary works to this research which primarily focus on state-business interactions. For example, the role of NGOs in designing and promoting the domestic carbon market would be an important manifestation of the increasing power of civil society in the Chinese environmental governance. Surveys and in-depth interviews can be used to study NGO's contribution in maintaining the quality of the offset programs.

Internationally, the role of Chinese companies and their overseas investment on clean development and its impact on global climate governance should be attached with greater academic attentions. One of the target companies of this research, Longyuan Group, has initiated huge investment in Africa on wind farms. Other giant SOEs in China are believed to follow Longyuan's step very soon since the domestic wind energy market is reaching to its full potential. Understanding the moves of Chinese companies into other developing countries' political economy can be highly valuable. Yet it would be a challenging task since the researcher would have to access to the informants within both China and the investment destination to gather sufficient data at both ends. However, such studies, if carried out eventually, would provide important insights of the implications on both local clean development and global environmental governance.

Bibliography:

- Adger, W. N. & Jordan, A. 2009. *Governing sustainability*, Cambridge University Press Cambridge.
- Agar, M. 1986. *Speaking of ethnography*, SAGE Publications, Incorporated.
- Andonova, L. B., Betsill, M. M. & Bulkeley, H. 2009. Transnational climate governance. *Global Environmental Politics*, 9, 52-73.
- Atkinson, P. & Coffey, A. 1997. Analyzing Documentary Realities, in *Qualitative Research*, edited by. Silverman, D., London, Sage.
- Bäckstrand, K. 2008. Accountability of networked climate governance: The rise of transnational climate partnerships. *Global Environmental Politics*, 8, 74-102.
- Bai, C.-E., Du, Y., Tao, Z. & Tong, S. Y. 2004. Local protectionism and regional specialization: evidence from China's industries. *Journal of International Economics*, 63, 397-417.
- Bachrach, P. & Baratz, M. S. 1970. *Power and poverty: Theory and practice*, Oxford University Press.
- Bai, C.-E., Liu, Q., Lu, J., Song, F. M. & Zhang, J. 2004. Corporate governance and market valuation in China. *Journal of Comparative Economics*, 32, 599-616.
- Bakker, S., Haug, C., Van Asselt, H., Gupta, J. & SaïDi, R. 2011. The future of the CDM: same same, but differentiated? *Climate Policy*, 11, 752-767.
- Barnett, M. & Duvall, R. 2005. Power in international politics. *International Organization*, 59, 39-75.
- Barry, J. & Eckersley, R. 2005. *The state and the global ecological crisis*, The MIT Press.
- Beeson, M. 2010. The coming of environmental authoritarianism. *Environmental Politics*, 19, 276-294.
- Benecke, G., Friberg, L., Lederer, M. & Schroeder M. (2007) From Public Private Partnership to market: The Clean Development Mechanism (CDM) as a new mode of governance in climate protection. *Conference paper on the Human Dimensions of Global Environmental Change. Amsterdam.*
- Bernstein, T. P. & Lu, X. 2008. *Taxation without representation in contemporary rural China*, Cambridge, Cambridge University Press.
- Biermann, F. & Pattberg, P. 2008. Global environmental governance: Taking stock, moving forward. *Annual Review of Environment and Resources*, 33, 277-294.
- Böhringer, C. 2003. The Kyoto Protocol: A Review and Perspectives. *Oxford Review of Economic Policy*, 19, 451-466.

- Böhm, S. & Dabhi, S. 2009. *Upsetting the offset: the political economy of carbon markets*, London, May Fly Books.
- Bosi, M. & Ellis, J. 2005. Exploring Options for „Sectoral Crediting Mechanisms “. Paris: Organisation for Economic Co-operation and Development (OECD)/International Energy Agency IEA). COM/ENV/EPOC/IEA/SLT (2005) 1.
- Boyd, E., Hultman, N., Timmons Roberts, J., Corbera, E., Cole, J., Bozmoski, A., Ebeling, J., Tippman, R., Mann, P. & Brown, K. 2009. Reforming the CDM for sustainable development: lessons learned and policy futures. *Environmental Science & Policy*, 12, 820-831.
- Breslin, S. 2007. *China and the global political economy*, Basingstoke, Palgrave Macmillan.
- Bruun, O. 1996. The fengshui resurgence in China: Conflicting cosmologies between state and peasantry. *The China Journal*, 47-65.
- Buchanan, J. M. & Tullock, G. 1975. Polluters' profits and political response: Direct controls versus taxes. *The American Economic Review*, 65, 139-147.
- Buckley, P. J., Tan, R. H. & Xin, L. 2008. Historic and emergent trends in Chinese outward direct investment. *Management International Review*, 48, 715-748.
- Bumpus, A. G. & Cole, J. C. 2010. How can the current CDM deliver sustainable development? *Wiley Interdisciplinary Reviews: Climate Change*, 1, 541-547.
- Bumpus, A. G. & Liverman, D. M. 2008. Accumulation by Decarbonization and the Governance of Carbon Offsets. *Economic Geography*, 84, 127-155.
- Button, J. 2008. Carbon: Commodity or Currency-The Case for an International Carbon Market Based on the Currency Model. *Harv. Envtl. L. Rev.*, 32, 571.
- Byrne, J. & Yun, S. 1999. Efficient global warming: Contradictions in liberal democratic responses to global environmental problems. *Bulletin of Science, Technology & Society*, 19, 493-500.
- Carter, N. & Mol, A. P. J. 2007. *Environmental governance in China*, London, Routledge.
- Castro, P. 2010. Climate Change Mitigation in Advanced Developing Countries: Empirical Analysis of the Low-Hanging Fruit Issue in the Current CDM. *CIS Working Paper 54*
- Castro, P. & Michaelowa, A. 2010. The impact of discounting emission credits on the competitiveness of different CDM host countries. *Ecological Economics*, 70, 34-42.
- Cerny, P. 2003. What next for the state? *Globalization: Theory and Practice*. Continuum International Publishing Group, 207-221.
- Chan, G., Lee, P. K. & Chan, L.-H. 2008. China's Environmental Governance: the domestic-international nexus. *Third World Quarterly*, 29, 291-314.

- Chen, K., Jefferson, G. H. & Singh, I. 1992. Lessons from China's economic reform. *Journal of Comparative Economics*, 16, 201-225.
- Chen, W. 2007. Does the Colour of the Cat Matter? The Red Hat Strategy in China's Private Enterprises. *Management and Organization Review*, 3, 55-80.
- Cheung, P. T. Y., Chung, J. H. & Lin, Z. 1998. *Provincial strategies of economic reform in post-Mao China : leadership, politics, and implementation*, Armonk, N.Y. ; London, M.E. Sharpe.
- Child, J. & Tsai, T. 2005. The Dynamic Between Firms' Environmental Strategies and Institutional Constraints in Emerging Economies: Evidence from China and Taiwan. *Journal of Management Studies*, 42, 95-125.
- Chung, J. 1995. Studies of Central-Provincial Relations in the People's Republic of China: a Mid-Term Appraisal', *China Quarterly*, 142, 487-508.
- Chung, R. K. 2007. A CER discounting scheme could save climate change regime after 2012. *Climate Policy*, 7, 171-176.
- Coase, R. 1960. The Problem of Social Cost. *Journal of Law and Economics*, 3, 1-44.
- Corbera, E. & Brown, K. 2010. Offsetting benefits? Analyzing access to forest carbon. *Environment and planning. A*, 42, 1739.
- Cosbey, A., Parry, J.-E., Browne, J., Babu, Y. D., Bhandari, P., Drexhage, J. & Murphy, D. 2005. *Realizing the development dividend: Making the CDM work for developing countries*, International Institute for Sustainable Development
- Cox, R. W. 1987. *Production, power, and world order: Social forces in the making of history*, Columbia University Press.
- Cunningham, E. 2007. China's Energy Governance: Perception and Reality. *MIT Center for International Studies Audit of the Conventional Wisdom*, 07-04.
- Dahl, R. A. 1957. The concept of power. *Behavioral science*, 2, 201-215.
- Daily, G. C., Söderqvist, T., Aniyar, S., Arrow, K., Dasgupta, P., Ehrlich, P. R., Folke, C., Jansson, A., Jansson, B.-O. & Kautsky, N. 2000. The value of nature and the nature of value. *Science (Washington)*, 289, 395-396.
- Dales, J. H. 1968. *Pollution property & prices: an essay in policy-making and economics*, [S.l.], U. of Toronto Pr.
- de Coninck, H. 2008. Trojan horse or horn of plenty? Reflections on allowing CCS in the CDM. *Energy Policy*, 36, 929-936.
- Dechezleprêtre, A., Glachant, M. & Ménière, Y. 2009. Technology transfer by CDM projects: A comparison of Brazil, China, India and Mexico. *Energy Policy*, 37, 703-711.

- Denzin, N. K. 1970. *Sociological methods: A sourcebook*, Butterworths London.
- Depledge, J. 2000. Tracing the Origins of the Kyoto Protocol: an Article-by-article Textual History, UNFCCC Technical Paper, <http://unfccc.int/resource/docs/tp/tp0200.pdf>
- Dickson, B. J. 2003. *Red capitalists in China: the party, private entrepreneurs, and prospects for political change*, Cambridge ; New York, Cambridge University Press.
- Doukas, H., Karakosta, C. & Psarras, J. 2009. RES technology transfer within the new climate regime: a "helicopter" view under the CDM. *Renewable and Sustainable Energy Reviews*, 13, 1138-1143.
- Drezner, D. W. 2007. *All politics is global*, Cambridge Univ. Press.
- Duckett, J. 1998. *The entrepreneurial state in China : real estate and commerce departments in reform era Tianjin*, London, Routledge.
- Eckerberg, K. & Joas, M. 2004. Multi-level Environmental Governance: a concept under stress? *Local Environment*, 9, 405-412.
- Economy, E. 1997. Chinese policy-making and global climate change: two-front diplomacy and the international community. In: Schreurs M, Economy E (eds) *The internationalization of environmental protection*. Cambridge University Press, Cambridge
- Economy, E. 2004. *The river runs black: the environmental challenge to China's future*, Ithaca, N.Y. ; London, Cornell University Press.
- Economy, E. 2006. Environmental governance: the emerging economic dimension. *Environmental Politics*, 15, 171-189.
- Elkins, P. & Baker, T. 2001. Carbon Taxes and Carbon Emissions Trading. *Journal of Economic Surveys*, 15, 325-376.
- Ellis, J. & Kamel, S. 2007. Overcoming barriers to CDM projects. *Analytical Paper. Climate Change Expert Group of the UNFCCC*.
- Ellis, J., Winkler, H., Corfee-Morlot, J. & Gagnon-Lebrun, F. 2007. CDM: Taking stock and looking forward. *Energy Policy*, 35, 15-28.
- Falkner, R. 2003. Private environmental governance and international relations: exploring the links. *Global Environmental Politics*, 3, 72-87.
- Falkner, R. 2006. International sources of environmental policy change in China: the case of genetically modified food. *The Pacific Review*, 19, 473-494.
- Falkner, R. 2008. *Business power and conflict in international environmental politics*, Basingstoke, Palgrave Macmillan.

- Fielding, N. & Fielding, J. L. 1986. *Linking data*, Beverly Hills ; London, Sage.
- Figueres, C. 2005. Study on Programmatic CDM Project Activities: Eligibility, Methodological Requirements and Implementation. *Paper Prepared for the Carbon Finance Business of the World Bank*.
- Figueres, C. 2006. Sectoral CDM: opening the CDM to the yet unrealized goal of sustainable development. *McGill Int'l J. Sust. Dev. L. & Pol'y*, 2, 5.
- Figueres, C. & Streck, C. 2009. The Evolution of the CDM in a Post-2012 Climate Agreement. *The Journal of Environment & Development*, 18, 227-247.
- Finnemore, M. & Sikkink, K. 2001. Taking stock: the constructivist research program in international relations and comparative politics. *Annual Review of Political Science*, 4, 391-416.
- Foster, K. W. 2001. Associations in the embrace of an authoritarian state: state domination of society? *Studies in Comparative International Development*, 35, 84-109.
- Foster, K. W. 2002. Embedded within state agencies: Business associations in Yantai. *The China Journal*, 41-65.
- Ganapati, S. & Liu, L. 2009. Sustainable development in the clean development mechanism: The role of Designated National Authority in China and India. *Journal of Environmental Planning and Management*, 52, 43-60.
- Gilley, B. 2012. Authoritarian environmentalism and China's response to climate change. *Environmental Politics*, 21, 287-307.
- Gold, T. B., Guthrie, D. & Wank, D. L. 2002. *Social connections in China: institutions, culture, and the changing nature of Guanxi*, Cambridge, Cambridge University Press.
- Goodman, D. S. G. 1997. *China's provinces in reform: class, community and political culture*, London, Routledge.
- Grbich, C. 2007. *Qualitative data analysis: an introduction*, London, SAGE.
- Greiner, S. & Michaelowa, A. 2003. Defining investment additionality for CDM projects—practical approaches. *Energy Policy*, 31, 1007-1015.
- Grubb, M., Vrolijk, C., Brack, D. & Forsyth, T. 1999. *The Kyoto Protocol: a guide and assessment*, Royal Institute of International Affairs London.
- George, A. L. & Bennett, A. 2005. *Case studies and theory development in the social sciences*, Mit Press.
- Haas, P. M. 2004. Addressing the global governance deficit. *Global Environmental Politics*, 4, 1-15.

- Haites, E., Duan, M. & Seres, S. 2006. Technology transfer by CDM projects. *Climate Policy*, 6, 327-344.
- Hammersley, M. & Atkinson, P. 1983. *Ethnography : principles in practice*, London, Tavistock.
- Han, J., Mol, A. P. J., Lu, Y. & Zhang, L. 2009. Onshore wind power development in China: Challenges behind a successful story. *Energy Policy*, 37, 2941-2951.
- Harkness, J. 1998. Recent trends in forestry and conservation of biodiversity in China. *China Quarterly-London*, 911-934.
- Harris, P. G. 2002. *International environmental cooperation: politics and diplomacy in Pacific Asia*, University Press of Colorado Boulder, CO.
- Haščič, I. & Johnstone, N. 2011. CDM and international technology transfer: empirical evidence on wind power. *Climate Policy*, 11, 1303-1314.
- Haya, B. 2007. Failed mechanism—how the CDM is subsidizing hydro developers and harming the Kyoto Protocol. Berkeley: International Rivers. Retrieved March 25, 2009, from: http://www.internationalrivers.org/files/Failed_Mechanism_3.pdf.
- Hayashi, D. & Michaelowa, A. 2007. Lessons from submission and approval process of large-scale energy efficiency CDM methodologies. HWWI Research Paper.
- He, G. & Morse, R. 2010. Making carbon offsets work in the developing world: lessons from the Chinese wind controversy. *PESD working paper, No. 90*
- Heggelund, G. 2007. China's climate change policy: domestic and international developments. *ASIAN PERSPECTIVE-SEOUL-*, 31, 155.
- Heggelund, G. & Buan, I. 2009. China in the Asia–Pacific Partnership: consequences for UN climate change mitigation efforts? *International Environmental Agreements: Politics, Law and Economics*, 9, 301-317.
- Hendrischke, H. J. & Feng, C. 1999. *The political economy of China's provinces : comparative and competitive advantage*, London, Routledge
- Hepburn, C. 2007. Carbon Trading: A Review of the Kyoto Mechanisms. *Annual Review of Environment and Resources*, 32, 375-393.
- Ho, P. 2001. Greening without conflict? Environmentalism, NGOs and civil society in China. *Development and Change*, 32, 893-921.
- Ho, P. 2003. Mao's war against nature? The environmental impact of the grain-first campaign in China. *The China Journal*, 37-59.
- Ho, P. & Edmonds, R. L. 2007. *China's embedded activism: opportunities and constraints of a social movement*, London, Routledge.

- Hong, Z. 2004. Mapping the evolution and transformation of the new private entrepreneurs in China. *Journal of Chinese Political Science*, 9, 23-42.
- Howell, J. 1998. An Unholy Trinity? Civil Society, Economic Liberalization and Democratization in post-Mao China. *Government and Opposition*, 33, 56-80.
- Huang, Y. 1996. *Inflation and investment controls in China : the political economy of central-local relations during the reform era*, Cambridge, Cambridge University Press.
- Huang, Y. 2002. *Selling China: foreign direct investment during the reform era*, New York, Cambridge University Press.
- Huang, Y. 2008. *Capitalism with Chinese characteristics : entrepreneurship and the state*, Cambridge, Cambridge University Press.
- Hyön, I. & Schreurs, M. A. 2007. *Environmental Dimension of Asian Security: Conflict And Cooperation Over Energy, Resources, And Pollution*, United States Institute of Peace Press.
- IEA. 2012. CO2 Emissions from Fuel Combustion. Available at:
<http://www.iea.org/co2highlights/co2highlights.pdf>
- Inner Mongolia DRC. 2011. Implementation Measures for Developing and Managing Wind Resources in Inner Mongolia
- Jagers, S. C. & Stripple, J. 2003. Climate Governance beyond the State. *Global governance*, 9, 385.
- Jahiel, A. R. 1997. The Contradictory Impact of Reform on Environmental Protection in China. *The China Quarterly*, 149, 81-103.
- Jahiel, A. R. 1998. The organization of environmental protection in China. *The China Quarterly*, 156, 757-787.
- Jinghua Times, 2010. The wind farms are merely 'show business', claimed by the vice minister, 2010.3.10 available at:
<http://news.163.com/10/0310/02/61CNOQ9P000146BB.html>
- Johnson, D. G. 1988. Economic reforms in the People's Republic of China. *Economic Development and Cultural Change*, 36, S225-S245.
- Jotzo, F. & Michaelowa, A. 2002. Estimating the CDM market under the Marrakech Accords. *Climate Policy*, 2, 179-196.
- Jung, M. 2006. Host country attractiveness for CDM non-sink projects. *Energy Policy*, 34, 2173-2184.
- Kaplinsky, R. & Morris, M. 2009. Chinese FDI in Sub-Saharan Africa: engaging with large dragons. *European Journal of Development Research*, 21, 551-569.

- Keeley, J. 2006. Balancing technological innovation and environmental regulation: an analysis of Chinese agricultural biotechnology governance. *Environmental Politics*, 15, 293-309.
- Kelle, U. 2004. Computer-assisted qualitative data analysis. *Qualitative research practice*, 473-489.
- Keohane, N. O. 2009. Cap and Trade, Rehabilitated: Using Tradable Permits to Control U.S. Greenhouse Gases. *Review of Environmental Economics and Policy*, 3, 42-62.
- Kennedy, S. 2005. *The business of lobbying in China*, Cambridge, Mass. ; London, Harvard University Press.
- King, G., Keohane, R. O. & Verba, S. 1994. *Designing social inquiry: Scientific inference in qualitative research*, Princeton University Press.
- Knill, C. & Lehmkuhl, D. 2002. The national impact of European Union regulatory policy: Three Europeanization mechanisms. *European Journal of Political Research*, 41, 255-280.
- Kollmuss, A. 2010. *Handbook of carbon offset programs: trading systems, funds, protocols and standards*, Earthscan.
- Kvale, S. 1996. The 1,000-page question. *Qualitative inquiry*, 2, 275-284.
- Lederer, M. 2011. From CDM to REDD+ — What do we know for setting up effective and legitimate carbon governance? *Ecological Economics*, 70, 1900-1907.
- Lema, A. & Ruby, K. 2007. Between fragmented authoritarianism and policy coordination: Creating a Chinese market for wind energy. *Energy Policy*, 35, 3879-3890.
- Levy, D. L. & Egan, D. 2003. A Neo-Gramscian Approach to Corporate Political Strategy: Conflict and Accommodation in the Climate Change Negotiations. *Journal of Management Studies*, 40, 803-829.
- Levy, D. L. & Newell, P. 2005. *The business of global environmental governance*, Cambridge, Mass. ; London, MIT.
- Lewis, J. I. 2010. The evolving role of carbon finance in promoting renewable energy development in China. *Energy Policy*, 38, 2875-2886.
- Li, H., Meng, L., Wang, Q. & Zhou, L.-A. 2008. Political connections, financing and firm performance: Evidence from Chinese private firms. *Journal of Development Economics*, 87, 283-299.
- Li, H. & Zhou, L. A. 2005. Political turnover and economic performance: the incentive role of personnel control in China. *Journal of Public Economics*, 89, 1743-1762.

- Li, S., Li, S. & Zhang, W. 1998. Cross-regional competition and privatisation in China. *MOCT-MOST: Economic Policy in Transitional Economies*, 9, 75-88.
- Lieberthal, K. 1997. China's governing system and its impact on environmental policy implementation. *China Environment Series*, 1, 3-8.
- Lieberthal, K. & Lampton, D. M. 1992. *Bureaucracy, politics, and decision making in post-Mao China*, University of California Press Berkeley.
- Liu, G. S., Sun, P. & Woo, W. T. 2006. The political economy of Chinese-style privatization: motives and constraints. *World Development*, 34, 2016-2033.
- Liu, J. & Diamond, J. 2005. China's environment in a globalizing world. *Nature*, 435, 1179-1186.
- Liu, Y. & Kokko, A. 2010. Wind power in China: Policy and development challenges. *Energy Policy*, 38, 5520-5529.
- Liverman, D. M. and Boyd, E. (2008) 'The CDM, Ethics and Development', in K. H. Olsen and J. V. Fenhann (eds), *A Reformed CDM: Including New Mechanisms for Sustainable Development*. Roskilde: Forskningscenter Risø.
- Lohmann, L. 2008. Carbon trading, climate justice and the production of ignorance: ten examples. *Development*, 51, 359-365.
- Lovell, H. C. 2010. Governing the carbon offset market. *Wiley Interdisciplinary Reviews: Climate Change*, 1, 353-362.
- Lovell, H. & Liverman, D. 2010. Understanding carbon offset technologies. *New Political Economy*, 15, 255-273.
- Lukes, S. 2005. *Power: a radical view*, Basingstoke, Palgrave Macmillan.
- Lütken, S. E. & Michaelowa, A. 2008. *Corporate Strategies and the Clean Development Mechanism: Developing Country Financing for Developed Country Commitments?*, Edward Elgar.
- Mansfield, M. & Boyd, E. 2007. Commodifying carbon—the ethics of markets in Nature. *In*: ECI Workshop Report, July, 2007.
- McKeown, T. J. 1999. Case studies and the statistical worldview: Review of King, Keohane, and Verba's *Designing social inquiry: Scientific inference in qualitative research*. *International Organization*, 53, 161-190.
- Meckling, J. 2011. *Carbon coalitions: business, climate politics, and the rise of emissions trading*, Cambridge, Mass. ; London, MIT Press.
- Mertha, A. 2009. "Fragmented Authoritarianism 2.0": Political Pluralization in the Chinese Policy Process. *China Quarterly*, 200, 995.

- Meisner, M. 1996. *The Deng Xiaoping era : an inquiry into the fate of Chinese socialism, 1978-1994*, New York, Hill and Wang.
- Michaelowa, A. 2003. CDM host country institution building. *Mitigation and Adaptation Strategies for Global Change*, 8, 201-220.
- Michaelowa, A. 2007. Unilateral CDM—can developing countries finance generation of greenhouse gas emission credits on their own? *International Environmental Agreements: Politics, Law and Economics*, 7, 17-34.
- Michaelowa, A. & Jotzo, F. 2005. Transaction costs, institutional rigidities and the size of the clean development mechanism. *Energy Policy*, 33, 511-523.
- [Michaelowa, A.](#) and [Purohit, P.](#) 2007. *Additionality Determination of Indian CDM Projects. Can Indian CDM Project Developers Outwit the CDM Executive Board?* Switzerland: University of Zurich.
- Michaelowa, A., Stronzik, M., Eckermann, F. & Hunt, A. 2003. Transaction costs of the Kyoto Mechanisms. *Climate Policy*, 3, 261-278.
- Mitchell, R. B. & Bernauer, T. 2004. Beyond story-telling: designing case study research in international environmental policy. *Models, numbers, and cases: methods for studying international relations*, 81-106.
- MOF. 2011. Measures to Manage CDM Fund, available at:
<http://cdm.ccchina.gov.cn/list.aspx?clmId=3&page=1>
- Mol, A. P. 2012. Carbon flows, financial markets and climate change mitigation. *Environmental Development*, 1, 10-24.
- Mol, A. P. J. & Carter, N. T. 2006. China's environmental governance in transition. *Environmental Politics*, 15, 149-170.
- Montgomery, W. D. 2012. Markets in licenses and efficient pollution control programs. *Journal of economic theory*, 5, 395-418.
- Moran-Ellis, J., Alexander, V. D., Cronin, A., Dickinson, M., Fielding, J., Sleney, J. & Thomas, H. 2006. Triangulation and integration: processes, claims and implications. *Qualitative Research*, 6, 45-59.
- Morton, K. 2005. The emergence of NGOs in China and their transnational linkages: implications for domestic reform. *Australian Journal of International Affairs*, 59, 519-532.
- Muller, A. 2007. How to make the clean development mechanism sustainable—The potential of rent extraction. *Energy Policy*, 35, 3203-3212.

- Narain, .S. 2009. The business of carbon is different, in: Böhm, S. & Dabhi, S. (ed.) *Upsetting the offset: the political economy of carbon markets*, London, May Fly Books.
- Narain, U. & Van't Veld, K. 2008. The Clean Development Mechanism's low-hanging fruit problem: When might it arise, and how might it be solved? *Environmental and Resource Economics*, 40, 445-465.
- NDRC. 2005, 2011. The Measures for Operation and Management of Clean Development Mechanism Projects in China.
- NDRC. 2007. Medium and Long-Term Development Plan for Renewable Energy in China
- NDRC. 2010. The Twelfth Five Year Plan for the Renewable Energy Development in China
- NDRC. 2011. Working Plan of Energy Saving and Emission Reduction during the 11th Five Year Plan Period
- NDRC, 2013. Issued CERs for Chinese Projects by Project Types. Available at: <http://cdm.ccchina.gov.cn/NewItemTable12.aspx>
- Nee, V. 2010. Bottom-up economic development and the role of the state: A focus on China. *CSES Working Paper Series #49*
- Newell, P. 2003. Globalization and the Governance of Biotechnology. *Global Environmental Politics*, 3, 56-71.
- Newell, P. 2008(a). Lost in translation? Domesticating global policy on genetically modified organisms: comparing India and China. *Global Society*, 22, 115-136.
- Newell, P. 2008(b). The political economy of global environmental governance. *Review of International Studies*, 34, 507-529.
- Newell, P. 2009. Varieties of CDM Governance: Some Reflections. *The Journal of Environment & Development*, 18, 425-435.
- Newell, P. 2011. The political economy of carbon markets: The CDM and other stories. *Climate Policy*, 12, 135-139.
- Newell, P. & Paterson, M. 1998. A climate for business: global warming, the state and capital. *Review of International Political Economy*, 5, 679-703.
- Newell, P., Phillips, J. & Purohit, P. 2011. The political economy of clean development in India: CDM and beyond. *IDS Bulletin*, 42, 89-96.
- Newell, P. & Paterson, M. 2010. *Climate capitalism: global warming and the transformation of the global economy*, Cambridge, Cambridge University Press.
- Odell, J. S. 2001. Case study methods in international political economy. *International Studies Perspectives*, 2, 161-176.

- OECD. 2005. OECD Economic Survey of China 2005, available at:
- Okereke, C., Bulkeley, H. & Schroeder, H. 2009. Conceptualizing climate governance beyond the international regime. *Global Environmental Politics*, 9, 58-78.
- Olsen, K. 2007. The clean development mechanism's contribution to sustainable development: a review of the literature. *Climatic Change*, 84, 59-73.
- Oi, J. C. 1995. The Role of the Local State in China's Transitional Economy. *The China Quarterly*, 144, 1132-1149.
- Oi, J. C. 1999. *Rural China takes off: institutional foundations of economic reform*, Berkeley; London, University of California Press.
- Qi, Y., Ma, L., Zhang, H. & Li, H. 2008. Translating a Global Issue Into Local Priority: China's Local Government Response to Climate Change. *The Journal of Environment & Development*, 17, 379-400.
- Qiu, J. 2009. China's climate target: is it achievable? *Nature*, 462, 550.
- Pan, J. 2003. Emissions rights and their transferability: equity concerns over climate change mitigation. *International Environmental Agreements*, 3, 1-16.
- Paulsson, E. 2009. A review of the CDM literature: from fine-tuning to critical scrutiny? *International Environmental Agreements: Politics, Law and Economics*, 9, 63-80.
- Pearce, D. W. & Turner, R. K. 1989. *Economics of natural resources and the environment*, Baltimore, The Johns Hopkins University Press.
- Pearson, B. 2007. Market failure: why the Clean Development Mechanism won't promote clean development. *Journal of Cleaner Production*, 15, 247-252.
- Piao, S., Ciais, P., Huang, Y., Shen, Z., Peng, S., Li, J., Zhou, L., Liu, H., Ma, Y. & Ding, Y. 2010. The impacts of climate change on water resources and agriculture in China. *Nature*, 467, 43-51.
- Pierre, J. 2000. Conclusion: Governance Beyond State Strength, in Jon Pierre (ed.) *Debating Governance: Authority, Steering, and Democracy*, Oxford: Oxford University Press.
- Pigou, A. C. 1920. *The Economics of Welfare*, London, Macmillan & Co.
- Qiu, J. 2009. China's climate target: is it achievable? *Nature*, 462, 550.
- Rawski, T. G. 1995. Implications of China' Reform Experience. *The China Quarterly*, 144, 1150-1173.
- Richards, L. & Richards, T. 1991. Computing in qualitative analysis: A healthy development? *Qualitative Health Research*, 1, 234-262.

- Resnier, M., Wang, C., Du, P. & Chen, J. 2007. The promotion of sustainable development in China through the optimization of a tax/subsidy plan among HFC and power generation CDM projects. *Energy Policy*, 35, 4529-4544.
- Rosenau, J. N. & Czempiel, E. O. 1992. *Governance without government: order and change in world politics*, Cambridge, Cambridge University Press.
- Ross, L. 1987. Environmental policy in post-Mao China. *Environment: Science and Policy for Sustainable Development*, 29, 12-39.
- Ross, L. 1992. The Politics of Environmental Policy in the People's Republic of China. *Policy Studies Journal*, 20, 628-642.
- Ross, L. 1998. China: Environmental Protection, Domestic Policy Trends, Patterns of Participation in Regimes and Compliance with International Norms. *The China Quarterly*, 156, 809-835.
- Ruggie, J. G. 1998. What makes the world hang together? Neo-utilitarianism and the social constructivist challenge. *International Organization*, 52, 855-885.
- Saich, T. 2000. Negotiating the State: The Development of Social Organizations in China* Tony Saich. *The China Quarterly*, 124-141.
- Samaniego, J. and Figueres, C. 2002. Evolving to a Sector-Based Clean Development Mechanism, in: K. Baumert (ed.): *Building on the Kyoto Protocol: Options for Protecting the Climate*. Washington, DC: World Resources Institute, 89-108.
- Sasuga, K. 2004. *Microregionalism and governance in East Asia*, London, Routledge.
- Schatz, A. 2008. Discounting the clean development mechanism. *Georgetown International Environmental Law Review (GIELR)*, 20.
- Schmidt, J., Helme, N., Lee, J. & Houdashelt, M. 2008. Sector-based approach to the post-2012 climate change policy architecture. *Climate Policy*, 8, 494-515.
- Schneider, F. & Volkert, J. 1999. No chance for incentive-oriented environmental policies in representative democracies? A Public Choice analysis. *Ecological Economics*, 31, 123-138.
- Schneider, L. 2009(a). A Clean Development Mechanism with global atmospheric benefits for a post-2012 climate regime. *International Environmental Agreements: Politics, Law and Economics*, 9, 95-111.
- Schneider, L. 2009(b). Assessing the additionality of CDM projects: practical experiences and lessons learned. *Climate Policy*, 9, 242-254.
- Schneider, M., Holzer, A. & Hoffmann, V. H. 2008. Understanding the CDM's contribution to technology transfer. *Energy Policy*, 36, 2930-2938.

- Schneider, M., Schmidt, T. S. & Hoffmann, V. H. 2010. Performance of renewable energy technologies under the CDM. *Climate Policy*, 10, 17-37.
- Schroeder, M. 2009. Varieties of Carbon Governance: Utilizing the Clean Development Mechanism for Chinese Priorities. *The Journal of Environment & Development*, 18, 371-394.
- Schroeder, M. 2012. *Local climate governance in China: hybrid actors and market mechanisms*, Basingstoke, Hampshire, UK, Palgrave Macmillan.
- Schwartz, J. 2004. Environmental NGOs in China: roles and limits. *Pacific Affairs*, 28-49.
- Sending, O. J. & Neumann, I. B. 2006. Governance to governmentality: analyzing NGOs, states, and power. *International Studies Quarterly*, 50, 651-672.
- Seres, S., Haites, E. & Murphy, K. 2009. Analysis of technology transfer in CDM projects: An update. *Energy Policy*, 37, 4919-4926.
- Shapiro, J. 2001. *Mao's war against nature: Politics and the environment in revolutionary China*, Cambridge University Press.
- Shen, L. and Dai, Y. 1990. Woguo "Zhouhou Jingji" De Xingcheng Ji Chi Biduan He Genyuan (The Creation, Origins and Failings of Feudal Economies in China), *Jingji Yanjiu (Economic Research)*, 3, 12-20.
- Shi, H. & Zhang, L. 2006. China's environmental governance of rapid industrialisation. *Environmental Politics*, 15, 271-292.
- Shin, S. 2010. The domestic side of the clean development mechanism: the case of China. *Environmental Politics*, 19, 237-254.
- Shrestha, R. M. & Timilsina, G. R. 2002. The additionality criterion for identifying clean development mechanism projects under the Kyoto Protocol. *Energy Policy*, 30, 73-79.
- Silverman, D. 1999. *Doing qualitative research: a practical handbook*, Thousand Oaks, CA ; London, SAGE.
- Silverman, D. 2006. *Interpreting qualitative data: methods for analysing talk, text and interaction*, London, SAGE.
- Sina News. 2009. Cheating for CDM subsidy? China fights back against EB's decision. Available at: <http://finance.sina.com.cn/roll/20091215/01577102219.shtml>
- Smith, K. 2007. The carbon neutral myth. *Offset indulgences for Your climate sins. Carbon Trade Watch, Transnational Institute, The Netherlands*.
- Sohu News, 2012. Why so many CDM projects have been approved? Available at: <http://business.sohu.com/20120601/n344612585.shtml>

- Solinger, D. J. 1992. Urban entrepreneurs and the state: the merger of state and society. *State and Society in China: The Consequences of Reform*, 121-142.
- Spash, C. L. 2010. The brave new world of carbon trading. *New Political Economy*, 15, 169-195.
- Stavins, R. N. 1998. What Can We Learn from the Grand Policy Experiment? Lessons from SO₂ Allowance Trading. *Journal of Economic Perspectives*, 12, 69-88.
- Stavins, R. N. 2002. Experience with Market-Based Environmental Policy Instruments. *FEEM Working Paper No. 52.2002; KSG Working Paper No. 00-004*
- Sterk, W. & Wittneben, B. 2006. Enhancing the clean development mechanism through sectoral approaches: definitions, applications and ways forward. *International Environmental Agreements: Politics, Law and Economics*, 6, 271-287.
- Stern, D. I. & Jotzo, F. 2010. How ambitious are China and India's emissions intensity targets? *Energy Policy*, 38, 6776-6783.
- Strange, S. 1994. *States and markets*, London, Pinter.
- Strange, S. 1996. *The retreat of the state: the diffusion of power in the world economy*, Cambridge, Cambridge University Press.
- Streck, C. 2004. New Partnerships in Global Environmental Policy: The Clean Development Mechanism. *The Journal of Environment & Development*, 13, 295-322.
- Streck, C. & Lin, J. 2008. Making markets work: a review of CDM performance and the need for reform. *European Journal of International Law*, 19, 409-442.
- Su, C. & Littlefield, J. E. 2001. Entering guanxi: a business ethical dilemma in mainland China? *Journal of Business Ethics*, 33, 199-210.
- Sugiyama, T. & Michaelowa, A. 2001. Reconciling the design of CDM with inborn paradox of additionality concept. *Climate Policy*, 1, 75-83.
- Sutter, C. & Parreño, J. 2007. Does the current Clean Development Mechanism (CDM) deliver its sustainable development claim? An analysis of officially registered CDM projects. *Climatic Change*, 84, 75-90.
- Tao, J. & Mah, D. N. 2009. Between market and state: dilemmas of environmental governance in China's sulphur dioxide emission trading system. *Environment and planning. C, Government & policy*, 27, 175.
- The Economist. .2012.The Rise of State Capitalism, 2012-1-21
- Tsai, K. 2004. Off balance: The unintended consequences of fiscal federalism in China. *Journal of Chinese Political Science*, 9, 1-26.

- Tsui, K. Y. & Wang, Y. 2004. Between Separate Stoves and a Single Menu: Fiscal Decentralization in China. *The China Quarterly*, 177, 71-90.
- UNEP. 2008. The UNEP Project CD4CDM: Guidebook for Financing CDM Projects, available at:
<http://cd4cdm.org/publications/financecdmprojectsguidebook.pdf>
- Victor, D. G. 2004. *The collapse of the Kyoto protocol and the struggle to slow global warming*, Princeton, N.J. ; Woodstock, Princeton University Press.
- Victor, D. G. 2006. Toward Effective International Cooperation on Climate Change: Numbers, Interests and Institutions. *Global Environmental Politics*, 6, 90-103.
- Vogel, D. 1995. *Trading up: Consumer and environmental regulation in a global economy*, Wiley Online Library.
- Wang, B. 2010. Can CDM bring technology transfer to China?—An empirical study of technology transfer in China's CDM projects. *Energy Policy*, 38, 2572-2585.
- Wang, M. Y. 2002. The motivations behind China's government-initiated industrial investments overseas. *Pacific Affairs*, 187-206.
- Wang, R., Liu, W., Xiao, L., Liu, J. & Kao, W. 2011. Path towards achieving of China's 2020 carbon emission reduction target—A discussion of low-carbon energy policies at province level. *Energy Policy*, 39, 2740-2747.
- Wank, D. L. 1998. *Commodifying communism : business, trust and politics in a Chinese city*, Cambridge, Cambridge University Press.
- Wara, M. W. & Victor, D. G. 2007. A Realistic Policy on International Carbon Offsets. *Program on Energy and Sustainable Development working paper 74*
- Weiss, L. 1999. State power and the Asian crisis. *New Political Economy*, 4, 317-342.
- Wendt, A. 1992. Anarchy is what states make of it: the social construction of power politics. *International Organization*, 46, 391-425.
- Wendt, A. 1999. *Social theory of international politics*, Cambridge University Press.
- Werksman, J. 1998. The Clean Development Mechanism: Unwrapping the 'Kyoto Surprise'. *Review of European Community & International Environmental Law*, 7, 147-158.
- Weyant, J. P. 1999. Emissions Trading: Reducing the Cost of Implementing the Kyoto Protocol. *Energy & Environment*, 10, 539-547.
- Wiener, J. B. 2007. Climate change policy and policy change in China. *UCLA L. Rev.*, 55, 1805.

- Wright, C. & Rwabizambuga, A. 2006. Institutional pressures, corporate reputation, and voluntary codes of conduct: An examination of the equator principles. *Business and Society Review*, 111, 89-117.
- World Bank, 2004. Clean Development Mechanism in China, Available at: <http://siteresources.worldbank.org/INTCC/817372-1110879250911/20557087/cdm-china.pdf>
- World Bank. 2010. State and Trends of the Carbon Market Report 2010, available at: http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2010_low_res.pdf
- Wu, F. 2003. Environmental GONGO autonomy: unintended consequences of state strategies in China. *The Good Society*, 12, 35-45.
- Wu, F. 2009. Environmental Politics in China: An Issue Area in Review. *Journal of Chinese Political Science*, 14, 383-406.
- Xie, P. 1999. Financial Reform in China: Review and Future Challenges, *World Economy and China*, (9-10): 5-13.
- Netease News. 2012. Big SOEs gamble on Yumen's Wind Farms: 20 Billion Investment with Less Than 0.1 Billion Local Tax Income, available at: <http://money.163.com/12/0224/23/7R2KB0DI00253B0H.html>
- Yang, G. 2005. Environmental NGOs and institutional dynamics in China. *The China Quarterly*, 181, 46-66.
- Yin, R. K. 1994. *Case Study Research: Design and Methods*, Sage Pubns.
- Young, A. 2000. The Razor's Edge: Distortions and Incremental Reform in the People's Republic of China. *The Quarterly Journal of Economics*, 115, 1091-1135.
- Young, O. R. 1997. *Global governance: drawing insights from the environmental experience*, Cambridge, Mass; London, MIT Press.
- Yu, H. 2004. Local Protectionism: The Bottleneck of China's Economic Development'. *IIS Newsletter*, 33, 24.
- Yu, H. 2008. *Global warming and China's environmental diplomacy*, Nova Publishers.
- Zegras, P. C., Chen, Y. & Grütter, J. M. 2009. Behavior-Based Transportation Greenhouse Gas Mitigation Under the Clean Development Mechanism. *Transportation Research Record: Journal of the Transportation Research Board*, 2114, 38-46.
- Zhang, K. & Wen, Z. 2008. Review and challenges of policies of environmental protection and sustainable development in China. *Journal of Environmental Management*, 88, 1249-1261.

- Zhang, W & Li. S. 1998. Inter-locality competition and privatizing Chinese SOEs, *Economic Research*, 12, 13-22
- Zhang, Y. 2003. China's Emerging Civil Society, *Brookings Institution Center for Northeast Asian Policy Studies Working Paper*, available at www.brook.edu/fp/cnaps/papers/ye2003.pdf
- Zhang, Z. 2000. Decoupling China's carbon emissions increase from economic growth: An economic analysis and policy implications. *World Development*, 28, 739-752.
- Zhang, Z. 2006. Toward an effective implementation of clean development mechanism projects in China. *Energy Policy*, 34, 3691-3701.
- Zhang, Z. 2011. In what format and under what timeframe would China take on climate commitments? A roadmap to 2050. *International Environmental Agreements: Politics, Law and Economics*, 11, 245-259.
- Zhou, L.-A. 2004. The Incentive and Cooperation of Government Officials in the Political Tournaments: An Interpretation of the Prolonged Local Protectionism and Duplicative Investments in China [J]. *Economic Research Journal*, 6, 33-40.
- Zweig, D. 2002. *Internationalizing China: domestic interests and global linkages*, Ithaca ; London, Cornell University Press.

Appendix 1: Lists of Interview Participants

No.	Names (Codes)	Job Title	Place of Interview	Date of Interview
1	AF	Project Owner	Office	2011.5
2	BJZ	Government Officer	Office	2011.9
3	DW	Validator	Office	2011.6
4	HP	Validator	Cafe	2011.7
5	FJG	Engineer	Cafe	2011.11
6	FY	Local CDM Centre	Cafe	2011.11
7	GJ	Project Developer	Office	2011.10
8	HSD	Project Owner	Office	2011.9
9	JKJ	Government Officer	Office	2011.10
10	KWW	Project Developer	Cafe	2010.11
11	LHL	Project Developer	Cafe	2010.11
12	LX1	Project Developer	Cafe	2011.4
13	LX2	Project Developer	Cafe	2011.7
14	LY	NGO	Office	2011.11
15	LYR	Carbon Fund	Office	2010.12
16	LYS	Project Owner	Office	2011.5
17	MC	Government Officer	Office	2010.12
18	MXN	Project Developer	Office	2011.4
19	MZM	Project Developer	Office	2010.11
20	MZM 2	Project Developer	Office	2011.7
21	MOF	Project Owner	Cafe	2011.2
22	PJH	Researcher	Office	2011.3
23	PP	Project Developer	Office	2010.12
24	QLM	Government Officer	Office	2011.5
25	QY	Validator	Cafe	2011.9
26	SZQ	Local CDM Centre	Office	2011.10
27	WLY	Government Officer	Office	2011.8
28	WAW	Project Developer	Office	2010.12
29	YAM	Project Developer	Office	2011.11
30	YM	Carbon Fund	Office	2011.9
31	ZH	Project Developer	Cafe	2011.8
32	ZL1	Project Developer	Cafe	2010.11
33	ZL2	Project Developer	Cafe	2011.5
34	ZJJ	Project Developer	Cafe	2011.2
35	ZNW	Project Owner	Office	2010.11
36	AL (English)	Carbon Fund	Office	2011.9
37	CL (English)	Carbon Fund	Office	2011.9
38	MC (English)	Carbon Fund	Office	2011.10
39	RP (English)	International Officer	Office	2011.10
40	TA (English)	Carbon Fund	Office	2011.9

Appendix 2: Document list

No.	Document Name	Document Type
1	Key Information about CDM in China	Pol i cy
2	Measures for Operation and Management of Clean Development Mechanism Projects in China	Pol i cy
3	China's National Climate Change Programme (Full text)	Pol i cy
4	China's Scientific & Technological Actions on Climate Change (Full text)	Pol i cy
5	Notice on Adding RMB Yuan as Price Unit to Examine CER's Price	Pol i cy
6	Format for CDM Project Application in China	Pol i cy
7	Arrangements for the Implementation of Clean Development Mechanism Projects in the Hong Kong Special Administrative Region	Pol i cy
8	Notification Requirement of CDM Projects Starting on or after 02 August 2008	Pol i cy
9	China's Policies and Actions for Addressing Climate Change(Full text)	Pol i cy
10	Clarification on grid tariff of Renewable Energy Projects in China	Pol i cy
11	Notes on the Issue of China Wind Power Generation Reduction	Pol i cy
12	China's Regional Grid Baseline Emission Factors 2009 revealed	Report
13	Study Report on Development of Policy of Chinese Wind Power Tariff	Report
14	Supplementary Notes for Hong Kong enterprises to implement CDM projects on the Mainland	Pol i cy
15	China's Regional Grid Baseline Emission Factors 2010	Report
16	风电场工程建设用地和环境保护管理暂行办法	Pol i cy
17	关于规范中国 CDM 项目咨询服务及评估工作的重要公告	Pol i cy
18	CDM 项目申报审批流程	Pol i cy
19	我国现行建设项目环评的相关规定	Pol i cy
20	关于中国清洁发展机制基金及清洁发展机制项目实施企业有关企业所得税政策问题的通知	Pol i cy
21	关于办理二氧化碳减排量等环境权益跨境交易有关外汇业务问题的通知	Pol i cy
22	关于开展碳排放权交易试点工作的通知	Pol i cy
23	" 十二五"控制温室气体排放工作方案	Pol i cy
24	关于做好中国清洁发展机制基金赠款项目和有偿使用项目申报管理工作的通知	Pol i cy
25	中华人民共和国环境保护法	Law
26	中华人民共和国大气污染防治法	Law
27	中华人民共和国环境影响评价法	Law
28	中华人民共和国清洁生产促进法	Law
29	中华人民共和国循环经济促进法	Law
30	中华人民共和国节约能源法	Law
31	中华人民共和国可再生能源法	Law
32	建设项目环境保护管理条例	Pol i cy
33	可再生能源产业发展指导目录	Pol i cy
34	风电场工程建设用地和环境保护管理暂行办法	Pol i cy
35	可再生能源发电有关管理规定	Pol i cy
36	促进风电产业发展实施意见	Pol i cy
37	关于加强中央企业节能减排工作的意见	Pol i cy
38	中央企业任期节能减排管理目标	Pol i cy
39	中央企业节能减排监督管理暂行办法	Pol i cy

40	国务院批转节能减排统计监测及考核实施方案和办法的通知	Policy
41	龙源电力 2012 年度报告	Report
42	龙源电力 2011 年度报告	Report
43	温室气体自愿减排交易管理暂行办法	Policy
44	中国电力行业年度发展报告 2011	Report
45	大气污染防治行动计划	Policy
46	可再生能源发电价格和费用分摊管理试行办法	Policy
47	《中国的能源状况与政策》白皮书	Policy
48	关于加快风力发电技术装备国产化的指导意见	Policy
49	可再生能源产业发展指导目录	Policy
50	可再生能源发电有关管理规定	Policy
51	中华人民共和国电力法	Law
52	河流水电规划报告及规划环境影响报告书审查暂行办法	Policy
53	关于加强风电并网和消纳工作有关要求的通知	Policy
54	风电发电科技发展“十二五”专项规划	Policy
55	“十二五”第二批风电项目核准计划	Policy
56	“十二五”第一批拟核准风电项目计划	Policy
57	关于规范风电开发建设管理有关要求	Policy
58	风电功率预报与电网协调运行实施细则（试行）	Policy
59	关于加强风电安全工作的意见	Policy
60	海上风电开发建设管理实施细则	Policy
61	分散式接入风电开发的通知	Policy
62	风电开发建设管理暂行办法	Policy