UNIVERSITY OF LIVERPOOL

Greening the State in China: The Construction of a Carbon Market

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

By

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11/2022

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Acknowledgement

This thesis marks the end of a long academic journey that I could not have completed without the dedicated support from all the lovely people who care for me most. I am incredibly grateful for my supervisor, Dr Geoffrey Chun-fung Chen for helping me in my research's many aspects, valuable discussions, and for his continuous encouragement and endless patience.

I would like to convey my heartfelt gratitude towards my parents and my six adorable cats. They have been of incredible love and care for me. To the world I may be one person, but to them I may be the world. My sincere thank also goes to my friend, Alison. The joy and sorrow that we shared together in such a long journey are definitely a wonderful chord in my life. I am deeply indebted to Ray; thank you for all kinds of help. Furthermore, special thanks to those friends and experts who help me during my fieldwork.

In addition, I wish I could thank Pink Floyd for the songs they wrote. Music can always be the most effective remedy to my life, and I was healed a thousand times.

Everyone I've mentioned has helped me improve, grow, and become a better person. They also made me value myself and my life more. I also want to thank myself who finally come to the finish line, even though no one tell me when to run.

The time is gone, and the song is over, thought I'd something more to say.

--Pink Floyd, Time

Abstract

This thesis aims to investigate how and to what extent can China's state manage its climate change adaptation via the construction of a carbon market. Through the theoretical lens of the green state and principal-agent approach, this thesis investigates the role of the state in China's carbon market governance, and the institutional configurations, organisational interactions, and civil society participation in China's green trajectory for facilitating the emergence of a carbon market. By doing this, certain central-local relations and state-market interactions in this novel market-oriented policy experimentation are addressed. In addition, what lies behind this thesis is the exploration of a new carbon governance model that emerges in such a commodification of nature, and a possibly compatible alternative for the economy and the environment.

Methodologically, the qualitative analysis is mostly based on semistructured interviews with a total of 36 professionals, including both state and non-state actors in China's carbon market. Supplementary to the interviews with the elites, an in-depth policy document analysis is conducted. Beijing City and Jiangsu Province are used as two independent cases to see how the carbon market is deployed at the local level.

I conclude that China is seen as an emerging green state with limited network and reveals a hybrid form of top-down, non-participatory carbon market governance model. Chinese state enhances its top-down control through the lens of SOEs and robust regulations of the market. The limited participation of civil society actors in China's carbon market, especially the constrained roles of the NGOs in the policy process of decision-making, makes it more difficult for the state to permeate the ecological modernisation discourse into the local level of carbon market governance. Furthermore, China's experience of carbon market construction reveals a long-held inveterate conflict between the economy and environment in the policy process, where I argue, a seemingly weak but window-dressing version of ecological modernisation exists as a veil for the state to legitimise itself in its green trajectory.

Contents

List of Abbreviations

ACET	Alliance of Carbon Emissions Trading
ETS	Emission Trading System
EU ETS	European Union Emissions Trading System
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
MEE	Ministry of Ecology and Environment
MOF	Ministry of Finance
MRV	Monitoring, Reporting and Verification
NDRC	National Development and Reform Commission
NGO	Non-Governmental Organisation
SOE	State-Owned Enterprise

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Chapter 1 Introduction

1. Introduction

1.1 Environmental Degradation: A Political Issue

The whole world has been experiencing an acute environmental crisis (e.g., global climate change, heavy pollution, biodiversity loss, ozone depletion, overexploitation of resources, etc.). Although it remains unresolved scientifically who should be blamed for the environmental problems, human behaviours seem to be recognised as a critical driver that has eroded the ecological balance over the past century (Jaskólsk, 2021). Since 2000, China's carbon emissions have increased exponentially under the intensification of industrialisation (see Figure 1.1), and China has now become one of the world's largest carbon emitters (Yang et al., 2022). China has committing itself to being a "responsible power" but is also facing a looming environmental catastrophe at home (Zhou & Li, 2019). The Chinese state's response to ecological degradation and its effort to dealing with the climate change have attracted global attention among scholars, policymakers, and the public, pushing China to undergo a low-carbon transition to provide a safeguard for human-nature relations.

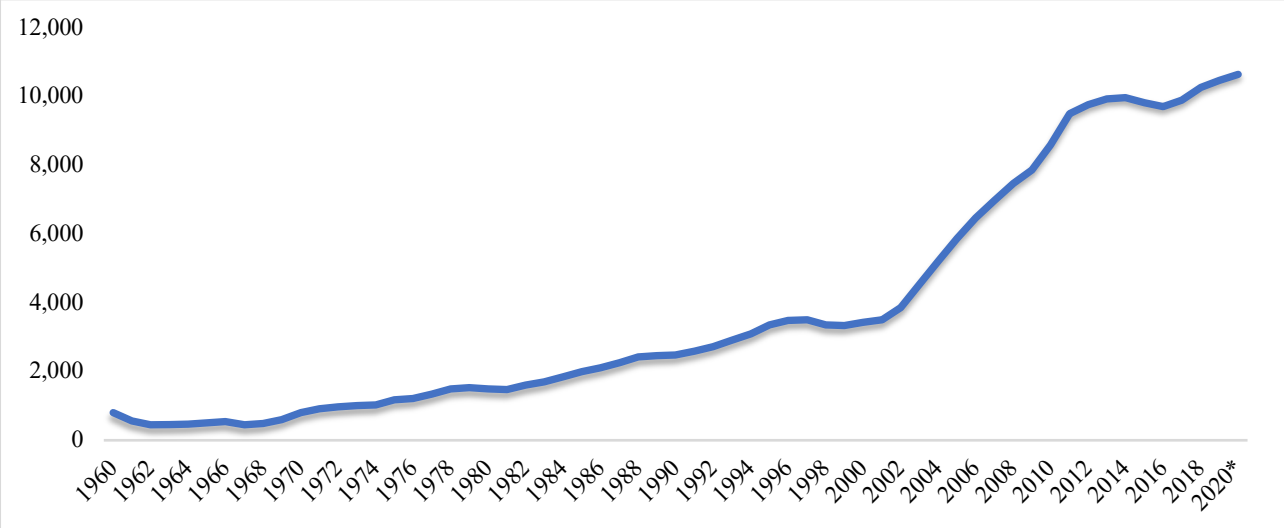

Fig.1. 1Territorial carbon dioxide emissions in China from 1960 to 2020 (in million metric tons CO_2)

Source: Global Carbon Project

In 2018, the president of the People's Republic of China, Xi Jinping, made a speech at the National Ecological Environment Protection Conference, stating that

‘environmental protection is a major political issue that is in line with the Chinese Party’s key mission and purpose’. Indeed, the ecological crisis is depicted as more than a scientific issue but also a political one (Hu & Guan, 2017). Carter (2018) claimed that the core characteristics of the environment distinguish it as a policy problem: the global commons are ‘nonrival’ and ‘nonexcludable’, transboundary, irreversible, and full of uncertainty. Often described as ‘public goods’, the environmental resource is attached by the features where one individual’s consumption does not necessarily lead to the subtraction of consumption of others’, and also, each individual commonly undertake the effect that arise when one person refrains from a polluting action. The public nature of the environmental issues leaves significant challenges for the policymakers as free-riders and collective-action problems exist amidst the effort to deal with the environment. That said, the expense may be dispersed widely, whereas the advantages of using a public good are frequently concentrated around a small number of producers. Meanwhile, the global commons are frequently transboundary, especially the climate change and air pollution. There will be a strong temptation for one nation to benefit from others’ effort in combating the environmental degradation, but itself makes less or even no effort. The intrinsic peculiarities of the environment, therefore, hamper policymaking and bring high levels of complexity to the overall policymaking and implementation process. Environmental issues are climbing up the political agenda, even though in countries such as Britain, who have a strong history of respecting scientific expertise, policy priorities have been gradually pushing the science, instead, to fall in line with the government, with political actors seeking tailored recommendations accordingly in the environmental arena (Dryzek, 2013). There thus becomes to appear a series of emerging environmental discourses, innovative policy instruments and experimentations on the policy agenda. For example, green pioneers Germany and Netherlands urgently appeal to the “precautionary principle[1]”. Over the decades, countries have made concerted efforts to deal with the growing ecological problems in different ways, seeking to relieve the environmental pressure by either ‘leaving it to the experts’ (e.g., legislation, the development of agencies, or adoption of regulatory instruments), ‘leaving it to the people’ (e.g., public consultation, policy dialogue, citizen deliberation, or right-to-know legislation), or ‘leaving it to the market’ (e.g., the green tax, the emission trading system) (Dryzek, 2013). However, as argued by Boyd and Folke (2012), ‘equally viable options in technological or even economic terms get screened in or out of policy debate because of their political acceptability

[1] Precautionary principle, according to Cater (2018), means that no action to avoid environmental damage may be delayed due to a lack of scientific assurance. This can be seen as a moderate response to the radical technical or social experimentation.

(Boyd et al., 2012, p.9)'. It has thus raised two questions: First, can the efforts to combat ecological degradation be seen as a manifestation or as a trigger of a transformation in the interaction among the environment, society, economy and politics at their most fundamental levels in modern society? Second, are there new governance issues or challenges that emerge from the new forms of environmental problem solving, and if so, what is the role of the state in mobilising the environmental governance arrangements to follow a green trajectory?

Since the 1980s, green parties have chanted the slogan 'think globally, act locally' in matters of environmental governance, and their propositions have further informed four pillars of green politics, which can also be seen as the premises of a sustainable society: decentralisation, grassroots democracy, egalitarianism, and nonviolence[2] (Eckersley, 2004, p.11). These default assumptions can be found in the conventional Western environmental governance models espoused by many green pioneers (e.g., Germany, Norway, Sweden, Finland) and later emerging as a "one-size-fits-all" model followed by environmental laggards such as Britain and Demark. Similar to any definitive list of the major features of an ideology, these core green political features, especially democracy and decentralisation, also arouse notable controversies in practice. For example, attention has been raised among environmental scholars on the degree to which a decentralised approach can be conducive to boosting political governance in the environmental arena (Bardhan & Mookherjee, 2007), and there have been criticisms about the absence of empirical data that backs participatory government as a generic concept (Blühdorn, 2013). With the proliferation of climate-related initiatives and actions worldwide (Baeumler et al. 2012; Hoornweg, 2012; UN Habitat, 2011), China's state has also sought new channels for translating its carbon-related commitments, targets and policy rhetoric on the ground by adopting a range of technologies, regulations, and tools for carbon governance. In a broader context of global environmental politics, China serves as a quintessential example of how to address environmental damage in a very different way, adopting a form of 'environmental authoritarianism' (Beeson, 2010; Gilley, 2012). This does not mean that the green slogan is invalid in China's hierarchical political system; instead, the specific response of the Chinese state and its related institutional configurations in dealing with ecological degradation in the process of "acting locally" has become increasingly important, which

[2]Decentralisation, grassroots democracy, egalitarianism, and nonviolence, the "four pillars" of green politics, were first noted by the German Green party in the 1980s as the key features of a green sustainable society and were later widely recognised by green parties elsewhere.

may challenge or compel discussion on the centrality of green principles and contribute to green political theories by providing potentially unique “Chinese lessons”.

1.2 The Idea of Carbon Market and its Practice

Environmental policies that rely on tradable rights are a crucial market-based departure from the Pigouvian tradition, which has its roots in Coase's 1960 critical assessment of the Pigouvian tradition (Coase, 1960). He refines the analysis of externalities by removing Pigouvian concerns about cost and benefit distribution between the private and public realms, and assigns responsibility for resolving the discrete environmental problems to all parties involved, including polluters and non-polluters (Bryant, 2019). In other words, Coase (1960) assumed shared responsibilities for climate change adaption and mitigation among all actors in the optimisation of economic utility. The idea of carbon market is based on a methodology of commodifying the scarce nature and controlling the greenhouse gas emission through the lens of market mechanisms. Worldwide, carbon markets fit into one of two categories: credit programs and cap-and-trade system. Under credit programs, credits are created when a source reduces emission under the reduction level required by existing; the credits can then be used to achieve the same or other firms’ abatement goal. Under a cap-and-trade system, when designing a carbon market, the government firstly sets a cap for the target emission amount and then allocates carbon emission allowances for the industries according to a designated method (e.g., grandfathering, auction). Firms that have difficulty controlling the sources of pollution can buy the permits in the market, while those that can easily control their sources can sell the unused permits for a profit. In brief, the emission trading market is established to incentivise emission reduction by putting a price tag on the carbon emission through an imposed limit and allowing the legally tradable permits to initially be either given away or auctioned off (see Figure1.2).

In a theory-oriented model of carbon trading, the government does not play a crucial role in altering market pricing. Still, the market itself can work in bringing all participants into the market solution by expanding its sphere of influence with property rights appropriately covered. By linking the costs of carbon abatement with the cost of carbon pollution, the carbon market can limit the scope of climate action and universalise the task to combat climate change. That is to say, the carbon market has clear parallels with neo-liberal principles, and theoretically it can be seen as a neoliberal

policy innovation for the prolonged dilemma between environment protection and capital accumulation.

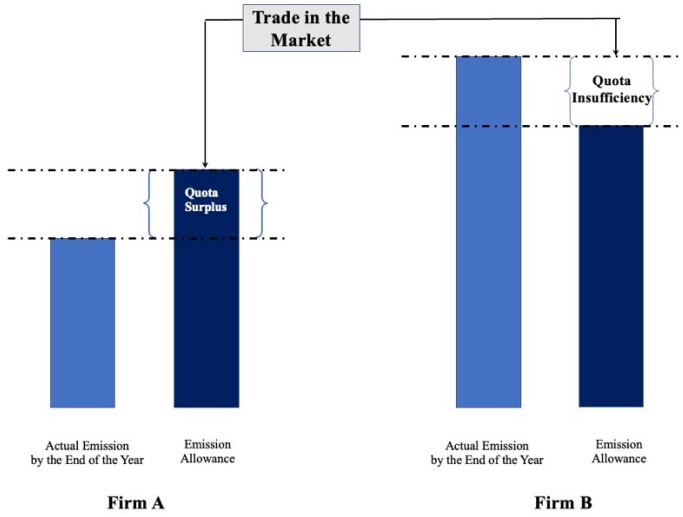

Fig.1. 2 Working Mechanism of Emission Trading System

The world of carbon politics, as we now commonly know it, is in fact initiated with a carbon economy consisting of several increasingly interconnected carbon markets. In different parts of the world, these carbon markets have varying ways of trading—either in the form of carbon emission trading, including the practical experiences of the Kyoto Protocol's emissions trading provisions, the European Union Emission Trading System (EU ETS), and other systems implemented in a short time (e.g., the Korean ETS and the India pilot carbon trading scheme) and similar efforts in the planning stage—or in the form of carbon offset trading, most notably through the Clean Development Mechanism (CDM) created by the Kyoto Protocol. It is worth mentioning that the carbon market in this thesis mainly denotes the emission trading system, and the CDM is more in the domain of international trade relations than in the domain of the national accounts, with a working mechanism where foreign investment in China's clean projects plays an essential role in the total operation. Another reason for removing CDM from the discussion is that, to date, CDM for China's market participants is still distrusted with a considerable level of uncertainty, and it has been "locked out" in recent years. In this case, this research excludes the exploration of CDM but instead takes the emission trading system as the subject for analysis, and the data presented in the following chapter do not include the CDM. The following part of the section introduces the major cap-and-trade program in the US and EU respectively. Reviewing the practices in the

developed economies offers valuable context for latter evaluating Chinese case.

1.2.1 Tradable Permits Programs in the US

In the early 1970s, the US Environmental Protection Agency (EPA) and the state operated the Clean Air Act's programs. As an important part of the program, an emission trading system was developed aiming to mitigate the pollution stress through the control of CO_2, SO_2, and NOx. Firms in the states were strongly incentive to meet emission cutting standards by being rewarded the "credits" usable against higher emissions elsewhere. The programs were carried out in six regions in the United States including California, Colorado, Georgia, Illinois, Louisiana, and New York, and each site has its own features. For example, in California, stationary resources reduced their compliance costs by the offset from an over-compliance product to the one with excess emission; credits generated in Colorado have been through reducing the scale of production or turning to cleaner materials since 1996; Georgia induced the banking and trading of the credits for vehicles that over-comply as regulated; Programs in Illinois focused on vehicles, and credits are earned via scrapping them; New York instituted the New York's New Source Review Offset Program, encouraging all kinds of emission cutting. The state-level emission credit programs represent the initial attempt of emission trading and achieves the first official recognition of the economic feasibility of applying the market-based mechanisms in the United States, regardless of the unsatisfied performance as expected (Miao 2013).

Later in the early 1990s, it was the SO_2 cap-and-trade program as the most important implication ever that represents the US's great and remarkable effort on fighting with the airborne pollution via a market-oriented tool. This system was carried out under the authority of Title IV of the 1990 Clean Air Act Amendments, namely the Acid Rain Program, aiming to regulate the emission of SO_2 and nitrogen oxide with a reduction of 10 million tons and 2 million tons respectively from the base-year 1980. This program achieved certain success in terms of environmental and economic aspects with a well-design model capable of wider application to GHG emission (Burtraw et al 2005; Miao 2013). Under the program, rather than the credits, homogenous tradable allowances were assigned to obtain a nation cap. One notable feature of this cap-and-trade program is the banking provision. Firms are provided with significant freedom and flexibility by the bank to reserve the surplus of allowances for future use. The uncertainties and risks

such as the price market volatility of the market thus can be weakened (Ellerman et al, 2003). Despite the trade amount was not as satisfied as expected, this cap-and-trade program brings huge welfare benefits to both the industries and the states (Burtraw et al., 1998).

1.2.2 Tradable Permits Programs in the EU

EU ETS, a grand experimentation among the emission cutting history, brings out the most prominent effort for the policy process of the market-based instruments in other regions. This program was launched on the 1st of January 2005 and then strengthened its stringency and potential effectiveness by introducing a series of new climate and energy policies (Zapfel &Vainio 2002; Skjærseth 2010).

The EU ETS is equipped with several innovative features, regardless of the sever challenges they brought in turn. Firstly, compared to previous permits trading program, EU ETS enlarges the slope of regulations to a broader set of industrial sectors, acquiring a stronger and more complicated process for reporting, monitoring and verification. Secondly, due to the constant delay in submitting national allocation plans of many member states, the allocation progress was difficult to be in practice where the initial allocation is free of charge. Thirdly, ensuring the sovereignty and considering various verification ability among each member state, there was no identical guidelines for verification, and an independent third-party verification is allowed. Fourthly, banking provision is forbidden to accumulate the achievement of target in the first Kyoto compliance. So far, the EU ETS is the most mature carbon market in the environmental, economic and social factors (Zhang et al, 2019).

The US and EU lessons indicate that the exploration of this market-based instrument is moving forward and has been empirically proven environmentally and economically effective if it is well-designed and implemented. Understanding the performance of the tradable permit programs in the world's other regions is of great significance for understanding the market design and operation of China's ETS in the later section.

1.3Carbon Market: A Panacea for the Environment Dilemma?

The carbon market itself has amplified the heated academic debate concerning

efficiency, legitimacy and justice grounds. Criticism of the efficiency of this approach is mostly tied to the preconditions of this market-based instrument in terms of the complete-information assumption and agents' rationality and the belief that the market is immune to the price distortions. Dominant among those criticisms are studies of the EU ETS (Cass, 2005; Skjærseth & Wettestad, 2010; Voß, 2007). Empirical evidence has shown that the EU ETS has been experiencing an erratic price path (see Figure 1.3). McAllister (2009) argued that the unstable carbon price might be due to the overallocation of permits, the excessive generation of sustainable international credits, the permission for banking, and misleading incentives, which are a consequence of design flaws. Moreover, carbon offset schemes are regarded as an opportunist tactic for those interest-related agents that can benefit from a lower environmental cost compared to directly cutting the emissions at their source (Dale, 2008). Lohmann (2009) expressed doubt about the effectiveness of carbon emission removal and accentuated that the implementation of a carbon offset market, in fact, has caused an increase in fossil fuel emissions and further engendered the environmental crisis.

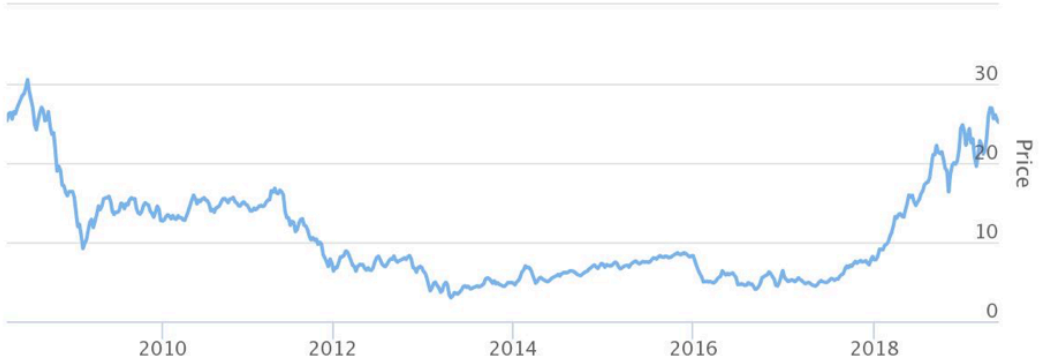

Fig.1. 3The allowance price of the EU ETS from 2007-2019.

Source from: https://sandbag.org.uk/carbon-price-viewer/

Apart from the criticism of its actual ability to reduce carbon emissions, this market-based policy attempt has been challenged by its slant towards mitigating climate change pressure through marketisation, especially in terms of its legitimacy. Wright and Nyberg (2015) identified the dual status of carbon as both a pre-existing condition for production and a commodity underlying 'capitalism's creative self-destruction'. The carbon market is designed to resolve the 'capital-climate contradiction', according to Gunderson et al. (2018), meaning that capital accumulation is prioritised at the expense of the ecosystem and will in return ultimately bring devastating effects to the environment. However, Stuart et al. (2019) argued that the carbon market is charged

with eliminating climate change pressure by stimulating the commodification of natural resources rather than diminution. The central objection of the commodification argument rests on the granting of rights to damage the environment instead of reflecting the rights of ownership (Aldred, 2012). As such, the carbon market appears to be a process of commodification and has been explicitly geared towards capital expansion. Newell and Paterson (2010) demonstrated that the emergence of a market on carbon is a new regime of capitalism, namely, climate capitalism, the purpose of which is to decarbonise and green the development trajectory while not destroying the existing economic system. They further explained that the Clean Development Mechanism (CDM) under the Kyoto Protocol can be seen as a green gloss, providing "feasibility" for industrialized or developed countries to meet their commitments.

Even though the emergence of the carbon economy was followed by an abundance of critics of its core idea of "commodifying nature", a carbon economy's importance should not be understated politically as these market-based solutions seemly provide the most acceptable solutions by binding the prevailing neo-liberal ideology and the preference of influential capital factions in advanced economies. The market-oriented solutions are also supported by many developing countries as they offer channels for resource transfer from the global North to the South through offset programs. In other words, the carbon economy promised to relieve the political resistance to environmental protection by creating new opportunities of capital accumulation and breaking through the boundaries of spaces of carbon governance, linking local areas to a global scale. Carbon markets provide political cover for a coalition of political forces, serve certain interest groups, some of whom are the direct beneficiaries from the market, and enable a cycle of investment and growth (Paterson, 2010; 2012). Bryant (2016) echoed this argument, suggesting that political elites treat the carbon market as a defensive manoeuvre with the purpose of keeping their salary unchanged and seeking additional benefits. In addition, the empirical operation of the EU ETS, in some ways, reveals the unexpected complex reality with entanglement among the interested parties, the intricate state–market relations and substantial transaction costs during the phases of policymaking and implementation (Spash, 2010).

The carbon market is often portrayed as a prime example of new environmental policy instruments but is not limited to that. As Stephan and Paterson (2012) stated:

> Such markets have taken on a life of their own and have themselves become a

> dominant response to climate change… so treating them (carbon markets) as part of a basket of 'new environmental policy instruments' limits our attention to the details of their political dynamics. (p.547)

The carbon market is distinct from other goods markets as a product of the state. Creating a carbon market, putting a price tag on public resources, rests heavily on regulatory foundations, direct state sponsorship, or implicit support (Duit et al., 2016). There is considerable research within the field on which the focus on the role of the state on this market-based instrument can draw.

1.4 Carbon Emission Trading: A Policy Experimentation with A Judicious Blend of State and Market

This thesis investigated China's carbon governance in its policy process of constructing a carbon market. The explorations of China's carbon governance in this thesis go beyond explaining the banal existence of such a novel market that puts a price tag on carbon and extend to the potential new governance pattern revealed by this unparalleled market-based experimentation. The terminology of policy experimentation, suggested by Lo and Broto (2019, p.2), has been a 'durable and institutionalised governance mechanism' in China that can be dated back to the revolutionary experience of the Chinese Cimmunist Party, and continues to be adopted by present-day policy makers (Heilmann 2008a; Heilmann, 2018; Mei & Liu 2014). As Heilmann (2008a, p. 2) describes, policy experimentation involves a 'policy process that is initiated from individual "experimental points" (shidian) and driven by local initiative with the formal or informal backing of higher- level policymakers.' During the policy process, the central state allows room for the local officials to develop novel problem-solving techniques and then emerge the local lessons into the national policy formulation. This process of expansion necessitates gradual policy improvement and results in a search for broadly applicable policy answers. The sophisticated indigenous methodology of 'experimental points' and 'proceeding from point to surface' contains synergy between the top-down and bottom-up fashion of governance (Heilmann, 2008b). Accordingly, the policy experimentation entails a 'mode of governance' (Heilmann, 2008b, p.3) that is distinct from the standard top-down process of policymaking but involves policy attempts innovated in particular spheres and then replicated on a massive scale. The formulation China's carbon market thus can be regarded as a policy experimentation—

a process that is initiated with several local policy experimentation pilots and further forms a nationwide market.

Creating and sustaining a carbon market encompasses a series of political, social and economic agents. The trading subject includes government, enterprises, investment institutions, social organization, and individuals. These groups of actors with various interest generally are cemented and bound by the regulations and institutional settings that underpin the functioning of such a human-invented market. The interventions introduced by the state to catalyse the policy process of the carbon market is often essential to kick start the market. Such a blend of the state and the market is acknowledged widely by market participators. Abyd Karmali, Managing Director, Global Head of Carbon Markets, Merrill Lynch (ClimateChangeCorp 2009) argued the following:

> Those who assume that the carbon market is purely a private market miss the point that the entire market is a creation of government policy. Moreover, it is important to realise that, to flourish, carbon markets need a strong regulator and approach to governance. This means, for example, that the emission reduction targets must be ratcheted down over time, rules about eligibility of carbon credits must be clear, etc. Also, carbon markets need to work in concert with other policies and measures since not even the most ardent market proponents are under any illusion that markets will solve the problem.

This argument proposes explicitly that the state plays a meaningful role in the preliminary facilitation of a carbon market, as the general tendency to resist change may impede the adoption of any new innovations, and the carbon market nevertheless is not automatically or easily diffused. Carbon governance, in this case, refers to both state and nonstate rules and institutions that are developed by a series of actors in an attempt to internalise carbon emissions to economic behaviours. The specific definition of governance suggested by Engels et al. (2015) is not ‘regulation without government’ but, instead, ‘the specific combinations of various (state and non-state) sources of power and enforcement' (Engels et al., 2015, p.151). This perspective can be seen as a complement to Kooiman’s (1993) account of governance:

> No single actor, public or private, has all knowledge and information required to solve complex, dynamic and diversified problems; no actor has sufficient

> overview to make the application of particular instruments effective; no single actor has sufficient action potential to dominate unilaterally in a particular governing model. (p.4)

Given these descriptions as premises, the carbon market can be clearly seen as a product of governance. The previous experience of carbon trading, the EU ETS, for example, reveals a possibly unprecedented plurality of governance form that combines each node of networking spanning a range of public, private and social agents. It also implies an attempt of the state to share its steering capacity with other actors in the market (Jordan et al., 2003). In regard to China, it is necessary to be aware that China's economic system is still in transition (Chu, 2010), undergoing a unique transition that combines a politically centralised regime with a decentralised, market-driven economy. The concern remains about whether the new carbon market governance requires or creates a particular new governance form to function properly in China's hierarchical state; or whether is it a sporadic experimentation only to "put new wine into old bottles" and serves as a tool to maintain the political status quo of the authoritarianism.

1.5Situating Carbon Market within China's Carbon Governance

This thesis aims to investigate China's carbon governance model for combating the climate change through a market-based instrument (MBI), the carbon market. MBIs, defined broadly, are policy attempts that 'affect estimates of costs of alternative actions open to economic agents' (OECD, 1998, p.17). They can be seen as 'regulations that encourage behaviour through market signals rather than through explicit directives regarding pollution control levels or methods' (Stavins, 2003, p.1). In previous decades, China's environmental regulations were dominated by technology-based standards and performance standards. However, the capability of such voluntary agreements in carbon emission control seems to be contentious. Mol (2009) argued eloquently that such innovations in environmental management fail to lead to an absolute reduction in pollution emissions but a significant decrease in GHG emissions relative to GDP growth. IEA's data on China's carbon emissions echoes Mol's critiques of the real effect of those soft instruments. Figure 1.4 shows that parallel to the reduction in CO_2 emissions per GDP, the absolute CO_2 emissions increased fourfold between 1990 and 2016. Moreover, soft mechanisms such as state-imposed command-and-control instruments have done little to curb GHG emissions and are widely criticised as unduly costly forms

for both society and the state (Ackerman & Stewart, 1988; Cole,2015). Similar to the MBIs in OECD countries that reveal a convergence of emission charges and tradable permits (OECD, 1998), developing countries have also followed the trend of 'putting a price tag on natural resources' in general (Panayotou, 1998; Worldbank, 1996). China, in particular, has gradually embraced market-oriented tools in its environmental protection portfolio since then, and more local experiments have been conducted within a broad range of industries and regions. The employment of market processes is not necessarily considered as opposing China's state ideology of 'socialism with Chinese characteristics' but, rather, as a pragmatic approach that welcomes all possible methods that benefit the achievement of policy goals.

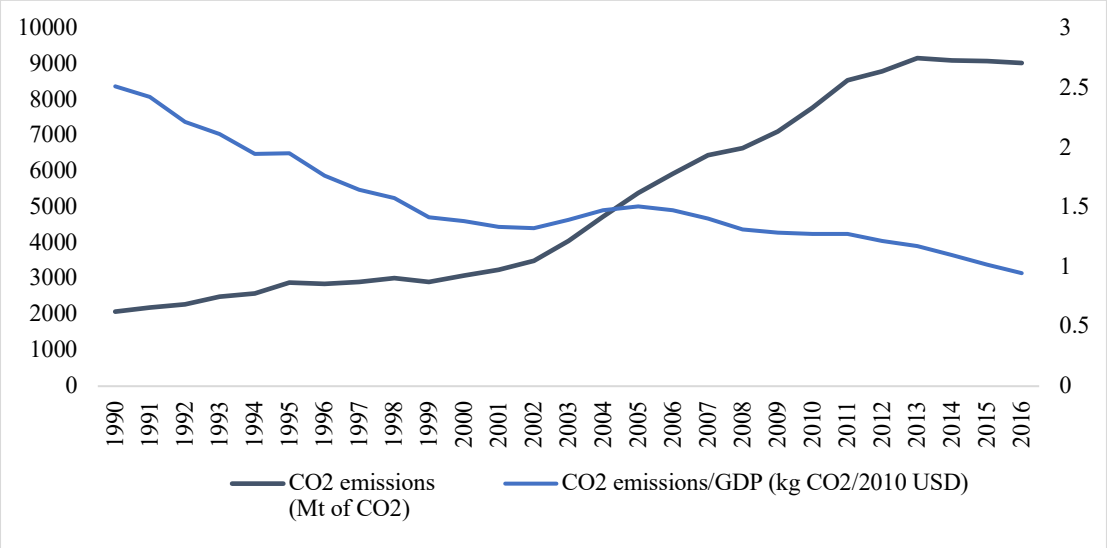

Fig.1. 4 China's CO_2 emissions and CO_2 emissions/GDP from 1990-2016

Source: IEA webpage: https://www.iea.org/countries/China/

In November 2011, the NDRC of China's State Council issued the Notice on The Implementation of Carbon Emission Trading Pilot Projects (Guanyu kaizhan tanpaifangquan jiaoyi shidian gongzuo de tongzhi, 关于开展碳排放权交易试点工作的通知), announcing the plan to carry out Chinese regional carbon emission trading pilot schemes in two provinces and six cities, ranging from coastal to inland areas, including Guangdong, Shenzhen, Beijing, Shanghai, Chongqing, Tianjin, Fujian and Hubei (Du et al., 2022). This announcement marked the start of China's market-based emission reduction efforts. The central authority in China revealed an eagerness to extend the conventional toolbox of climate change adaptation, as well as its strong determination to accelerate the transition of the existing economic development model and upgrade the industrial structure. These pilot regions and cities have a total

population of 260 million, consume 830 million tons of standard coal each year on average, and have a combined GDP of 14 trillion yuan, values that account for 19%, 27% and 23%, respectively, of China's overall values. In addition, these regions and cities capture considerable local diversities in terms of economic condition, energy consumption structure and greenhouse gas emission levels. The intent of incorporating the selected pilot areas that represent a spectrum of regions with local variability is to generate practical experience to form the foundation of decision-making by the central state in its further development of a national-scale market (Engels et al., 2015). Figure 1.5 and Figure 1.6 both demonstrate that there has been a large gap in the volume and value traded in each pilot. The significant variation of the policy outcomes in each regional ETS market may result from the different cultural backgrounds, resource consumption, industrial structure, and economic development of these regions. It may be attributed to that when implementing this policy experimentation, the central authorities delegate local regulators with a high degree of autonomy to tailor the emission trading pilots to unique local contexts, for instance, the scope of industries, the allocation of allowances, and the monitoring, reporting and verification (MRV) process (Chen et al., 2017), with the intention of accumulating local experience and later transforming it into full scale operational programs.

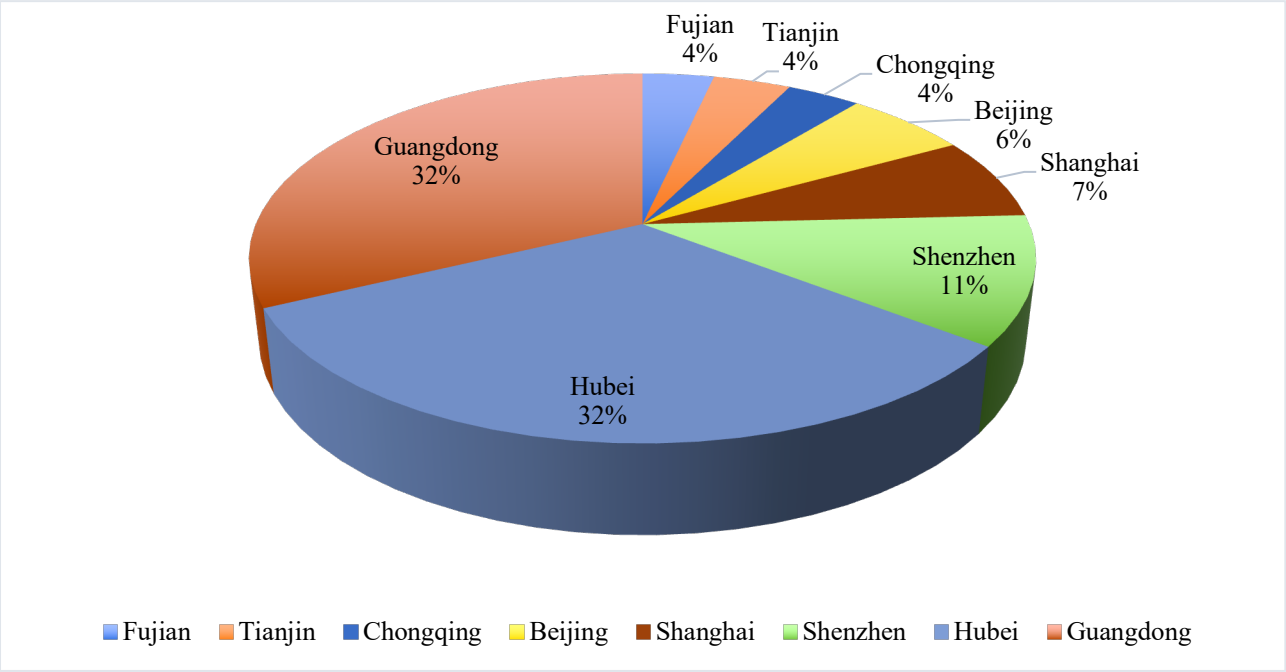

Fig.1. 5 Share of total trade volume as of June 2022 (unit: 10,000 tons)

Source: www.tanpaifang.com

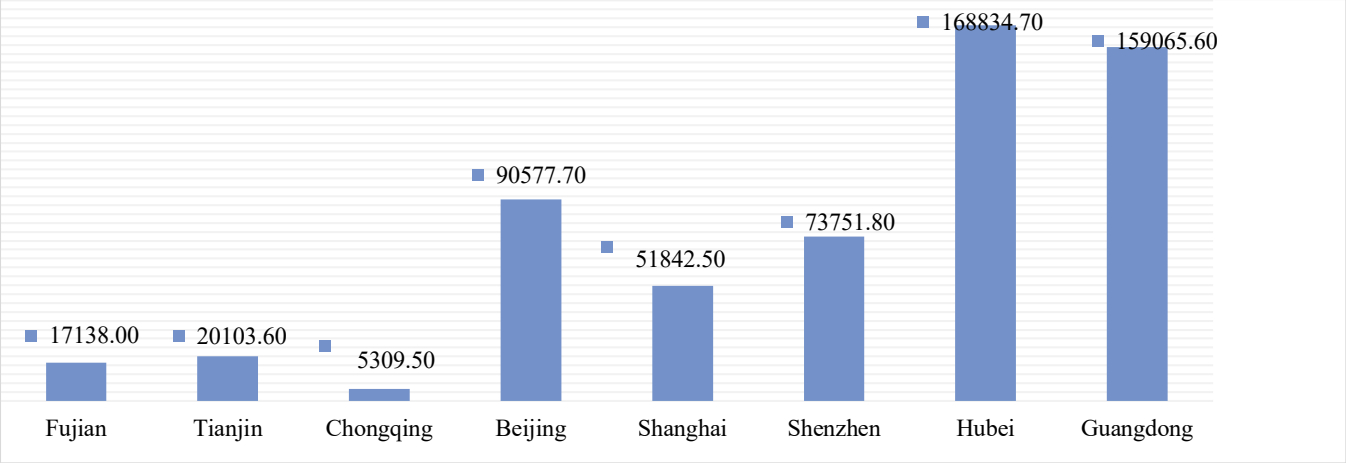

Fig.1. 6 The total trade value as of June 2022 (unit: 10,000 yuan)

Source: www.tanpaifang.com

China's national carbon market started with the promulgation of a series of policy documents. In January 2016, the NDRC issued the Notice on Effectively Undertake the Key Work of Starting the National Carbon Emission Trading Market (Guanyu qieshi zuohao quanguotanpaifang jiaoyi shichang qidong zhongdian gongzuo de tongzhi, 关于切实做好全国碳排放权交易市场启动重点工作的通知), and organised all relevant administrations, industry associations and enterprises managed to carry out the preliminary preparations, including the accounting and verification of the historical carbon emission of enterprises to be covered in the carbon market, and cultivation and selection of third-party verification institutions, and capacity building of interest parties. In late 2017, with the issue of the Program for the Establishment of a National Carbon Emissions Trading Market (Power Generation Industry) (Quanguo tanpaifang jiaoyi shichang jianshe fangan (fadian hangye), 全国碳排放权交易市场建设方案(发电行业) by the NDRC, China's carbon emission trading was officially launched. In line with the overall requirements for the construction of a national ecological civilisation and the control of greenhouse gas emissions, it was indicated in this policy document that China's carbon market should be constructed step by step but under the premise of without affecting the stable development of the economy. The objectives of different phases for national carbon market construction recorded in the policy document are summarised in the table below (Table 1.1).

Phase	**Main Objectives**
Phase1: Basic Infrastructure Establishment	♦ Develop national data reporting system, registration system,

	and transaction system ♦ Carry out in-depth capacity building and improve the ability to participate in trading various products ♦ Build a unified carbon market management system
Phase2: Stimulated Operation	♦ Undertake mock trading of allocation in the power generation industry to examine the effectiveness and reliability of each link ♦ Strengthen market risk prevention and control mechanisms ♦ Upgrade the carbon market management and supporting system
Phase 3: Improvement	♦ Carry out quota trading among trading entities in the power generation industry ♦ Expand the market to cover other sectors, trading products and trading types ♦ Integrate nationally certified voluntary emissions reductions into the national carbon market

Table 1.1. Stages for the construction of China's national carbon market
Summarised by Sandalow et al. (2022) and the author.

It can be instructive to introduce the interest parties involved in the trading so that the following discussions on the institutional configurations and the non-state actors' participation can be clearer. There is a series of stakeholders in the national carbon market. Figure 1.7 shows the key agencies involved, including environmental authorities, enterprises, trading institutions and regulatory institutions, and they are playing a different role during the operational process of carbon emission trading.

Enterprises should first register in Shanghai Environment and Energy Exchange, and then submit the monitoring and emission report to the third-party MRV institutions to monitor, report and verify the carbon emission. The local environment bureau is in charge of pre-allocating the quotas to the firms, approving and ratifying the quota, and determining the clearing quota. After that, trading can be taken place in the trading institutions, and settle in the registration system, followed by a final stage of supervision by the local environmental officials.

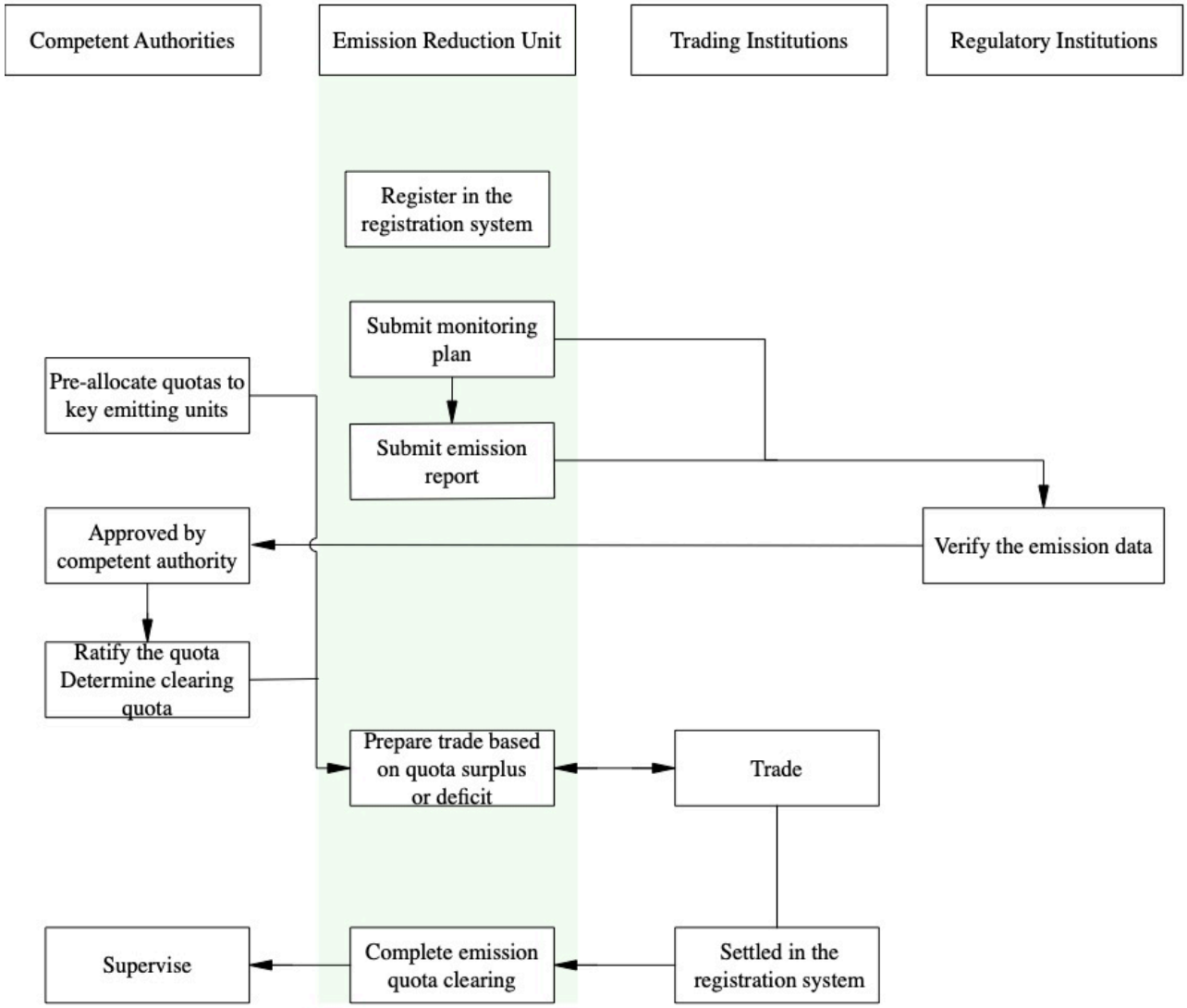

Figure 1.7 The operational process of China's carbon market

Although it is uncertain whether the carbon market will serve as a cornerstone of the country's climate change policy framework, it still can be seen as a component of broader developments in contemporary environmental politics. The carbon market can be regarded as a manifestation of ecological modernisation in policymaking (Jordan et al., 2003) that aims to overcome the old antagonism between economic development and ecological degradation by practising the "polluter pays" principle on the ground. In the context of China, decisions on carbon neutrality more or less imply major social and economic trade-offs for industries that heavily rely on fossil fuels and electricity generation, for example, and policy attempts directed towards carbon reduction often pitch them against those calling for limits on use. The forms of governance that have developed for the carbon market seem to be built on these social and economic disputes.

However, the politics of the carbon market in China are under-researched and will continue to be a hot spot in the sphere of environmental governance. To date, a body of literature explores the policy implementation of the emissions trading system in the context of China's domestic industries. The studies have been concentrated largely in the areas of theoretical analysis involving various econometric models for measuring the carbon market (Cong & Lo 2017; Liu & Wang, 2014; Wang & Yan, 2022), assessment of specific pilot designs (Duan et al., 2018; Tang et al., 2017; Zhu et al., 2016), carbon market financing analysis (Li et al., 2021; Hu et al., 2017; Zhu et al., 2021), or emission control enterprises participating in pilot projects (Gao & Wang, 2018 Liu & Fan, 2018; Shen, 2015; Yang et al., 2016). Some others (e.g., Lo 2013; Miao, 2013; Zhang et al., 2014) question whether China is prepared to integrate this market-based policy experimentation of carbon governance into its authoritarian and fragmented governance model. Li et al. (2019) simulated linkages between China's carbon market and the EU ETS and further investigated the role of linking in achieving climate change goals. Most of the previously mentioned literature embarked either on a cost–benefit analysis to examine the energy conservation or emission reduction effects or sought solid answers on how a national-scale carbon market can be better designed with maximised market efficiency and emission reduction. For example, Gu et al. (2022) provided an in-depth examination of China's effectiveness in reducing emissions by adopting a combination of difference-in-differences and trajectory balancing methods and identified a significant level of divergence in the emission reduction effect level at each pilot. Munnings et al. (2016) drew on an extensive range of sources to assess three carbon trading pilots in China and highlighted the cases where pilot regulators have skilfully customised carbon emissions trading to China's particular setting as well as

instances where designs are insufficient to ensure efficient operation. However, the policy outcomes of the carbon market cannot explicitly reflect the policy process. Few carbon market studies investigate the policy process that encompasses the institutional configurations among the state itself from different levels of hierarchy in this policy attempt and the complex interactions among the state and market agents. In addition, few studies have linked China's carbon market with policy experimentation governance. The carbon market is seen not only as a vital part of China's climate change mitigation strategy portfolio and an alternative means to achieve carbon neutrality (Hao &Yang, 2022; Yu et al., 2022), but also as revealing the actual practice of discourses in environmental politics that extend from a Western industrialised state to China's context (Chen & Wu, 2022). Therefore, throughout the thesis, I will make an effort to understand how the Chinese government is responding to the environmental catastrophe by experimenting with market-based policies. What lies behind this thesis is the exploration of a new carbon governance mode that may emerge in such a process of 'commodifying the nature', as well as a possibly compatible alternative for the economy and the environment.

2 Research Aim, Objectives, and Questions

The aim of this thesis is to explore the issues arising regarding the extent to which China's state can harbour political authority and steer state capacity to respond to ecological degradation and to further capture the transition towards a green state via market-based instruments. Instead of theoretical conceptual abstraction in pursuit of a conclusion, this research firstly offers empirical evidence on the possible decoupling of environmental protection and economic development in practice in China's carbon market governance. Secondly, it identifies the role of the Chinese state in this market-based policy instrument, the carbon market, and seeks to understand the ways in which the discourse of the green state is introduced by policy elites into China's carbon market governance. It further explores the institutional configurations and organisational interactions in China's green trajectory for facilitating the emergence of a carbon market. Through the analytical lens of the principal–agent approach, a third research question addresses certain central-local relations and state–market interactions in this novel market-oriented policy experimentation. Adopting this perspective allows a relatively panoramic picture of China's local governance structure of the carbon market to be clearly revealed. Moreover, this research also tries to identify the potentialities of China's position of embracing a liberal form of policy experimentation in carbon

politics and of forming a new carbon governance model with new governance patterns. For this reason, built on empirical materials from two selected cases, and combined with a discourse of green state channels and the principal–agent approach, I discuss this new model in the last chapter of this research. Figure 1.8 shows the two theoretical tools that this research applies for the macro- and microlevels of investigations. The key research question is as follows:

How and to what extent can China's state manage its climate change adaptation through the construction of a carbon market?

There are four subquestions underlying the key inquiry:

1. To what extent, are environmental protection and economic development compatible within China's carbon market governance structure?
2. What is the role of the state in China's carbon market?
3. What is the governance model of the carbon market at the local level?
4. Can we see a form of carbon market governance indicating a new pattern of political behaviour in a market-oriented policy experimentation emerging in China's context where state intervention dominates?

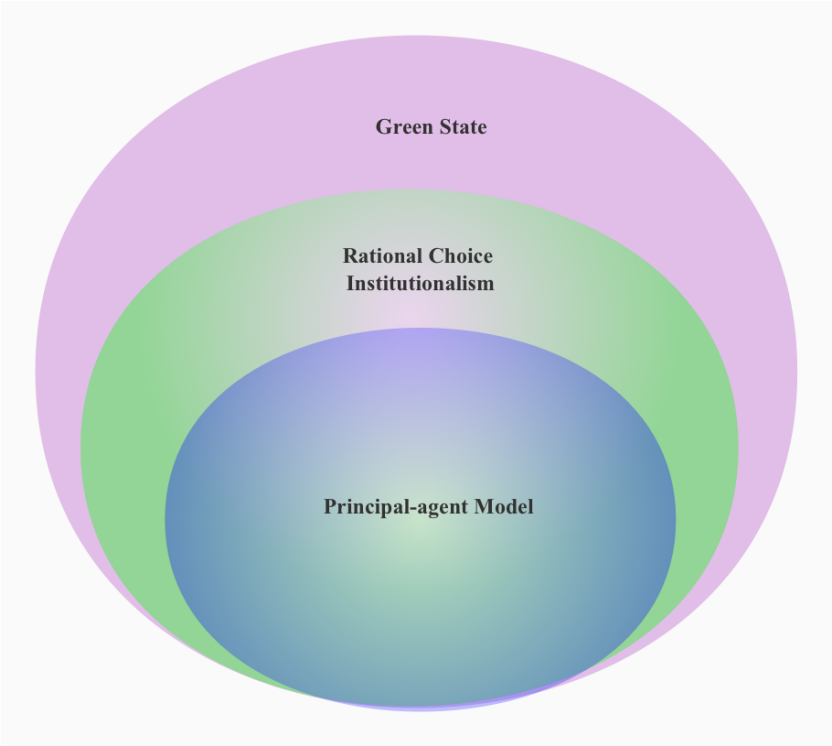

Fig.1. 8 Theoretical framework

3. Research Methods and Procedures of the Study

3.1 A Case Study Approach

This research uses Beijing City and Jiangsu Province as two independent cases for undertaking fieldwork. Given the complex local governance varieties, a relatively comprehensive way to inquire about China's carbon governance model through a market-based instrument may require the researcher to include as many sites as possible. A comparative analysis and mutual verification in different regions and at different stages of the carbon market work better to enhance the reliability and widespread use of conclusions in qualitative research. However, it is also necessary to narrow the research focus to a manageable selection of sites for investigation. Beijing and Jiangsu are not randomly selected; rather, there are important justifications for a thorough explorations of these cases.

Beijing City and Jiangsu Province are considered relatively autonomous in economic development. They have undertaken two different regional strategies respectively: The Coordinated Development of Beijing, Tianjin, and Hebei Strategy and the Yangtze River Economic Belt Development Strategy. The two sites have great disparity in terms of economic terms—GDP, city size—in the measure of population, and the quality of human life, e.g., disposable income per capita. Beijing is the capital city and is the centre of politics and culture. Compared to Beijing, Jiangsu exhibits certain patterns of capitalism whose economic development relies greatly on the private economy and undertakes a relatively higher degree of marketisation. Taking advantage of its location, the estuary of the Yangtze River, Jiangsu attracts foreign investments and stimulates international trade.

For the carbon market, Beijing has experienced a period an initial trial and is now emerging into a national carbon market, while Jiangsu is still in its preliminary stages in this abundance of novel policy attempts. Although the two cases manifest subtle nuances, or even contradictory features, in terms of the local institutional and regulatory arrangements and the specific operational mechanisms (e.g., the sectorial coverage and the monitoring, reporting and validation process, etc.), this thesis does not aim to undertake a comparative approach; instead, by addressing the local diversities of Beijing and Jiangsu, it unfolds the complexity of China's carbon governance and increases the

understanding of how a certain convergence of carbon governance structure is demonstrated at the local level during the policy implementation process.

Meanwhile, undertaking a deeper look at the governance patterns of China' carbon market, it is necessary to claim that the two case studies (Beijing City and Jiangsu Province) are both built on the same premises: institutions and politics take on a more significant role in the whole policy cycles of the construction of a carbon market than other command-and-control environmental tools that are commonly depicted by the previous literature (e.g., Nai et al., 2017; Yang et al., 2022; Zhou et al., 2022). Also, categorised from the perspective of the administrative unit, Beijing City and Jiangsu Province are both provincial-level units, even though they are titled differently. Beijing City is a municipality directly under the control of the central government, which is at the same administrative level as Jiangsu. In comparison, the explorations of the institutional configurations and the organisational interactions among a series of actor constellations in Jiangsu Province on the policy implementation of the carbon market may be of significant difference from Beijing and could indicate more local diversities as the deployment of Jiangsu's carbon market encompasses more levels of hierarchy vertically. Through the interactive relationships from the central state to each stage of the vertical administrative hierarchy, the role of the state in the creation and construction of the carbon market can also be revealed. Delving deeply into the policy logic can be an excellent showcase of why the popular rhetoric that "state intervention constrains the carbon market" is correct but also incomplete.

3.2 Interviews

Methodological trends in political science, particularly behaviouralism and, more recently, rational choice, stress the goal of generalisation of political phenomena, and the generalisation of objective "facts" is generally associated with a focus on the structure over the agent. However, in this research, to answer the research question concerning the state's response to environmental degradation via a carbon market that involves an inquiry into central–local and state–market relations, it is essential to include both state and nonstate agencies, such as state officials and market participants, in the discussion; otherwise, this study cannot distinguish the investigated cities from other Chinese studies in probing local environmental governance practices. Interviews, in this case, can build the appropriate context to reveal the situational factors explaining

a political case or behaviour (Rathbun, 2008). However, this form of research instrument is itself under attack from a range of quarters. Some textbooks in political science have pointed out the disadvantages of using interviews as a dominant methodological instrument. Interviews are often criticised for their inherent emphasis on complexity and are "stigmatised" by their detriment of objectivity, parsimony, and generalisability. Despite the flaws of this approach, these disadvantages rarely outweigh the usefulness of interviews. For instance, Silverman (2004) suggested in his book, *Qualitative Research: Theory, Method and Practice,* that interviews, compared with surveys or questionnaires, are more likely to result in an extensive and wide-ranging discussion. Interviewing is often the best tool to 'target questions directly to actual participants and push them for responses in a way that archival or other qualitative research never allows' (Rathbun, 2008, p.700). In the study of a particular policy phenomenon, interviewing elites can serve as an optimal method to gain insights about decision-makers and the decision-making process (Burnham et al., 2008). It is appropriate to claim at the outset that the respondents in this research are qualified as experts either in the professional field of China's carbon market or in China's environmental governance.

The qualitative analysis in this research is mostly based on semistructured interviews with a total of 36 professionals[3], including 5 senior policymakers, 2 experts from environmental and energy exchanges, 7 researchers in think tanks, 5 executives of third-party regulatory agencies, 7 leaders of NGOs and industrial associations, 10 business practitioners of firms within the covered sectors, experts in carbon consulting firms, and academic scholars. In the design of research methods, many researchers believe that "developing" and "showing" examples that are "representative", "typical" and "important" is particularly valuable and is also a common challenge in identifying a suitable case for deep exploration. In a pragmatic sense, it is probably true to say that the selection of interlocutor functions as the linchpin in conducting interviews with elites and then, to some extent, determines the quality of the research. These "qualified" respondents build the foundation for the further processing and analysis of the data.

Semistructured interviews are ideal for this thesis. Even though elite studies can also be conducted using a standardised questionnaire (Presthus, 1973), semistrucutured interviews can strike a balance between the freedom to ask all respondents the same

[3] For detailed information, see the appendix.

questions and the avoidance of survey-style leading questions that may influence the identification of related actors (Galletta, 2013; Wengraf, 2001). Semistructured interviews, as opposed to open-ended interviews or close-ended surveys, offer unlimited explorations of the interviewees' perspectives towards certain questions and generally emphasise the "context over generalisation, induction over deduction, and complexity over parsimony" (Rathbun, 2008, p.686). Questionnaires focus on the key questions on the experiences of political and economic actors in participating in China's carbon market; the regulatory performance of central and local governments; the patterns of interactions between governments and nongovernmental agencies in the market; and the identification of corporations and conflicts at each level of governance. The majority of the interviews were conducted face-to-face for an average duration of 30 minutes, with eight respondents interviewed over the phone. Tape recorders recorded all the conservations with the permission of the respondents. The researcher gave exhaustive explanations of the research itself with an emphasis on its academic purpose and, more importantly, left both individuals and their institutions anonymous, although interviews were occasionally difficult, as interviewees may have feared the exposure of their identities. This approach was advantageous by offering the experts the opportunities to speak freely without fear of repercussions, eliminating the risk to their job/political position, and simultaneously ensuring the reliability of interview data. Given a relatively small sample size, the causal relations among each individual are difficult to statistically test, but this sample size is effective in reflecting unobservable relations and can be described in detail accurately, which can be regarded as methodologically consistent with the scientific realistic ontology.

Snowball sampling is used to gain access to a network of informants, as Chinese elites possess dense territorial networks and close interpersonal relations. The first-round fieldwork was conducted between August and September 2019, a second round was conducted from March to August 2021, and a third round was conducted in February 2022. The original research plan was interrupted for half a year due to the worldwide COVID-19 pandemic. However, the personal connections with the potential interviewees were not reduced. This point is necessary for my later transcription of interview data and thesis writing for the clarification of the respondents' ideas. I specifically asked this question at the end of each interview, 'Could you please recommend another three more interviewees? Who are some of the key individuals/organisations in the field of China's carbon market?' Interviews were conducted in city rounds to allow for follow-up with the possible contacts. In addition,

I participated in a conference[4] held by the China Energy Conservation Association on the development of China's carbon market that included presentations by the vice-chairman of the Standing Committee of the National People's Congress, director of the Ecological Planning Institute of the Ministry of Ecology and Environment (MEE), director of the National Climate Change Committee, and academicians of the Chinese Academy of Engineering, and all participants were alliance members of carbon emissions trading China energy conservation associations. I presented my research objectives and preliminary findings to a group of experts specialising in varying aspects of the carbon market. This presentation allowed for the debate and feedback from intellectuals and industry practitioners, providing new angles of analysis for research and, more importantly, building new networking for my data collection.

The carbon market is regarded as a metaphor for ecological modernisation at large(Rudolph & Aydos, 2021). In other words, the public understands the manifestation of this novel environmental discourse through the examples of certain emblems. Ecological modernisation acknowledges new actors, particularly environmental organisations, and local residents. Hence, another way that ecological modernization manifests itself is through the opening up of current policymaking processes and the development of new participatory processes (Hajer,1997, p.16). To categorise the interviewees in this research, the two main dimensions are government officials and nongovernmental agents.

For governmental officials, this thesis focuses abstractly on state- and local-level bureaucracy. The term "Central State" generally refers to the central state mainly refers to the State Council and its over ten ministries, the Party's Politburo Standing Committee, and the National People's Congress at the central level[5]. The National People's Congress and the State Council are tasked with turning the abstract political concepts and discourses produced by Party's Politburo Standing Committee into

[4]The Third China Carbon Trading Market Development Forum was held in Beijing, May 2021.

[5]These organisations are closely intertwined and highly overlapping in personnel, making it difficult to strictly distinguish them when analysing China's environmental governance. At the local level, the main leaders of local Party committees and officials at all levels are responsible for environmental protection in their respective administrative areas and assume overall responsibility for the quality of nature. China's carbon market as one of the local policy experimentations, in practice, relies on local governments, and the local party secretaries (Difang dangwei shuji, 地方党委书记) are essentially local officials whose power cannot go beyond their territorial jurisdiction. Meanwhile, the structural and agency problems that may influence the division of authority between governments also affect the division of labour among political parties at all levels, for example, the issues of asymmetric information. In addition to that, local environmental affairs are propelled and implemented by governmental officials. Although each section is led by the Party committee, no permanent full-time local party committee is set to guide and manage daily environmental issues. In this case, when discussing China's carbon market governance, there is no clear line between the party and the government in this research.

concrete environmental laws and regulations (Ran, 2017). In this thesis, the central state mainly refers to the MEE affiliated with the State Council in particular Local officials are mainly those working in district governments, which may reside at the lowest level of the bureaucracy hierarchy. In some cases, local government can also refer to city-level government. It is necessary to point out here that the township and provincial levels of government are beyond the scope of what is noted as "local" in this study. The rationale for this exclusion is that there is a lack of formal environmental protection bureaus/departments in the towns or townships (except for certain environmental supervision teams). The environmental protection issues are mainly at the district/city level of management. More importantly, the carbon market as a new policy tool has not approached the lowest level of governance. For the provincial environmental protection bureaus, it is inevitable to involve them as the key actors for analysis, especially for studies on China's central-local relations in its governance structure.

Apart from the state officials, this research also involves agents from the economy and civil society in an attempt to offer empirical materials for laying out a major theoretical terrain on carbon politics for further exploration. In this thesis, the economic actors mainly refer to the enterprises regulated in the market either voluntarily or compulsively; civil society actors refer to the NGOs, industrial associations and citizen. I have selected the key respondents from the market players, the third-party regulatory institutions, and the industrial associations and NGOs. The same techniques used by the governmental officials were carried over to establish contact with the market participants, except for some minor modifications on the question orientation that shifted notably from the process of policymaking to deployment. Several of the respondents were introduced via study participants. Others were identified through online research into the industries, market entities, and regulatory institutions listed on the formal policy documents. I have sought to be as comprehensive as possible in my interviews given time and funding constraints. Overall, this process has rendered a reasonably comprehensive cross-section of policy, compliance parties, and monitoring agents.

3.3 Triangulations on Archives

It could be challenged as a less rigorous and unscientific research method if the piece of work is based entirely on an elite interview. In-depth interviews can help to explore the perceptions of local actors involved in China's carbon market and their "opinions" or "interpretation" of this local policy experimentation. The social fieldwork snapshots the

particular political and economic patterns at the time (Burnham, 2008). The changing process of the central–local dynamics reflected by the deployment of China's carbon market in this sense can only be partially clarified. As Hammersley and Atkinsion (1995) pointed out:

> One should not adopt a naively "optimistic" view that the aggregation of data from different sources will unproblematically add up to produce a more complete picture. (p.199)

Such an argument indicates a widely criticised account of undertaking qualitative analysis simply based on interview, a critique that is related to the reliability of data. In this case, triangulation of different sources can offer insights into various aspects of a certain phenomenon. In line with the principle of triangulation, which 'entails using more one method or source of data in the study of social phenomena' (Bryman, 2001, p.274), it is essential to adopt other techniques and sources. These can include but are not limited to archives, online documents or information online and observations made while attending legislative body sessions. (Burnham et al., 2008)

The present research is largely interpretive and, therefore, supplementary to the interviews with elites. Most of the analysis is based on policy documents on official webpages, which allowed the researcher to investigate the role of the state in the construction of China's carbon market. With the purpose of comprehending the dynamics of social, economic, and political transformation, any analysis should not lose sight of the role and capacity of local actors at various stages (Breslin, 2007). An in-depth reading of relevant literature is required on the locally tailored environmental policies and local agents' reactions to the central mandates. This literature ranges from environmental laws and regulations to studies that empirically investigate China's policy attempts at environmental governance. A great body of documentary research is reviewed and analysed, including, for example, central and locally tailored regulations, white/green papers, committee reports, and research reports.

3.4 Methodological Considerations: Doing Fieldwork in China

Based on the literature (e.g., Ran, 2015) and previous fieldwork experience, I summarised the following six factors that may influence the quality of interviews in China:

1. The social identity of the interviewer. The importance that the candidate for an interview attaches to the recruiter will change subtly in line with the social identity of the recruiter. In some cases, professors are more likely to be taken seriously, especially those with certain administrative positions and social influence. In contrast, some respondents (especially local officials) may sometimes "dismiss" inexperienced researchers, but they are also inclined to be "more open to the interviewer". In this case, it makes it more difficult for the recruiters for an interview to guard against phoney testimony by their interviewees.
2. The social identity of the interviewees. Local scholars, retired officials, officials of the CPPCC and People's Congress, and NGO managers are probably ideal interview subjects. They are not only better informed with sufficient professional experience but are also more willing to share their "real" thoughts. At the same time, it is vital for researchers to 'separate fact from opinion' (Rathbun, 2008, p.690) because many Chinese individuals, even those who work in a private enterprise, may be party members. Therefore, the researcher should also consider that the interviewees' political beliefs may affect their interpretations of certain questions.
3. Access to interviewer and interviewee. There are two kinds of channels for a researcher to enter the field of research: the first kind is the formal channels. For example, the research tasks assigned by superiors to subordinates and the cooperative projects between local governments and scientific research institutions (which are not involved in this thesis). The other kind is the informal channel established by a personal relationship network. The official and formal channels are more efficient for a researcher to enter the field of research. The interviewees are more serious about the arrangement of official channels; but they are also more restrained. Informal channels, created by personal networks, provide greater autonomy. However, there are also notable uncertainties during the investigation process, which may require more effort in independent research to approach the potential interviewees.
4. The format of the interview. I adopted two methods in this thesis: one-to-one interviews and informal interviews (the personal conversation, etc.). Although some interviewees find it easier to be candid in informal interviews, such as at a dinner table, the content and format of their statements are too casual to record or quote. Therefore, from my perspective, a better interview process could be initiated from a personal conversation to obtain preliminary contact and an initial understanding of the information and interviewees and then to have a targeted in-depth one-on-one

interview.

5. The timing of the interview. When a public event related to research occurs in a given place, researchers can visit the site and conduct interviews to obtain more detailed information. However, this is also the time that the interviewees (especially local officials) are most sensitive. Therefore, they are more inclined to refuse the interview invitation or choose to remain silent for the purpose of avoiding unexpected risks. At least two rounds of fieldwork are necessary to accommodate this possibility.
6. Local contact person. The interview data are obtained from interviews with policy elites, scholars, experts from NGOs and industrial associations, and the firm managers of those regulated industries in Beijing and Jiangsu. This will inevitably involve two main challenges: first, how to obtain access to the interviewees, and second, how to acquire adequate data for obtaining valid answers to the research questions and reach a desirable conclusion. Therefore, finding someone who is acquainted with local situations can help the interviewer enter the 'scene' more easily. This person can introduce the potential interviewees and help the interviewees build trust with the interviewer, which has a great impact on the quality of the field research. In addition to the rich local networks, local contacts' ability to mobilise social resources may also affect the quality of interviews. My fieldwork in Beijing and Jiangsu benefited greatly from the local contact's open vision, sincere support for this research, and his strong social resource capacity.

Two key challenges are encountered in conducting interviews with elites. For policy elites from the central or local authorities, basic information with respect to the name and position is available on the official webpage. However, for further contact details, it is the usual case that the secretariat responds to the researcher at the first stage, after which they refer the information superior after a thorough evaluation process. It is difficult to approach potential government officers who are responsible for environmental affairs by directly making phone calls or emailing. This process is extremely time-consuming and, to some extent, inefficient. This is partly because officers in high positions are busy dealing with numerous affairs and rarely have time to conduct an academic interview. More likely, the Chinese officials are reluctant to be interviewed by the researchers, and they are not accustomed to having personal opinions heard, especially to classify and illuminate the policy process. For local enterprises, it is a difficult task to approach managers, and they are also unwilling to disclose information on those interest-related questions. Given this first challenge, I made a list of respondents initiated by an experienced policymaker. Relying on his networking, I

was given the opportunity to approach the experts in the field of the carbon market, who have an average professional working experience of 10 years. In addition, I attended conferences and forums focusing on China's carbon trading development. Such occasions, on the one hand, have automatically filtered the potential interviewees because attendees were all preselected and, on the other hand, created face-to-face communication chances to introduce my research to the potential interviewees, increasing the possibility of conducting an interview later.

Another challenge concerning the data collection is that the discussion of the thesis is based on interview data with elites, where a local perspective is dominant because most of the interviewees are from the local level. It is difficult to reach the officials from China's central government directly. Their opinions and observations can only be implicitly inferred by other respondents, such as think tank experts. In this case, I used evidence from published records to approximate the central state "voice" on environmental governance. It may be challenged to what extent this approximation is satisfactory. The predominant majority of these documents/articles are policy relevant. Many of them are policy interpretations implicitly focused on China's environmental governance, written by the ministers of the MEE or the NDRC. I also addressed the second limitation through interviews with researchers from research institutions affiliated with the MEE and experts from think tanks who were directly involved in the policymaking pertaining to China's carbon market.

This research seeks to eliminate the limitation whereby the empirical observations are only faintly consistent with the theoretical concepts, which could lessen the effectiveness of the research because only those factors of particular interest are investigated. Through the qualitative exploration of the institutional configurations in China's carbon market, the analysis benefits from identifying both the convergences and local diversities across the cases relating to their ways of environmental governance. The different designs in the two cities can extend the understanding of local environmental governance and lead to still more general formulations of the carbon market policy process.

4. Overview of Chapters

This research investigates the interplay of theory, evidence and policy implications rooted in China's carbon governance, especially with regard to the domestic carbon

market. Chapter 2 reviews the key literatures in this field and illustrates the theoretical approaches for this research. The topic explored in this thesis is related to three strands of literature: China's carbon governance in general, the environmental authoritarianism, the green state, and the principal-agent approach under rational choice institutionalism. The chapter starts with the necessity of the state in environmental governance through a review of the existing contribution on the democratic-authoritarian dichotomy and environmental authoritarianism, followed by revisiting and synthesising the green state theories with various academic literature to understand the performance of the state in China's carbon politics to a broader context. It is demonstrated that China's green practice governance, so far, has been rarely isolated but yet linked itself with other mainstream political discussion. By doing this, the researcher identifies a series of criteria for latter examine the role of the state in China's carbon market governance, and seeks to fill in the research gap on whether a non-western democratic state can be formed as a green state via the carbon market governance. In particular, the China's carbon market governance can also contribute to existing understanding of environmental authoritarianism. Subsequently, the chapter reviews the core contributions of rational choice institutionalism, with a focus on the principal-agent approach. It serves as an analytical tool to later explore the institutional configurations underlying China's prolonged central-local relation and the organisational interactions between interest constellations in China's carbon market; it also lays a theoretical foundation for identifying the possible emergence of a new local carbon governance approach during its policy process of carbon market construction. In particular, this chapter also shows a comprehensive review of the existing contributions to China's environmental governance. In this way, gaps in the academic field of China's carbon governance are further clearly demonstrated.

The macrolevel investigation in Chapter 3 aims to pursue the following subquestions: To what extent, are *environmental protection and economic development compatible in China's carbon governance structure? What is the role of the state in China's carbon market?* This chapter starts with a historical retrospective of China's changing trajectory of environmental policy and the reshaping of environmental administrations to see the state's governance pathway to a green state; and it then turns the state strategies in carbon market deployment. Subsequently, it demonstrates an analysis of the governance features in China's carbon market to determine whether the rhetoric of ecological modernisation claimed by China's central state is consistent with what is advocated by the environmental discourse of the green state. In this chapter, it is identified that

China's central state centralises carbon governance fit into the governance paradigm of environmental authoritarianism through complementary authoritarian and limited participatory means for the civil society actors and business entities: first diminishing the power of the market by strong state intervention and second appealing to the public involvement with a so-called "national action system" but in fact restricting their space for policy involvement. In addition, the national carbon market is a vital component of China's climate change policy portfolio but seems to be dismissed as overblown rhetoric or jumping on the bandwagon. The state reveals relatively weak integrative capacity and fails to incorporate the environmental imperatives into its main pillar objectives in its real practice of carbon market governance and encounters considerable resistance when facing the environment-economy trade-offs at the local level of policy deployment. It partly implants itself under weak ecological modernisation but is more likely to engage in window dressing under the shadow of a centralised hierarchy to prioritise the economic development.

The carbon market serves as an effective illustration of how the state is adapting to new market forces. Chapters 4 and 5, therefore, concentrate on the case studies on the local carbon market governance structure: Beijing City and Jiangsu Province. These two chapters provide empirical findings that a hybrid model of carbon market governance at the local level is revealed, fitting neither into the public-private dichotomy nor into a clear state–market separation. Qualitative data are obtained to enlighten a comprehensive analysis of manifold institutional configurations in this market-based policy experimentation. These two chapters offer detailed discussions on the institutional configurations among different levels of bureaucracy and the state–market interactions in China's local carbon market governance. In addition, there is a discussion on the participation of the civil society actors, in particular the NGOs and industrial associations, to see how they are involved in such a governance structure. These two case studies have sought to offer new insights of the governance structure of the carbon market at the local level.

The concluding chapter summarises the previous findings and contemplates the final core subresearch question*: Can a form of carbon politics indicating a new pattern of political behaviour in a market-oriented policy instrument emerges in China's context where state intervention dominates*? The chapter discusses China's state path towards a China-style green state in carbon politics that is rife with contradiction and vacillation. The mode of the Chinese state in its carbon governance reveals mixed patterns where a

kind of emerging green state at its base, incorporating with limited network governance. Such a limited network governance is featured by heavy reliance on the authority-based style of governing complemented by the exclusively selective interactions and negotiations with the civil society actors. That is, in the exterior of modernised network governance, the politics of carbon in China conform to a trend towards a Weberian bureaucracy that gives the state's authority a central role in the governance structure.

5. Potential Contributions

This single-country research can be beneficial to China but is not limited to the Chinese context. First, as a contribution to the theoretical endeavour of building a full-fledged analytical concept of carbon governance, this research reinstates the state in the scholarly field of the Green State by addressing why the state is at the very heart of steering a genuinely sustainable development path and exploring its response to the climate change. Regarding China's carbon politics, this study addresses the paucity of research on the local carbon market governance by investigating the institutional arrangements and the organisational interactions among the central-local state actors, and their relations with the non-state agents in the market, through which the policy deployment at the local level are probed for the better use of the carbon market in effective policy experimentation. Scholars and Chinese policymakers can gain from these lessons, putting them a step further towards expanding China's nationwide carbon emission trading market to involve more industries and financial products in the market, as this thesis contributes to interpretatively examining the feasibility and transition of carbon market policies into the established political-economic structure of China by investigating the role of the state. In addition, analysing the ways in which the central government deploys supervisory mechanisms to oversee the local practices and the reactions of local agents to the central government's policy preferences under a principal-agent model within the theoretical basis of rational choice institutionalism will contribute valuable insights into the effects of regulatory institutions on the pace and direction of China's environmental governance. A potential new local environmental governance model is explored, providing more comprehensive and in-depth policy analysis and alternative insight to help the Chinese authorities to effectively govern the national-level carbon emission trading market. This model will be more than a metaphor and is, instead, a distinct and coherent blueprint, embracing the varieties of local carbon

market governance trajectories and providing way forward towards China's green state. Political elites from other countries could learn lessons from China.

Second, this research joins in the global debate over the role of the state in environmental governance and challenges the default assumptions of the conventional Western environmental model of decentralisation. China has been taking responsibility for global climate change issues and has increased its growing clout in world environmental negotiations, despite the path to climate change mitigation being unique and shaped despite the doubts of the West (Chen, 2016). By investigating the ways by which market-oriented mechanisms serve authoritarian-politically illiberal contexts and examining whether such a market-based of policy experimentation can solve the prolonged environment-economy dilemma in China, the findings of this research contribute to existing understanding of environmental authoritarianism by offering valuable empirical evidence in its carbon market governance.

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Chapter 2 Theoretical Approaches to Carbon Market Governance in China

We appear to have experienced a fundamental shift in how we see government and decision-making in environmental issues over the past few decades with the accumulation of growing studies in environmental politics. The concept of different forms of the state is emerged and proliferated to meet new policy challenges caused by the severe ecological degradation (Guttman et al., 2021; Hickmann & Elsässer; 2020; Lin, 2021; Turiel, 2017). The environmental concepts, discourses and theories followed by these emerging governance paradigms provide a solid foundation for answering the research questions of this thesis on China's carbon market governance in terms of the state-market, state-society relations, and so on. This chapter constructs a theoretical framework that are latter applied to explore China's carbon market governance. The structure of this chapter is as follows: it starts by demonstrating why the state matters in the domain of environmental governance, and introduce the concept of environmental authoritarianism for a better understanding about if China's carbon market governance fits into the features of such an approach. The second section the accentuates the theoretical and empirical aspects of the green state discourse and summarises the criteria for evaluating the state's capacity to see to what extent a non-western style democracy state can transform itself to a green state. It also discusses why China's environmental governance is seen as a blank space in the green state studies. Subsequently, there is a review of the literature on rational choice institutionalism and a discussion of a straightforward application of its principal-agent approaches to China's environmental governance system. I close this chapter with a brief summary on the theoretical framework used in this thesis.

1. Does the State Matters in Environmental Governance?

1.1 The Role of the State in Environmental Governance

There seems to be deep-felt disappointment with the state's contribution to confronting the climate chaos. The state has been criticised as a troubling, anachronistic, and occasionally downright dangerous institution with limited capacity for ecologically coherent, integrated decision-making and policy implementation, ranging from the

neoliberal approaches that have sought greater reliance on the power of the market, to Marxian-inspired perception of the state as a servant for capitalism that is locked into the treadmill of production or the contradictions of capitalism (Eckersley, 2004; Meadowcroft, 2012; Schnaiberg & Weinberg, 2002). The term 'state failure', once used by Martin Janicke (1990, p.1) to describe the state's incompetence in economic (distributing good public goods) and political (decision-making for the public) domains, can now be extended to depict the state's endemic inability in providing desirable environmental outcomes (mitigating environmental pressure in this context). This perception of state failure, to some extent, has provoked critical concerns about reshaping the state by committing to new modes of governance and 'reforming practices of socio-political governance to encourage shifts toward a more environmentally sustainable and equitable pattern of development' (Meadowcroft, 2009, p.323). Just as Eckersley (2004) stated at the very beginning of her book that, 'In any event, rejecting the "statist frame" of world politics ought not to prohibit an inquiry into the emancipatory potential of the state as a crucial "node" in any future network of global environmental governance'.

The state's allure has been tested during the past few decades by a shifted attention from a 'state-centric' view to 'a new spatial imagination' (Terry, 2011) of environmental policy cycles. This emerging trend has provoked a lively academic debate regarding a balanced environmental governance model with the encompassment of other non-sovereign networks of actors between the 'top-down' and 'bottom-up' approaches, including network governance, polycentric governance or hybrid governance (Alex, 2013; Amaruzaman et al., 2022; Ghost & Wolf, 2021; Gordon, 2016; Morrison, 2017). For instance, Mol and Spaargaren (2000a) argued that the nature of the state is now under transformation towards 'more decentralised, flexible and consensual styles of governance emerge, with less top-down, national command-and-control environmental regulation' (Mol & Spaargaren, 2002a, p.6). As a result, the state's potential as the central conceptual and analytical anchor in environmental governance before, has then been easily neglected by this focus on distributed agencies.

Indeed, the state by no means takes full responsibility for society's transition towards a sustainable future. However, the state remains a primary actor both in facilitating and coordinating domestic environmental activities (Bäckstrand & Kronsell, 2015), and in global environmental governance (Baker, 2015). Barry and Eckersley (2005) claimed that:

> Of course, consumer and shareholder vigilance, corporate self-regulation, and initiatives by non-governmental organisations (NGOs) can all play a significant role in promoting more ecologically responsible economic activity. However, these initiatives cannot compete with the steering capacity of states in terms of scale and scope. (p.256)

That is, the transition towards more a decentralised state cannot be conceived as hollowing out of the state (Rhodes, 1997). Rather, in turn, the state should be reinvented and retheorised in an important object of study in terms of its political orientations, interactions with civil society, and so forth (Barry & Eckersley 2005; Evans 2012). More recently, a rekindled academic orientation has been made to bring the state back within the environmental governance scholarship. As Christoff (2005a) stated:

> …the current shift to governance presents us with a problem insofar as it involves downgrading the environmental role and capacities of the state, which are diminished in stature at a time when state intervention—of a certain sort—is most urgently required. (p.289)

For several reasons, the state remains a potent political actor. Just like Hysing (2017) argued that compared to the non-state actors, state actors have a privileged position benefiting from the financial, administrative and political resources, and they are well-positioned to manage the networks by creating new institutional arrangements and offering political incentives. To avoid environmental tragedy, the management of commons requires a political unit that is entitled with substantial authority to push self-interested individuals to shift from the old habitual way of behaving and begin to frame ecological insights. Benefiting from the regulations, subsidies, and information, state actors can pressure individuals and businesses to take environmental protection into account during the policymaking process (Meadowcroft, 2005).

In the carbon market governance, the state remains a powerful actor that ensures the collective action compelling compliance for the rules of the ‘game’. In a range of new policy attempts, the state actions are necessary for functioning these novel tools by providing overarching regulations (Jordan et al., 2013), although these new environmental policy instruments are often ‘proposed, designed and implemented by non-state actors, sometimes working alongside state actors, but sometimes also

independently' (Jordan et al., 2005, p.481). Mol (2016) has argued that the state plays as a switchboard, turning ecological issues into economic ones with the purpose of moderately balancing the relationship between economic development and environmental protection. The carbon market can be regarded as a policy response by providing an alternative path for dealing with the climate change (Cui et al., 2021; Voß, 2007; Zhao et al., 2022). In line with the idea of pollution prevention pays under the ecological modernisation (Milanez & Bührs, 2007), firms are required to internalise hitherto externalised costs, which is likely to be antagonistic to their pursuit of profit maximisation. Following this perspective, they are inclined to be reluctant to speak for the ecological modernisation. In his book, Dryzek (2016) gave rise to the contestation that the key to encourage firms to take social responsibility is to inject "money" into the industry. The options can either be direct financial input or implicit support. His argument implied that the state should involve appropriate intervention by creating opportunities for the firms when regulating the nature. Although Dryzek (2016) further added, the business should be sufficiently far-sighted rather than stick to the interests only, the process of creating a market on the 'priceless' nature cannot be done without the state.

With the caveat of ecological degradation, the problem may lie in the extent to which the state is empowered to deal with the environmental imperative and the way it performs. Even in the domain of environmental policy that has been formed as a result of the nation's history of decentralisation (in some western countries), there is no reason to ignore or exclude the efforts that the state can make in response to environmental change.

1.2 Authoritarian Environmentalism[6] and China's Environmental Governance

An emerging paradigm of public policy making in the face of serious environmental concerns is known as authoritarian environmentalism. As one of the alternative models of public policy, it has been discussed both as a descriptive model of how states are likely to respond and as a prescriptive model of how they should respond effectively to such concerns. One potential outcome of environmental degradation is the growth or consolidation of authoritarian control, as political elites tend to prioritise regime

[6] Authoritarian Environmentalism and environmental authoritarianism are interchangeably used in this thesis.

maintenance and internal stability over political liberalisation (Beeson, 2010). Heilbroner was the first to articulate the latent idea of authoritarian environmentalism, arguing that it is necessary to restrict freedom of speech and "an absence of inhibitions with respect to the exercise of power" in order to manage population growth (Heilbroner 1974, p.38). More recently, Beeson (2010) extends such a concept to two dimensions: first, a 'reduction in individual freedom' that prohibits individuals from acting in ways that harm the environment and forces them to follow more responsible rules; and second, a political process dominated by a relatively independent central state, with social actors and their representatives excluded and having little/no influence (Beeson 2010, pp. 276, 289, 281). Proponents of environmental authoritarianism (e.g., Wells, 2007) emphasize the importance of excluding business and other groups from participation on the grounds that they are the groups most opposed to environmental action. In addition, they pay close attention to how scientists and technocrats influence and steer public policy and suggest limited participation by these scientific and technocratic elites. They also believe that a knowledgeable and honourable state elite, who are responsible for creating and implementing policy, manage their roles (Shearman & Smith 2007).

What can be seen is that in addition to placing the state in a relatively important position in environmental policy process, the authoritarian environmentalists focus on the absent of public participation. Public participation involves a range of actors, including individual citizens, civil society, the media, experts, business leaders, government officials, and residents of public places such as schools and websites (Baum 2004). Gilley (2012, p. 29) summarises two aspects of participation. One is the stage in the policy process at which participation occurs, and the other is the level of participation. Therefore, a tentative definition of authoritarian environmentalism is a style of public policy that concentrates power in a small number of executive agencies run by intelligent, ethical elites who seek to improve environmental outcomes. Only a small group of scientific and technological elites are allowed to participate in the public sphere, and others are expected to participate only in state-led mobilisations for implementation.

The political approach to climate change in China has been characterised by the top-down regulatory powers of the central state, which is consistent with authoritarian environmentalism (Gilley 2012). Although this model has several notable features, it is its non-participatory nature that reveals it as clearly authoritarian in China. In the broadest sense, eco-elites in China mostly talk about climate change in regulatory and technocratic discourses that do little or nothing to engage society. An authoritarian

model of governance, sometimes referred to as a 'command and control' system, prioritises the use of coercive policy instruments over market or nudging-based instruments by setting strict top-down goals, targets and sanctions that localities or organisations must comply with (Schreifels et al 2012). It is widely acknowledged by scholars that China is an exemplary case of environmental authoritarianism (Wang & Jiang 2020), but the emergence of the carbon market, which is seen as a market-oriented policy innovation that has emerged in recent years, has led us to consider whether the conventional environmental authoritarian model is likely to be challenged, or whether this policy attempt merely illustrates the basic tenets of environmental authoritarianism with possible modifications. Moreover, one of the fundamental puzzles of authoritarian environmentalism is its questionable effectiveness, which is often found to undermine centrally formulated environmental laws and goals due to the fragmented interests of different political and market actors. Such a problem can also be seen in the governance of China's carbon market, where there are a number of actors with different interests. How the state exercises its capacity to align different actors to enhance the effectiveness of environmental governance through a set of institutional frameworks is also explored in this thesis through the principal-agent mode (see Section 3 of this chapter).

2. Revisit of the Environment Discourse: The Green State

It is almost impossible to provide a single overarching definition of the green state. Green politics theorists note differently on the terminology of green state, for instance, the ‘ecological state’ (Meadowcroft, 2005; Lundquist, 2001), the ‘environmental state’ (Meadowcroft, 2012), and the ‘ecostate’ (Duit, 2012). Under the common banner of the green state[7], there are some variant images of the state and its concrete patterns for environment management. For instance, the notion of a green state in Christoff’s (2005b) terminology is a normative concept describing an ideal type of state characterised by strong ecological modernisation, while the ecostate empirically captures the environmental welfare capacities of an individual state. Carl Death (2016) stated that the meaning of the state in the environmental discourse of green state varies significantly depending on the authors, saying that:

> One important distinction is between those who use the term “state” to refer to

[7] Given the non-standard usage of these terms, the Green State in this context is a shorthand, encompassing all various descriptors and the corresponding implications shown in the literature.

> the administrative structure of government and those who invoke the concept of the nation-state in the sense of a sovereign unit of international politics. (p.22)

In other words, the term "green state" has no recognised definition worldwide. Hence, I emphasise the specific terms used by different authors where they are important. It can either be classified as a normative concept in green political theory and critical political ecology, or as an analytical tool in the field of comparative environmental politics (Bäckstrand et al., 2010). This section reviews and synthesises the critical green state scholarship with various academic literature: the states ought to be and the states as they are.

2.1 Green State from Normative Perspective

Within the scope of green political theory, the green state is conceptualised as a normative, or even utopian ideal that stipulates the features of sources, characteristics, and trajectory of an individual state's environmental provisions. Literature in the normative group largely rests upon certain conceptual images of what a green state should be. Christoff (2005b) suggested:

> *Green states* would be characterised by the predominance of types of state activity aimed at strong ecological modernisation. Here state activity would have, centrally, a driving and predominant moral purpose in directing social and economic activity toward ecologically sustainable outcomes. (p.41)

Christoff's portrayal of a green state has located on the environmental discourse of ecological modernisation. A green state, in his description, is committed to biocentric and eco-citizenship values, and ecological sustainability. His versions of a green state suggest a typology that focuses on the state's capacity for sustainable development in terms of consensus formation, strategic planning, policy coordination and integration, and implementation. Parallel to the welfare state, Christoff (2005b) has encompassed a wide array of variations to distinguish the possible types of the environmental welfare state, neoliberal environmental state, and ecofascist state based on (a weak or strong) ecological modernisation. In particular, he addressed the difference between the '*classical' neoliberal state* and *neoliberal environmental states*. For neoliberal environmental states, they should undertake the features of a neoliberal environmental state, involving the rejection of the existing regulatory system and treating the state

intervention as an intrusion, but also build a capability for moderate to strong environmental well-being. The power of the market, in this case, is believed as a powerful tool for achieving environmental protection (Castree, 2008; Heynen et al., 2007). However, markets can encapsulate in a given institutional framework where unbalanced power relations, differentiated interest and asymmetric information dominate. Bearing in mind that the carbon market follows the perceptions of neoclassical environmental economics, it is often evaded by the studies on the neoliberal environmental states on the role of the state when the market itself is incapable of self-adjusting to overcome the inherently attached shortcomings. To remedy market shortcomings, the state was primarily dragged into environmental governance (Meadowcroft, 2005). In the coming section (see Section3 in this chapter), a micro-level of the theoretical lens will be introduced to offer a functional perspective on the state's capacity to overcome the drawback of China's carbon market. While before that, still, more will be put on patterns of China's environmental governance in line with the green state discussion and to see whether it reveals or even extend some specific typology of green statehood.

Yet the green political theorists are suspicious of whether the liberal democracy is up to the task of balancing society and environment along with economic development. They are trying to identify a well-fitted path that embraces both democracy and genuinely ecological concerns. Eckersley's (2004) pioneering work offers influential contributions in terms of sovereignty and democracy. According to Eckersley (2004), the green transformation of the state would proceed from a redefinition of the sovereignty which should expand beyond the physical borders. She argued that only the move to the ecological democracy can sharpen a particular green state and defended it as a more conducive alternative than the liberal account of democracy on its transboundary dimensions for where she speaks for a 'democracy of the affected' (Eckersley, 2004, p.243). She further added that, a restructuring of the democratic institutions would accelerate the flow of the ecological concerns out of the state territoriality, and all that is potentially affected should be empowered for decision-making without being bounded by the territoriality. In brief, the transitions to a green statehood require a commitment to green objections and a break of structural blocks on the anarchic system of sovereign nation-states.

2.2 Green State from Empirical Perspective

Regarding the green state as an analytical tool in the field of comparative environmental politics, much work has converged on combining theoretical conceptualisation of the green state with systematic empirical analysis relative to the state's response to ecological degradation and to the "greening" evidence. The crucial task of such research is normally to explain how different states are performed with their relationship between civil society and economy.

First of all, some critical contributions to the green state have an increased focus on the the state and the civil society. The corpus of work done by John Dryzek and his associates is most noteworthy in this context. Dryzek et al.'s (2003) work emphasised the relationship between the state and civil society. Their account of democracy extends beyond the state and into the public spheres that organise civil society. By categorising four industrialised countries, the United States, the U.K., Norway, and Germany based on exclusive-inclusive and passive-active dimensions of state structure, they argued that green statehood is mostly likely to be emerged in a country with 'an emerging connection of environmental values to both economic and legitimation imperatives' (Dryzek et al., 2003, p.193) and 'an active oppositional public sphere' (Dryzek et al., 2003, p.114). That is to say, transforming to a strong environmental state is driven by a 'passive-exclusive' form of social movement and their deliberations that are in the public sphere but outside formalised channels. They further explained that such a passive exclusionary typology of the state could be linked to a green state, because practical policies and a broader shift in green values can permeate the state and society without public constraints, creating space for environmental ideology and the environmental movement to flourish. In addition, they advocated the integration of a coupling of the state imperative on environment conservation into economic development, by 'environmental conservation can attach itself to the economic imperative' (Dryzek et al., 2003, p.11). The China's carbon market governance can be regarded as a political arena where complex organisational interactions and institutional configurations between the state and civil society occur, to see how the state yields capacity to delink the environmental protection and economic development through such a market-based policy innovation. All these will be elaborated in the coming chapters.

The relationship between the economy and the environment is another core issue in the

empirical green statehood discussion. Taking the nuanced difference on the typologies of the green state into consideration, the “environmental state” is adopted as a less aggressive notation referring to institutional reform in the environmental authorities and regulations. The “environmental state” does not call for a thorough transformation of the political structures. It merely denotes that the state now, to some extent, shifts their regulatory attention to ecological concerns, taking part of the responsibility for curbing ecological destruction (Paterson, 2016). Instead of altering the patterns of production and consumption, the environmental state, relying on weak ecological modernisation, claim conflict-precluded measures to ensure the synergistic development of nature and economy (Christoff, 2005b).

Even though the emergence of some environmental states in some western countries have led to a series of successful environmental policy performance, such as the green tax (Norway), the integrated pollution control (Sweden), the National Environment Policy Plan (Netherlands) (Dryzek, 2013), the advocate for the environmental state leaves questions on the compatibility of each inherent function within the state, especially for those state which is largely dependent on the accumulation of the capital. In this vein, the ecological requirements that impede such an accumulation are likely unacceptable by both the public and political communities. Attaching environmental issues as an economic imperative seems to subordinate ecological protection to economic development implicitly.

Some others emphasise the internal logic of industrial capitalism and track an alternative way for ecologically sound capitalism (Schnaiberg, 1980; Schnaiberg et al., 2002). They believe that a fundamental solution underlying environmental protection cannot neglect capitalism. However, Mol and Spaargaren (2000b) confuted previous arguments and demonstrated that the advocate of a green statehood does not mean to marginalise capitalism, nor believe it indispensable, but instead, capitalism could guide environmental concerns towards an environmental reform that promotes an adjustment in production-consumption relationship.

The capital intensity that drives the interest in both production and consumption is also challenged by the concern that capital itself is differentiated, leading to environmental degradation. The emergence of the neo-liberal environment is built on this concern, taking the different parts of the capital seriously (Castree, 2008; Heynen et al., 2007). The process of commodification is the core element of these analyses of environmental

problems. It entails the extension of communication to nature through the creation of the market by legitimating private property rights. The carbon market is a burgeoning environmental initiative to this approach and lies in the centre of the climate capitalism[8] (Böhm et al., 2012). In other words, the neo-liberal response to the environment fails to address the underlying contradictions associated with capital accumulation and climate by embedding society and nature into the market. With regard to the role of the state in governing the carbon market, it is worth mentioning that the carbon market is accompanied by considerable involvement of various interests and actors at various levels. It is the complicated configurations of each interest group that require a deeper exploration of the state's oversight mechanisms. The principal-agent model under the rational choice institutionalism thus performs as an effective tool for further analysis to unfold the complex interactions among the interest constellations in China's carbon market governance.

Apart from that, some scholars unfold their exploration of the performance of the green state by quantifying indications for environmental performance (Koch & Fritz, 2015; Povitkina, 2015). Duit et al. (2015, p.7) classified four dimensions that a green state displays in the political community: as a system of regulation, an administrative apparatus, a corpus of ideas and exerted knowledge, and a site of contestation and decisions. These four dimensions dismember the broad description of the green state into measurable terms, providing a relatively comprehensive evaluation of each perspective of the state's environmental intervention. Mol (2016) further suggested another way for quantitively accessing the development of the modern environmental state, which is to examine the density and intensity of the environmental nation. The terms, density and intensity, were first raised by Knill et al. (2009), where the former refers to the frequency of the policy promulgation and the involvement of the environmental institutions; and the latter is applied to the strictness of the environmental management. Compared to the in-depth analysis of the bureaucratic structure, the regulatory modes of intervention, and the ideological justification, Mol's (2016) indicator-oriented measurement seems to be of inaccuracy, even though it contains more proxies with reference to the state capacity, the design of the environmental initiatives, policies and regulations, and the efficiency of the environmental state administration, so on and so forth. These macro-oriented studies unfold some features of how a state on the ground is practising towards their green path. However, regarding some specific

[8] The term 'climate capitalism' will be explained in detail in Introduction Section: Carbon Market: a panacea for the environmental dilemma?

environmental policy areas, they are limited by adequate empirical evidence to affirm a real case of the green state. Moreover, they may be challenged on their way to quantifying nature, for instance, there hardly exists longitudinal national datasets with the previous indicators covering all environmental sectors over the past several years. While it appears that the argument of Dryzek et al. (2003, p.2) remains hold, that 'at present, there are no green states. But some states are greener than others.

To sum, even though there exist different manifestations of green state scholarship, they all lend support to the role of the state in the pursuit of sustainability, positing a self-corrective capacity that adds ecological issues into its core functions. Drawing the previously mentioned themes together, I would summarise that the green state describes a statehood that is characterised by the predominance of types of state activity committing to the environmental discourse of 'strong' ecological modernisation. For the state's capacity for ecologically sustainable development to foster strong, reflexive ecological modernisation, Peter Christoff described four tightly interrelated aspects: communicative capacity, strategic capacity, integrative capacity, and implementation capacity (Christoff, 2005). They are used as criteria to see to what extent does China's state has been transiting to a green state (see Figure 2.1). The *communicative capacity* describes the state's ability to shape participatory channels to enhance public acceptance of ecological-related policies and programs. The *strategic capacity* describes the state's capacity to make strategic decision, which significantly depends on access to sufficient information and data, the necessary knowledge to interpret that information quickly and develop coherent policies as a result, institutionalised memories of past environmental successes and failures, and the capacity to learn from both its own and other people's policy experiments and experiences. The *integrative capacity* refers to the state's capacity of injecting environmental ideas and programs into other public policies and private activities. The *implementation capacity* involves five dimensions, bureaucratic/administrative ability, economic ability, legal power, regulatory enforcement, and cognitive activities. The four capacities are mutually illuminating. By successfully developing and utilizing capacity in each of these areas, environmental trends should significantly improve while simultaneously safeguarding the complete spectrum of ecological values. On the other hand, the lack of or diminution of any of these capacities is likely to result in worsened ecological consequences, threats to, or destruction of, those values.

Communicative Capacity	➢ The capacity to promote and take part in meaningful discursive democratization and to use the exchange to forge sound and morally sound policy. ➢ Advocate transparent and well-informed forums, deliberative procedures, and other forms of discursive design.
Strategic Capacity	➢ The capacity to identify environmental issues, formulate policies, and make strategic choices which would result in ecologically sustainable outcomes for the "whole of society" and the "whole of nature".
Integrative Capacity	➢ The capacity to integrate ecological concepts and objectives into the creation and implementation of public policy as well as private sector activity.
Implementation Capacity	➢ Bureaucratic/administrative ability ➢ Economic ability ➢ Legal power ➢ Regulatory enforcement ➢ Cognitive activities

Figure 2.1 Criteria for Evaluating China's Carbon Market Governance as a Green State
Source: summarised by the author according to Peter Christoff (2005)

2.3 China: The Blank Space in Green State

The discourse of green state has mostly been applied in advanced economies, in particular, the OECD countries. Duit et al. (2015) stated that:

> Environmental states emerged as an outgrowth of a process of political conflict and policy development within advanced industrialised nations…their bureaucratic structures, regulatory modes of intervention, and ideological

justification were first articulated in OECD-type countries… (p.8)

This argument shows that environmental states are closely tied to developed economics. At the same time, it indicated a notable omission that both normative and empirical studies may lack sustained knowing of developing countries in their state's green practices. When reviewing studies on China's environmental politics, barely exists research that discusses China's environmental governance through the lens of a green state. Although a noticeably large number of studies on China's green practice is regarded as regional studies in a broad context of environmental politics, they are usually linked itself with other mainstream political discussions, for instance, neo-Marxist, socialist, liberal theories (Eaton & Kostka, 2014; Huan, 2000; Huan, 2008; Liu, 1995); or with the lessons from the green revolution in the green pioneers (Bao 2003; Huan, 1996). On top of that, among the scholars in China's politics (e.g., Lieberthal & Lampton, 1992; Lieberthal & Oksenberg, 1988), classic models applied by political scientists to understand the Chinese state, for instance, the fragmented authoritarianism, are replicated by incorporating the environment into policy process analysis. Some scholars discuss how the Chinese state responds to sustainable development and global climate change issues from the perspectives of governance structure, the hierarchical relationship of the bureaucratic system, central-local relations, and incentive mechanisms of the political elite (see, Han, 2021; Kostka & Nahm, 2017; Zhang, 2017). In addition, others focus on the emerging role of environmental NGOs, environmental protests, and public involvement in bottom-up channels of China's environmental governance (see, Hsu & Hasmath, 2014; Lin, 2018; Zeng et al., 2019; Zhang & Li, 2018). To summarise, these works of literature on China's environmental politics explain two issues:1. the governance model of authoritarian states, especially around the decentration-centration dichotomy; 2. the interaction of the civil society and authoritarian states in environmental governance, and its possible significance for the consolidation or transformation of authoritarian states.

One underlying reason for the neglect by the green state theorists may own to the relatively lagging economic development of those developing state. The Ecologist published *A Blueprint for Survival*, with its piercing insights into the challenges for ecological revival that, 'Unfortunately, the government has an increasingly powerful incentive for continued expansion in the tendency for economic growth to create the need for more economic growth (The Ecologist, 1972, p.27)'. The incentives of the government, suggested by Christoff (2005a), are mixed and captured by certain political

and economic imperatives that could hardly be altered in a given period. Even though many of these developing nations are jumping on the bandwagon of environment management, the urgency of boosting economic development still ranks high priority within the state's core imperatives (Sommerer & Lim 2016). Eckersley (2004) explained bluntly such mission, ascribing 'the most serious challenge to global sustainability' to the issues of destitution, impoverishment and historical injustice. In her assertion, economic development is a prerequisite for a state's green trajectory, and an evolving green state may hardly ever appear in a society without much development both economically and culturally. Although it receives significant criticisms on mixed empirical evidence, the Environmental Kuznets Curve suggests a compatible link between an improved environment and a boosting prosperous economy (Özcan & Öztürk, 2019). Economic growth and environmental degradation abide by the Curve, where pollutants initially increase to a climax in line with the degree of industrialisation, and then decline as countries become more efficient, more technologically sophisticated and more elastic to environmental impacts with corresponding legislation (Awan & Azam, 2022). This inverted-U-shaped relationship between economic development and environmental deterioration confirms some real-world situations in those industrialised countries that environmental degradation is reduced only if economic advancement has been researched to a certain level (Acaravci & Ozturk, 2010; Esteve & Tamarit, 2012).

However, we can also see that environmental regulatory expansion does occur in some developing nations, and even some non-western countries are identified as green pioneers. The relatively late beginning of the economic development of developing countries in the historical stage has no longer been an excuse for the lax performance in environmental protection. Sommerer and Lim (2016) found that growing economies, like those in the BRICs, are actively enhancing their administrative capacities in line with embedding environmental agendas into their policy portfolios. China is now playing constructive roles in both international affairs and domestic programs on its green transition. The Chinese state is keeping pace in deploying a set of new environmental policy instruments to mitigate greenhouse gas emissions (Kitagawa, 2017). The performance of this development has been circuitous and met some implementation challenges but progressed in an unprecedented way (Du et al., 2022; Lin, 2021; Song et al. 2019; Zhang et al., 2022). However, China is still a blank space as an analytic body under the banner of green state. Under a trend of global convergence in some aspects of global environmental governance, suggested by Sommerer and Lim (2016), a thorough understanding of developing nations on their environmental agendas

may benefit a panoramic picture, and this study, which focuses on the Chinese context, takes a little step in that direction. Of course, balancing economic growth and environmental protection is a longstanding task facing China's state in its carbon market governance, and I will reserve discussions on that for subsequent empirical chapters.

Another reason for sidestepping the developing countries is that the green state literature has always featured by the inclination towards democratic states irrespective of the nuanced difference among their democratic processes. Tracking back to a radical and distinct green ideology, the green party poses what a good society will be like, recommending participatory democracy and decentralisation as essential means[9] for sustainability. Their green slogan, 'Think globally, act locally' has been permeated to the institutional design and its related institutional environment where the pre-conditions for a sustainable path inhabit (Eckersley, 2004, p.11). Given the lack of green state studies in those non-democratic state, Barry and Eckersley (2005) pointed out that not all emerging nations exercise democratic self-determination, despite the fact that all available research indicates that democracy is beneficial to both the environment and government. The greens are overtly hostile to an authoritarian response to environmental risk by addressing the encroachment of the authoritarian state on individual autonomy, and they believe the right for governance should be delegated to the lowest 'appropriate' level (Porritt 1984). Some green political scholars recognised the significant role of the state and confirmed that even if within locally based political communities, its operation is largely dependent on the agreement and support of the state (Barry & Eckersley 2005; Eckersley, 2004; Meadowcroft, 2005). However, most greens still try to make cogent appraisals of democracy and focus much on reshaping or reframing it to better fit the green path, instead of justifying whether a sustainable society must be subject to the pre-condition of democracy. Just as John Dryzek and his collaborations (2003) said in the preface of the book, *Green States and Social Movements: Environmentalism in the United States, United Kingdom, Germany, and Norway*, that 'though we are not statists, we are democrats'. As such, non-democratic states are long banished from the core of the 'green state'.

The Green's radical delineation to the green slant "act locally" reveals notable controversies when facing some real cases of environmental governance, not only because of the inherent tensions of the democratic theory itself when embracing the

[9] The greens also speak for another two core features for a sustainable path, non-violence and social justice, which are beyond the discussion of this thesis.

ecological concerns, but also the peculiar dynamics of ecological degradation that are neither limited in a particular region nor within a particular time. The unbalanced structure of interest distribution in environmental conflicts between groups of people in sustainability and those in alternatives to sustainability undermines the capacity of the democratic authority and intensifies the instability of the demos. Furthermore, the traditional accounts of the democratic agency are out of reach and come up with difficulty in managing environmental issues appropriately confine. On the other hand, evidence has shown that powerful international organisations that benefit from solving problems in democratic cross-regional decision-making (Dryzek, 2016), are also the least democratic (Ellis, 2016).

This research will fill in the research gap in the literature on whether a non-western style democracy state can be a green state through China's carbon market governance. The emphasis on democracy for achieving sustainability underestimates the importance of environmental governance in the context of an authoritarian society. Despite China's governance path showing different patterns and being formed accompanied by the West's skepticism (Chen, 2016), China has been assuming responsibility for issues related to global climate change and expanding its rising clout in international environmental debates. China's carbon market governance is likely to offer different experience to remedy the climate change and environmental disruption in the state's carbon governance, based on the idea of "environmental authoritarianism" (Beeson, 2010), or what Gilley (2012, p.288) calls 'a public policy model that concentrates authority in a few executive agencies manned by capable and uncorrupted elites seeking to improve environmental outcomes[10]'. The specific response of the Chinese state in dealing with the ecological degradation in the process of "acting locally" becomes increasingly important that may challenge the centrality of green principles of democracy and flourish the ambit of green political theories. The green state discourse, in this case, is considered a broad heuristic perspective, and one might thus gain some insights into the carbon market governance in China.

[10] The debate on which political system is better suited to environmental issues, the democracy or the authoritarian, goes beyond the scope of this thesis.

3. Principal-agent Issue in China's Carbon Market Governance

Under the aim of addressing the research questions (see Chapter1), especially on the governance of the carbon market at the local level, a principal-agent model under a broader camp of rational choice institutionalism is incorporated as an element of the analytical framework to understand how and to what extent the state can yield capacity in aligning various interests of stakeholders for better policy implementation in when constructing China's carbon market. The aforementioned green state discourse is mainly applied to address the environmental governance structure from a macro perspective in which the construction of China's carbon market is seen as a sign of the state's determination for a strong ecological modernisation by turning to market-oriented governance of carbon under a non-democratic political system. However, the discourse of green state alone is far from adequate to illustrate the complex interactions of a set of constellations of stakeholders involved in this local policy experimentation, and to demonstrate how the governance strategies have been employed under a dynamic process to push forward the scale-up of the carbon market.

The governance of China's carbon market as a policy experimentation has been melted with the complex principal-agent issues. What is behind these principal-agent issues is a prolonged issue of the relationship between central and regional power, which is also a recurring theme in numerous studies on China's environmental governance. Under multi-level governance, the Chinese state delegates its power to the sub-national tiers of government and builds strong binding with non-state agents in the enactment of environmental regulations (Baker, 2015). While at the local level, the government officials within the bureaucracies are responsible not only for the local government but are firmly grasped by functional administrative superiors (Mertha, 2005). Benefiting from the institutional flexibility, strengths of proximity and local knowledge, the local governments have the power to explain the environmental policies issued by the state (Schienstock, 2005). As municipalities have gained more regulatory and financial authority since the economic reform, many academics claim that the central state has tried to deputise and designate provincial leaders and regularly negotiates policy issues with provinces (Lieberthal & Lampton, 1992; Yang, 2014). This is even the case for local policy experimentation that is related to the recently developed institutional or policy innovations. They are frequently described as indigenous projects with strong patronage ties to the centrally located pro-reform leaders. In terms of China's carbon market, Chen et al. (2019) identified various locally guided collaborative processes that

have sought to expand the carbon emission trading scheme beyond a top-down fashion in Guangdong Province, and made it commit to local political traditions, bureaucratic culture, and distinctive development needs with the local state officers take responsibility of the full manner of policy innovations (from designing, developing to implementing and brokering). However, Goron and Cassisa (2017) pointed out that unsolved tensions between the state and market in terms of its regulatory practice in China's carbon market exacerbated the implementation deficit of the local regulators who are dealing with more urgent industrial and environmental regulations, which further strengthened state dominance in the market. The state is being reconfigured as policy experiments taken place, and this process calls for new mechanisms for controlling and supervising citizens and agents (Bulkeley et al., 2014). During this process, the question of how the existing or the newly developed mechanisms in the carbon market governance are making localities to the centre's line has not been thoroughly investigated in China's carbon governance literature. This thesis thus tries to unfold this based on empirical cases of China's ETS pilots.

Although it remains to be seen to what extent the carbon market is simultaneously a continuation of China's tradition of local policy experimentations that reveal features of 'indigenous but centrally control' (Chen et al., 2017, p.3), the Chinese government has created intricate control systems to ensure that local policy is carried out. Under multi-level governance of China's carbon market, the researcher believes that these control mechanisms, including both formal institutional arrangements and informal connections among the actors, are at the core of the analysis of this thesis to unfold the local carbon market governance patterns. This has been barely discussed in previous studies on China's carbon market. More than that, experimentations with market-based instruments are deemed as a vital example of decentralised and fragmented experimentations in global environmental governance, and the wide range of interest constellations they involve further requires the state's effort in monitoring and regulating the networked agents in the market. The interactive process in the governance system can be investigated more thoroughly using the principal-agent approach. This research, in this case, will adopt the principal-agent approach as an analytical lens to explore the interactions of state agents at various levels of hierarchy, also their interactions with non-state actors in the governance of China's carbon market. By doing this, the role of the central state as principal in exerting top-down control in the carbon market experimentation within the broader governance networks is addressed. The effectiveness of central control mechanisms is largely tied to the degree to which

officials at the central state have acquired information on local experimenters' performance (Lo, 2013), and how the main actors of the policy processes, response to the incentives and sanctions in a given institutional context (Laffont & Martimort, 2002). What channels and mechanisms have been created and implemented to gather relevant, accurate and reliable information and to ensure the local implementations of centrally formed policies, and exactly how do these institutional arrangements serve as effective means for the central state to pursue its goals, and are further shaped as new governance patterns of carbon experimentations? These are the objectives that will be investigated in the analysis of China's carbon market governance through the analytical lens of the principal-agent model.

The following section reviews the key contributions of the principal-agent theory in the domain of rational choice institutionalism, followed by an elaboration of the possible applications of that in China's environmental governance. A more empirical-oriented exploration will be unfolded in the coming case study chapters.

3.1 Information Asymmetry and Oversight Mechanisms in Governance

Principal-agent models were originally utilised by economists who aimed to analyse organisational behaviours. In the context of business management, the original interpretation of the approach involved the directors of the enterprises as the principals, and the corporate managers as agents. In a classical framework of the model, it is used as the standard means for analysing the failures or rent-seeking problems of actors within organisations caused by asymmetric information. The principal-agent model brings a clear emphasis on the structures of relationships between the principal and agent (Peters, 2012). The reciprocity between the individuals and the institution lies at the core of the perspective of the principal-agent model. The principal-agent model is widely applied for understanding the regulatory policy, as it enlightens the puzzle about how to design and arrange effective institutions so that agents can better serve and satisfy the principals (Weingast, 1983; McCubbins et al., 1987). Given that there exist various alternative views of institutions with the broad umbrella of rational choice theory, giving a panoramic, accurate and all-embracing definition of institution is not easy. Under the theoretical framework of the principal-agent approach, this research adopts Kiser and Ostrom's (1982) definition of the institution to, in a certain degree, limit the flexibility of this approach to politics so that the institution will not 'become

all things to all people' (Peters, 2012, p.67). Kiser and Ostrom (1982) argued that institutions are:

> . . . rules used by individuals for determining who and what is included in decision situations, how information is structured, what actions can be taken and in what sequence, and how individual actions will be aggregated into collective decisions. . .all of which exist in a language shared by some community of individuals rather than as physical parts of some external environment. (p. 179)

In line with this spectrum of the institution, the principal-agent relationships are then deemed to be framed simultaneously by a series of organisational rules and individualist assumptions that shape their typical forms of interaction (Peters, 2012). This thesis will mainly focus on the institutional settings, especially the rules, regulations and interactions, either formal or informal, that underpin China's carbon market construction. The assumptions about the agents' motivations of this approach are that individuals are rational within the cognitive boundary of themselves, and their behaviours are based upon utility maximisation. The individuals' rational and strategic behaviours within institutions in light of their preferences and the possibility of manipulation through institutional settings can be explained (Shepsle & Weingast, 1995), either with mathematical formulations or without formal modelling (Pollack, 2007).

The core of the majority study of the principal-agent model is the question of how principals exert control over an agent who has information advantages to fulfil the principals' wants (Braun & Guston 2003; Waterman & Meier ,1998; Weingast & Moran, 1983). The unequal distribution of knowledge gives a chance for the agents to pursuit their own interests and leave their tasks unachieved when there exist conflicts of interest between them and the principals (Miller, 2005). This 'incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse' (Williamson, 1998, p.47), noted as opportunism, is in charge of generating artificial or genuine information asymmetry, making the organisational issues more complex. The existence of asymmetric information further provides fertile soil for adverse selection and moral hazard and ultimately leads to market failures.

When the principal-agent approach expands its applications to a broader context, it can function as a tool for comprehending the interactions between a number of public

sectors, it, therefore, helps to address the question of how to design the structures so that the state actors as principals can make the agencies achieve their policy goals. Theorists have underlined that in an effort to match the agents' motives with the principal's desires, opportunism can be defeated by providing rewards for the agents' good behaviour (Heap et al., 1992). The agency theory postulates a risk-sharing duty for all parties involved in the procedure under such a process with mutual incentives. Means for lessening the opportunism and ensuring compliance can be categorised either as *ex-ante* or *ex-post* control mechanisms. For example, a system of incentives is highlighted by Weingast and Moran (1983) when a congressional committee tries to control an agent's actions in the face of asymmetric information. Their findings, supported by empirical data, speak for the congressional surveillance system, and reveal that the absence of a costly oversight input does not preclude political control of bureaucrat behaviour. An implicit political control system combined with both the *ex-ante* incentives and *ex-post* publishments, in fact, played a significant role in aligning the Congress (as the principal) and the bureaucracy (as the agent). Mitnick (1980) also used a principal-agent perspective to investigate the connections between bureaucracy and legislators. He identified the police-patrol mechanism that the regulators adopted to enforce compliance with objectives concerned by the public. He also addressed the transaction costs of policing during the process that may be hard to measure given its nature of public interest. In addition to that, McCubbins and Schwartz's (1984) research draws our attention to two forms of oversight model: police-patrol oversight and fire-alarm oversight. The police-patrol oversight means centralised oversight of the administrative agency in order to guard against any departure from legislative objectives. It infers that the principal is empowered to make discretionary changes to the policy process and continue administrative enforcement, in addition to a focused and frequent investigation of the agent's conduct in decision-making. While firm-alarm oversight indicated a more inclusive system where civil society actors have access to policymaking through rules, procedures, and informal practice. Compared to the policy-patrol approach, firm-alarm oversight is less costly, and it lies on close connection between the state and non-state actors (Jensen, 2007). We still can see the limitations of the principal-agent model in explaining or analysing regulatory policies, as it may oversimplify the complex nature of the policy process. Apart from that, it can serve as an effective analytical tool for investing in China's carbon market governance patterns.

3.2 Principal-agent Issue in China's Environmental Governance

It can be seen that the principal-agent model has been applied to the political world, and it may also be used to explore the interactions between the vertical and horizontal aspects of the implementation of the carbon market in China's bureaucracy. Although China is an authoritarian state, given its gigantic territory and significant local diversities; its longstanding central-local relations under the multi-level governance seem to make the principal-agent approach be appropriate to explore how the central state exerts control to oversee the sub-national provinces during the policy implementation of China's carbon market. It should be noted that when constructing the carbon market, the state extends the use of a series of formal mechanisms that were originally adopted in financial or fiscal policy areas, and these mechanisms have been gradually institutionalised since the 1980s (Vogel, 2011). More than that, the carbon market is based on politically created caps rather than a system based on trade. The large constellations of stakeholders involved in the market, especially the covered enterprises that are now asked to "pay for the pollution", require the state to develop robust supervisory mechanisms during the market trading. In this section, it will first review China's central-local relationships in terms of its horizontal and vertical bureaucracy on policy formulation and implementation, followed by a preliminary discussion of networking in carbon market governance in the principal-agent model.

Environmental governance in China is a multi-tiered issue. It has followed a consistent governance pattern of vertical-horizontal relations (also known as the Tiao-Kuai relationship) (Breslin, 1996, pp.697-698; Mertha, 2005; Hensengerth & Lu, 2019; Schreurs, 2017; Sun & Baker; 2021), which was initially cited by Mao Zedong and has now developed into a term that policymakers and academic researchers regularly use to describe the policymaking and deployment process. The "Vertical" refers to the similar-functioning state-party machinery that extends vertically from the top to the bottom of governments; and the "Horizontal" refers to different levels of sub-national governments. These vertical-horizontal government apparatuses are cemented by power delegations and a series of control channels. The vexing problems associated with the intergovernmental relationships among different levels of bureaucracy within China's environmental governance structure in the certain policy areas, such as the power industry, are often dragged by dynamics of a mixture of decentralised delegation and centralised control in its locus of environmental policy governance (Alkon & Wong, 2020). That is to say, the central government delegates the power to local governments

to handle a wide variety of duties that appear to include all aspects of governance, including the economy, civil affairs, environment so on and so forth. However, if the central government deems it necessary, it has the authority to revoke the local government's jurisdiction. Zhou (2008) described China's intergovernmental relations as a top-down subcontracting practice:

> The central government subcontracts virtually all administrative functions and public services to the intermediate subordinate government, and the latter further subcontracts all those functions and services down to the next level of government, all the way down to the bottom-level local governments, such as counties or townships. (p.2)

This administrative subcontracting mode of governance saves the central state from routine micromanagement. Zhou (2007) claimed that the vertical *administrative subcontracting* combined with the horizontal *political tournament* mechanism revealed the unique China characteristics in its governance and differentiated it from other governance paradigms such as administrative decentralisation, M-form organisation, and government outsourcing. This view is further explained by Cao (2011), who suggested that in China, the power of governing officials and the power of governing civil rights were divided, forming a governing system of the upper and the lower. In his description, the central government mainly wields the power of governance, that is, the power to select, supervise, reward and punish officials, while the actual authority for governing the citizens is left to local officials. If the local officials do not violate the general policies set by the central government, in practice, they can exercise their power of governance in line with local conditions and flexibly handle the affairs in the areas under their jurisdiction.

In this case, many academic researchers (e.g., Deng, 2010; Liu et al., 2012; Kostka & Mol, 2013; Ran, 2013) argue that the environmental policy decision-making is highly centralised within the central Party-State. It is also pointed out that the complicated interactions among multi-levels of institutions could weaken the state's capacity for decision-making and influence policy implementation at the local level. For instance, Van Rooij (2006) maintained that the lack of central recognition of environmental legislation could be ascribed to local governments' inadequate enforcement of environmental regulations. He further demonstrated that there exist conflicts of interest between the central state and local authorities, especially where regulations are blanking

or ambiguities. When encountering contradictions of interest, the provincial leaders may tend to selectively implement central's orders as they have more accessible local information, open public participation, and a closer people-nature relationship (Kostka & Mol, 2013; Schienstock, 2005). Economy (2004) also identified that based on China's decentralised administrative structure, the local officials are given excessive authorities, retaining loose enforcement and weak control over policy implementation. She offered a detailed explanation in her book, *The River Runs Black: The Environmental Challenge to China's Future*, and argued that the central government's environmental policies are not implemented effectively because of opposition or backwardness by local government officials. Kostka and Mol (2013) pointed out that due to institutional factors, the problems of the policy implementation gap and public participation gap in local environmental politics are still seriously plaguing China's environmental governance. These gaps can be widely seen in the policy experimentations as local officials could benefit more from the institutional flexibility, strengths of proximity and local knowledge in those bottom-up policy innovations (Schienstock, 2005). Zhou (2015) investigated China's environmental governance by placing China's three levels of government (central-provincial-city/county/town) in a three-level bureaucratic model (principal-manager-agent). He suggested that the central government (the principal) has the ultimate authority in policy formulation and institutional design in terms of cadre performance evaluation and supervision; while grassroots governments (the agents), such as township governments and subdistricts, are responsible for implementing top-down directives and policies. In this structure, the central government delegates part of the authority to intermediate governments (the manager), such as provincial governments to supervise the implementation of policies by subordinate governments. The incompetence and complicity in the implementation of policies from local officials, in his explanation, stem from a longstanding contradiction within the Chinese regime, that is, the conflict between central authority and local government: the former tends to concentrate power and resources at the top, which could hinder local governments' abilities to solve problems; and the latter overuse its authority, threatening the control from the central state. They hold the view that in an authoritarian system, this contradiction so far has not been fundamentally resolved.

Although a multi-level governance structure leaves bargaining room for local governments to flexibly implement environmental policies, the central government, however, can exert its control over the local authorities through internal communication, incentive, and oversight mechanisms (Heberer & Senz, 2011). Instead of trying to

redress the problems caused by "wrong" institutional settings, the central government may target presenting the institutional configurations and their development, arrangement, and adjustment in line with the environmental issues. Just as Finger (2008) claims that:

> Institutions are simply seen as being neutral instruments in the hands of policies, politicians, ideologies, people, organisations, or even technologies. Rarely are institutions considered to be a problem, let alone the problem when it comes to diagnosing or addressing the global environmental crisis. (p.34)

That is said, the existing literature on China's environmental governance offers an inadequate explanation of the enforcement dilemma of local environmental politics. While, for both the central state and local officials, the researcher treats them as rational entities and seeks their own utility maximisation. Therefore, the prevailing discussions on the centralisation-decentralisation dichotomy may offer little illumination for the inquiry of this research, but instead, how does the central state exert control in overseeing and motivating local authorities in China's carbon market governance drives our concern.

To sum up, the principal-agent model has been applied to comprehend the issues emphasising the power shifting within or away from the central state organs to a range of third parties (Bovens, 2007; Maggetti & Papadopoulous, 2018; Schillemans & Busuioc, 2015). The large constellations of stakeholders in the carbon market require new systems of supervision. This research applies the principal-agent model as a means of understanding the supervisory and incentive mechanisms adopted by the central environmental authorities to the local officials that generally encounter the problems of agency loss rooted in China's multi-level governance, also the oversight mechanisms between the public sector and non-governmental agencies. In other words, the principal-agent model allows us to analyse the political control means deployed by the MEE-as the principal, including the *ex-post* sanctions and *ex-ante* incentives to avoid the opportunistic actions and minimise the non-compliance of the sub-national officials and non-governmental market participants as agents in China's carbon market experimentation.

4. Summary

This chapter reviews the key contributions of existing literatures on the environmental authoritarianism, the green state, and the principal-agent model. By doing this, a theoretical framework is developed for futher exploration on China's carbon market governance. Based on the environmental discourse of the green state, also given the importance of the state in achieving a sustainable society, this research will unfold answers on to what extent a non-western democratic state can be formed to a green state in its carbon market governance. This research question is related to how the state embraces the ecological concern in its policy agenda and how such environmental engagement triggers internal conflicts within the state's various parts, as well as new state-society relations in China's carbon market governance. The discussions in the coming chapters will be in line with the criteria mainly put forward by Peter Christoff to evaluate the state capacity in forming reflective, strong ecological modernisation and transforming to a green state, that are communicative capacity, strategic capacity, integrative capacity, and implementation capacity.

For the opportunistic events caused by the information asymmetry between the state (as principal) and local administrations and economic entities (as agents), the principal-agent model is illuminating for us to analyse the institutional setting, either formal or informal, adopted by the state to exert control to the market. In this part, interactions of different actors will be investigated, and it thus can offer new insights of the political economy and present politics of the Chinese carbon market. With the departure from the justification of the efficiency and legitimacy of the carbon market, concerns will also be attached to the possibly foregoing crooked coalition issues addressed through institutional design or other political complementary mechanisms in oversight; and ways the state manages multi-level governmental agencies and other related agents in the following chapters.

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Chapter 3 Greening the State via Market-based Policy Experimentation: A Top-Down Nonparticipatory Paradigm for Governing the Carbon Market

1. Introduction

Over the past three decades, China has experienced spectacular economic growth since it started to undergo economic reform, rising from a state of economic underdevelopment to the world's second-largest economy. Its GDP has been incrementally increasing at an unprecedented rate. China's economic *Miracle* has sparked considerable concern in the study of the *China Model* on its governmental paradigm (e.g., Gilley, 2003; Teets, 2014; Zhao, 2010; Breslin, 2016). In this process, interest in a potential Chinese alternative to the current (neo)liberal systems of growth and governance has increased, and the possibility that this could reverse much of the progress that has been made on democracy and governance[11] has been raised. Commentators have observed the emerging idea of 'Chinese exceptionalism', where China seems to differ fundamentally from other nations in that it has duty to advance a viable alternative to the existing international regime (Shen & Xie, 2018). Having distinct and nation-specific characteristics in terms of factor endowments and its social and historical background, the Chinese model can be seen as either a peculiar or a typical state-led alternative to the neoliberal initiatives that have come to dominate Western developmental rhetoric. However, Breslin (2011) argued that the Chinese model of governance is only 'a variant of a relatively well-trodden statist development path (Breslin, 2011, p.1323)'. When highlighting some of the major issues that have appeared repeatedly in the many studies on China's governance system, we can see nuanced developmental trajectories in China's different policy areas and industry strategies, despite the underlying common umbrella of certain China models rather than a single consensus. The literature is using this terminology, the China model, more frequently, which illustrates the fact that, in many respects, China's developmental model is a symbol or a metaphor rather than a coherent paradigm that might provide the best option for other developing states. Its state-led regime has gradually become a symbol of confrontation in the wake of democratisation and capitalist globalisation (Bell, 2016).

[11] The Subcommittee on Africa, Global Human Rights, and International Operations of the US House of Representatives made these remarks during a hearing on "China's impact in Africa.", July 2005

Environmental governance has seen more drastic changes recently than it did in the 1990s (Shapiro, 2012) and has become a new political arena for sustaining the political machinery of the modern state-nation. In a widely distributed pamphlet created by the London-based Foreign Policy Centre, the '*Beijing Consensus*[12]', Joshua Ramo (2004) stated that the idea that 'no matter whether it is a white cat or a black cat, a cat that can catch rats is a good cat' put forward by Xiaoping Deng has laid a solid foundation for China's reform and opening up. However, Ramo further argued that what China needs is a 'green cat'; that is, the Chinese state development goals should shift from GDP growth to sustainable development. In line with that, the carbon market, which is the research focus of this theses, deployed by Chinese state in recent decades can be seen as an empirical policy response to Ramo. China's carbon market is a market-based policy attempt initiated as a local policy experimentation, starting from several pilot schemes and then expanding to a national scale. China started emission trading system (ETS) trial programs in two provinces and five cities between 2013 and 2014 (See Chapter 1; Duan & Pang 2014; Zhang et al., 2014), and the Chinese state declared the official launch of its national ETS in December 2017. However, China's national emission trading scheme's debut has been frequently postponed throughout the preceding years. Originally set in the 12th five-year plan, the deadline was further pushed out to 2016, then 2017. In practice, it was not until 2021 that a national carbon market was officially kicked off.

China, of course, is not the first or only country to adopt this novel policy tool. Carbon markets have taken centre stage in many countries' policy frameworks for addressing the climate change over the past 15 years, including the EU, the US, Canada, Japan, South Korea and New Zealand (ICAP, 2018). The carbon market is also the key component of the Kyoto Protocol (Stephan & Paterson, 2012). To date, the Chinese national ETS covers more than 4.5 billion tons of carbon emissions annually and has 2,162 key emission entities in the power-generating sector as participants, overtaking the European Union's ETS and becoming the largest carbon market in the world (State Council Information Office, 2021a).

[12] Joshua Ramo, The Beijing Consensus: notes on the new physics of Chinese power (London: Foreign Policy Centre, 2004).

However, this phenomenon raises a few perplexing questions, such as what is the model of governance used in China's carbon market? How does this market-oriented approach to climate governance come to be "naturalised" in China's climate change policy portfolio? What is the role of the state in the policy process of this policy experimentation? These unsolved puzzles are related to an emerging carbon governance model in China. The current chapter, therefore, provides a review of the literature, exploring how the state in China has moved forward to a green state through market-based environment policy experimentation. It covers state-level tactics in carbon market deployment and the obstacles of the policy process facing the state to pave the way for the investigations of local carbon market governance features in the following chapters. In this chapter, the analysis will progress in four stages. The next section presents a historical retrospective of China's governance pathway to a green state with references to the formation of an environmental policy portfolio and environmental administrations. The third section explores state strategies in China's carbon market deployment, linking it with a larger climate policy complex. It discusses that market-based policy experimentation is being incorporated by the policy elites into a state-led growth plan that upholds state legitimacy requirements through tight top-down control. The fourth section reviews the emergence of governance deficits in the policy deployment and implementation of this top-down-driven governance experiment. It explores whether the ecological modernisation claimed by the Chinese central state is consistent with the prevailing environmental discourse of the green state in the West. By doing so, I attempt to provide more nuanced details on a governance system in which the central government has developed for the deployment of the carbon market. The findings are summarised, and conclusions are drawn in the last section.

2. Steering the Strategic Capacity: Governance Pathway to a Green State

This section provides a political-institutional analysis of contemporary Chinese environmental policy. It then illustrates how and to what extent the state incorporates environmental agencies as a constituent part of China's forms of ecological modernisation. It also shows how these new findings relate to the literature on Chinese environmental politics, which forms the basis for the empirical case studies. The discussions in this section can show that the Chinese state has made efforts to enhance its strategic capacity in terms of emphasising the importance of environmental issues, formulating a series of environmental regulations, and transforming environmental

agencies to a higher level. Meanwhile, these general accounts serve as steppingstones for the discussions in the following parts of this chapter, where I argue that the ecological modernisation advocated by the central state is merely rhetorical and a political tactic to reinforce China's authoritarian environmental governance on its way to becoming a green state.

2.1 Changing Trajectory of China's Environmental Policy

Environmental protection in China started with the United Nations Conference on Human Environment in 1972, in Stockholm, Sweden. China sent an official delegation to this conference during the turmoil of the Cultural Revolution (1996-1976) and after the United Nations proclaimed in 1971 that the People's Republic of China was the sole representative of China. In the coming year, August 1973, the First National Conference on Environmental Protection was convened to mark the official recognition of environmental protection as a governmental matter (Zhao et al., 2020). However, during the early stages of the Cultural Revolution, Red Guards (Hongweibin, 红卫兵) and Rebels (Zaofanpai，造反派) overthrew the organisations of the Chinese Communist Party and the Chinese government at various levels. Although the Chinese government was later reconstructed, class conflict took precedence over economic or social issues, and there were no significant conflicts between economic expansion and environmental protection, because the state at that time may be indifferent to both (Zhang & Barr, 2013).

After a brief period of transition following the end of the Cultural Revolution in 1976, China officially embarked on a new era of reform and opening up in December 1978. Economic development rose swiftly to the top of the state's strategic imperatives, replacing class struggle and other political affairs. The effects of economic development on environmental quality soon became apparent. From December 31 to January 7, 1984, environmental protection was declared to be one of the fundamental national policies during the Second National Conference on Environmental Protection. In the same year, China's State Council published the Decision of Work on Environmental Protection (Guanyu huanjing baohu gongzuo de jueding,关于环境保护工作的决定), pointing out that tasks aimed at preventing contamination of nature and enhancing and maintaining the ecological environment were incorporated into China's basic national policy for modernisation imbued with Chinese characteristics. Since then, the Chinese government

has developed specialised government bodies to undertake duties, including regulating and implementing environmental protection. In 1989, the State Council held the third National Environmental Protection Conference and established Three Major Policies (Sanda zhengce，三大政策) and Eight Systems (Bada tixi，八大体系). Until 1991, the state promulgated a relatively sound legal system consisting of more than ten laws on resources and the environment, including the Law on the Prevention and Control of Water Pollution(Shuiwuran fangzhifa，水污染防治法), the Law on the Prevention and Control of Air Pollution(Daqi wuran fanghzifa，大气污染防治法), and the 'Regulations on the Prevention and Control of Environmental Noise Pollution(Huanjing zaosheng wuran fangzhi tiaoli,环境噪声污染防治条例), complemented with over 20 administrative regulations and departmental rules.

Since 1992, China's industrialisation process has undergone a first round, the development of the chemical industry. The rapid growth resulted in the environmental deterioration (Jin 2020). Therefore, the targeted field of pollution control began to shift from industrial pollution to urban pollution (Zhao et al., 2020). The central state, during this time, appealed for a coordinated development strategy and announced equal attention to economic development and environmental protection (Sternfeld, 2016). In 1992, China attended the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, and promulgated the '*People's Republic of China Report on Environment and Development*(Zhonghua renming gongheguo huanjing yu fazhan baogao，中华人民共和国环境与发展报告). The document clearly states that China will follow a path of sustainable development. Then, in 1995, China responded by releasing a series of regulatory standards, developing planning opinions, publishing action plans, and putting laws and actions into place, with the goal of accomplishing coordinated growth of the economic, social, and atmospheric environments. However, these actions seem to be inadequate for reducing greenhouse gas emissions due to a sharp increase in sulphur dioxide pollution and fine particulates followed by the expanding economy (Wang et al., 2021; Chang et al., 2020).

In 2003, the Third Plenary Session of the 16th CPC Central Committee put forward the environmental discourse of Scientific Outlook on Development (Kexue fazhanguan，科学发展观) for the first time. On March 12, 2005, the Hu Jintao government proposed the 'strive to build a resource-saving and environmentally friendly society' policy at the Central Working Forum on Population, Resources and Environment (Zhongyang

renkou ziyuan huanjing zhongguo zuotanhui, 中央人口资源环境工作座谈会). Furthermore, China has actively taken part in international environmental governance negotiations and discussions with an open mind and spirit of collaboration (Fitrian, 2021). In 2006, China ratified the Kyoto Protocol, committing to cut greenhouse gas emissions and prioritising environmental protection, particularly climate change mitigation, as a vital imperative of the Chinese state. Driven by a strategy that prioritised the environment, in response to the Kyoto Protocol, China has established six regional protection inspection centres in charge of coordinating regional environmental governance. These regionally based centres served as the administrative backbone for the rewriting of regional atmospheric prevention and control legislation and regulation standards, as well as the long-term strategic plan for regional air pollution prevention and control (Chen, 2016).

Since the 18th National Congress of the Communist Party of China (CPC), China has placed great emphasis on ecological civilisation, which was included in the strategic plan for constructing socialism with Chinese features. In 2015, the new environmental law was formally implemented. There has been a noticeable increase about the environmental discourses when the state describes the nation's environmental goals, including ecological civilisation (Shengtai wenming, 生态文明); Lucid Waters and Lush Mountains are Invaluable Assets (Qingshan lvshui jiushi Jinshan yinshan,青山绿水就是金山银山); greenisation (Lvsehua, 绿色化); and the war on air, water and soil pollution (Xiang daqi shuitumai wuran xuanzhan, 向大气水土霾污染宣战).

China has shifted its orientation from “pollution before governance, pollution while governance, and economic development prior to environmental protection” to “paying equal attention to environmental protection and economic growth; promoting synergic development of economy and environment” (Kitagawa, 2017). In line with its environmental strategy, China’s environmental policy is shifting from the past single command-and-control environmental policy to the extensive use of multiple environmental tools (Zhao et al., 2020), including environmental investment, environmental tax, ecological compensation, emission trading, and green finance. These policy tools have stimulated innovation and policy learning, requiring a transition away from the conventional state-formed intervention to a governance model that includes a greater emphasis on markets and nonstate actors within the whole environmental governance process (Gouldson & Bebbington, 2007). This “market-oriented turn” in

environmental governance has thus been linked with a series of dedicated government entities that have been established to regulate and implement environmental protection in China. Miao (2013) stated that China's effort to combat climate change does not exist in an institutional vacuum, and it entails the highest efforts from the level of the central government. In the coming section, there is a review of China's environmental administrations. A better understanding of the complex interactions among China's environmental authorities could provide clear guidelines for discussions of carbon market deployment.

2.2 Reshaping of China's Environmental Administration

This section investigates policymaking and implementation in environmental affairs in China. From a broad perspective, the Chinese government refers to the Party, the People's Congress, the Administration, CPPCC committees, the procuratorate and the court. From a narrow perspective, it only refers to administrative organs. In the previous chapter (see Chapter 1), it was noted that this thesis mainly focuses on the environmental authorities under the State Council. This section thus reviews the environmental authorities at both the central and local levels.

2.2.1 Environmental Decision-making and Implementation at the Central Level

The organisation, authority, and jurisdiction of the primary state agency in China responsible for environmental protection have changed over time. In China, tasks on national environmental planning are undertaken by the state (Shapior, 2012), particularly by the MEE (previously the Ministry of Environmental Protection), which is under the direction of the State Council, along with local administrative bureaus of environmental protection. China's environmental administration can be traced back to 1984, when the Ministry of Construction founded the State Environmental Protection Agency. Later, in 1988, it was separated out as an independent vice ministry to be directly led by the State Council. The reform of the State Council in 1998 equipped the SEPA with an elevated status and renamed the State Environmental Protection Administration. At that time, it was still not an official constitutional member of the State Council. Environmental preservation then moved closer to the centre of the central state's authority and became a vital matter of state concern, not just of a single ministry.

The main focus of China's reforms over the years has been to alter the dynamic between the state and the market. Before 1992, China was under a planned economy, and there

exists no markets that were characterised by capitalistic nature (Sornoza Parrales et al., 2018). Prices were not deemed effective indicators for market supply and demand but rather were tightly controlled by the government. Despite fluctuations, the general trend over the past few decades has been the revival, development, and maturation of diverse markets, and the shift of the state's attention from general issues to strategic and public ones. As a result of the state ceding control to the market, production and consumption are now more heavily influenced by market signals than by directives from central planners. Major changes were made in 1998, including the restructuring of large state-owned corporations, the privatisation of minor businesses, and the expansion of private business development (Boer, 2022). In parallel to market reforms, during the same period, the State Council clarified the boundary between the state and the market, establishing four new ministries and eliminating fourteen ministries and commissions that had been in charge of economic functions. The State Environmental Protection Administration replaced the previous State Environmental Protection Agency and was elevated to the ministerial level.

However, environmental protection, despite receiving ever higher status during the aforementioned reforms, was kept out of the core of the Chinese central state, where the State Council directs the day-to-day running of the nation. During the 1990s, policies on climate change were coordinated by the National Coordination Group of Climate Change (NCGCC) and were put under the auspices of the State Meteorological Bureau (now the China Metrological Bureau). Regular meetings were held, discussing the environmental issues and practical matters on climate change. At the end of the 1990s, with massive international and domestic pressure, the Chinese government realised that global climate change could pose significant threats to domestic economic growth and could no longer be insulated from the state's economic development strategies. In 1998, the NCGCC was renamed the National Coordination Group on Climate Change Strategy and was then placed under the command of the NDRC. The group's primary area of focus is developing national plans, directives, and responses to mitigate and adapt to climate change; organising and implementing the policy of the State Council on energy conservation and emission reduction; managing international cooperation; and coordinating significant environmental issues. Although the State Environmental Protection Administration has been elevated to the ministerial level, it was not a ministry then. Its director was not a State Council member as defined by law, and he/she could only attend meetings by invitation, and had limited authority over matters pertaining to

other ministries, even if those matters might be closely related to environmental protection.

The authority of environmental protection has been enhanced in recent decades. The year 2008 was a turning point when the State Environmental Protection Administration was reorganised as the Ministry of Environmental Protection and officially affiliated with the State Council[13]. The State Council's department of environmental protection has been promoted from a leading group to a full-fledged official constituting ministry. This reform served as evidence that environmental preservation had elevated to the list of national priorities (Lo, 2016). The new ministry and its counterparts at the local level thus received more power to enact and carry out environmental policies. In 2018, a new phase of reform began to further consolidate environmental authorities that were dispersed across many ministries into the MEE (State Council, 2018). The newly formed MEE now shoulders the fundamental responsibility of unifying the supervision of the ecological environment.

The justification of MEE combines the original functions of 1. The Ministry of Environmental Protection, 2. Climate change and mitigation under the Ministry of Land and Resources, 3. Water environment management under the Ministry of Water Resources, 4. Agricultural pollution under the Ministry of Agriculture, 5. Ocean environment under the State Oceanic Administration, and 6. South-north water diversion project's environmental protection under its office. The climate change-related tasks were transferred out of the NDRC and placed under MEE's duty (the carbon market, which will be discussed in the next section, was also assigned to MEE).

In China's governance, the phenomenon of "Water control in Kowloon (Jiulong zhishui, 九龙治水)" in many policy sectors, such as the food and marine sectors, also appears in the field of environmental protection. Environmental affairs under MEE's jurisdiction do not fully cover all domains of environmental protection, some of which remained in other functional departments. For example, MEE works with the Ministry of Agriculture in agricultural environment governance, with the Ministry of Land and Resources in soil pollution prevention and control, and with the Ministry of Water Resources in water

[13] The Institutional Reform of China's Central State since the Foundation of New China, http://www.gov.cn/test/2009-01/16/content_1206928.htm

environment management. Indeed, dealing with the climate change and reducing GHG emissions involves many fields, including air, space, ground, and water, and it is inevitable that there exists an overlapping of functions between the MEE and other departments in some specific environmental fields. In a list of the State Council's national leading group on climate change, energy conservation and emission reduction, in addition to the MEE, the NDRC, the Ministry of Water Resources, the Ministry of Agriculture, the Ministry of Land and Resources, the Forestry Administration, the Oceanic Administration, the Ministry of Transport and the Meteorological Bureau, are all involved[14]. This makes the interdepartmental cooperation of vital importance, and the quality of the work depends on the attention and coordination ability of the leaders in charge. The coming discussions on China's carbon market shows the extent to which the fragmenting environmental authorities have eroded the state's capacity in carbon market deployment with weak inner workings among the central ministries (see Section 4).

2.2.2 Environmental Decision-making and Implementation at the Local Level

Consistent with the environmental authoritarianism, while the policy making is done at the national level, it is each provincial government's responsibility to implement it, which in turn assigns most decision-making to lower-level governments. In China's horizontal-vertical system, central government entities, such as the MEE and the NDRC, are mirrored at the provincial and local levels. The local environmental protection agencies, which cooperate with other functional departments, are responsible for daily environmental protection administration under the leadership of the local Party and local government.Given the emergence and upgrading of environmental protection ministries at the central government level, the corresponding local environmental departments and bureaus have also begun to be established and developed. By 1990, the majority of the local governments had established certain environmental protection departments to deal with increasing environmental issues. Up to now, to respond to national demands for emissions intensity reductions as well as for climate change mitigation plans, provincial, prefectural, county, and city governments have established their own climate change leading committees (NDRC, 2009). However, some environmental protection issues are still scattered among other departments (Anonymous, PK/Think Tank 03).

[14] https://www.mee.gov.cn/ywdt/hjywnews/201808/t20180803_447653.shtml

The fundamental focus of China's climate change policy is on the central government's regulatory and coercive authorities as well as the political and developmental incentives of local governments (Gilley, 2012). Under China's Nomenklatura system, vertical-horizontal relations determine which entities the local environmental authorities are under their command (Mertha, 2005). The local environmental protection bureau, in principle, is under the jurisdiction of the local government, and it is simultaneously under the guidance of the superior environmental protection department "vertically". However, in practice, the policy process melted with the "tiao-kuai" relation is often complex and unclear. Horizontal management dominates the personnel and financial arrangements where the appointments and removal of the main leadership of the local environmental protection bureau is largely decided by the local government, and finance is also allocated by the local government (Mertha, 2005). These complex interactions among different levels of environmental bureaucracies may lead to opportunities for rent seeking during policy making and implementation. Figure 3.1 shows the hierarchy of environmental protection agencies in China's local context.

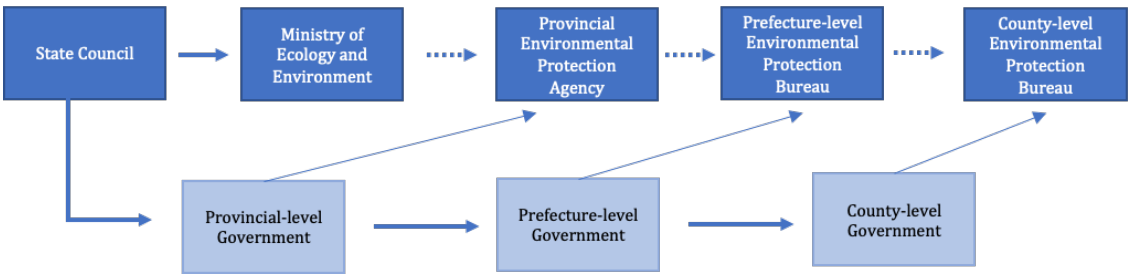

Fig.3. 1Theoretical framework[15]

3. State Strategies in Carbon Market Deployment

3.1 Carbon Market in the Larger Environmental Policy Complex

This section provides a brief overview of the overall policy backdrop in which China's national carbon market is taking place before moving on to local cases of the country's emission trading experiments. As the world's largest emitter, responsible for nearly one-third of global emissions (Crippa et al., 2019), China's coal-dominated energy mix is the main source of serious air pollution incidents and carbon emissions. This may challenge the ceiling of environmental capacity and economic development. In 2020,

[15] The solid line is the management relationship, the dashed line is the guidance relationship.

coal consumption accounted for 56.8% of total energy consumption (National Bureau of Statistics, 2021). The carbon market thus offers an optional policy alternative for emission reductions to render a wicked environmental problem more tractable (Heggelund et al., 2019).

The Chinese state has introduced a series of climate and energy policies. These policies targeted at reducing GHG emissions partially supplement each other (Heggelund et al., 2022). In China's 12th Five-Year Plan for Energy Development (2011-2015; State Council, 2013), the central state issued a dual control policy, announcing targets on energy usage and energy intensity. Technology innovation and renewable energy then became key for China's carbon governance (Korsnes, 2020). Corresponding policies for renewable energy deployment, such as Made in China 2025, for the transformation and upgrading of China's pillar industries, were promulgated one after another. By the end of 2020, China had reduced its carbon intensity by 48.4% compared to the 2005 level, which successfully fulfilled its objective of a 40%–45% carbon intensity reduction by 2020 (State Council Information Office, 2021b). Additionally, coal consumption for 2021 also decreased from over 70% of the total energy usage of the last decade to 56% (Xu & Singh, 2021). In September 2020, President Xi Jinping announced the 'Dual Carbon' goals, or the '30/60' goals, at the 75th session of the United Nations General Assembly. President Xi proclaimed that China would strive to reach its carbon emissions peak by 2023 and become carbon neutral by 2060 (Heggelund, 2021). China's climate envoy reiterated in July 2021 that the nation's 2030 objective pertains to carbon dioxide (CO_2) peaking, and its "carbon neutrality" aim embraces all greenhouse gases. The "30/60" dual decarbonisation goals further enhanced the National Determined Contribution commitment of reducing the carbon intensity by at least 65% compared to the level of 2005[16] ("Full text: Remarks by Chinese President", 2020). This lent new relevance to China's emission trading scheme, as President Xi frequently referenced it in the context of reaching the country's dual carbon goals for the '30/60' goals. In 2021, the State Council pushed the goals for the next step by issuing the Action Plan for peaking CO_2 emissions at the National People's Congress, underlining provincial-level targets (State Council 2021). The national emission trading system is thus expected by China's state as one of the policy attempts for effectively accelerating its energy

[16] The previous goal was a reduction of GDP carbon intensity by 60%–65%, compared to 2005 (NDRC, 2015).

transition at lower costs (Goulder et al., 2017). Xinwen Lianbo[17], one of the most significant mouthpieces of the Communist Party of China, emphasised the importance of the scheme and reported on the very first day of its opening that:

> It is the first time that China has pressed the responsibility of controlling greenhouse gas emissions onto enterprises from the national level and promoted the upgrading of industrial technology through a market-pushing mechanism.

The 12th Five-year Plan, a landmark in China's energy transformation, was promulgated with an emission reduction target to cope with climate change. The state bureaucracy decided to deploy a national emission trading system as part of its policy to "let the market play a fundamental role in resource allocation" (NDRC, 2011a). For the first time, the carbon market entered the policy arena. This market-based approach was closely in line with the dominant ideas concerning regulation and the importance of efficiency. In 2015, the China-US Joint President Statement on Climate Change, China's state reaffirmed its determination to swiftly implement the shift to a green, low-carbon, and climate-resilient economy, strengthen bilateral coordination and cooperation, and advance the implementation of domestic climate policy, and announced that a national carbon market would be underway in 2017, covering key industries, for example, power generation, papermaking, iron and steel, and nonferrous metals.

There is a near-consensus among interviewees on the necessity of introducing climate policies to deal with the severe carbon emisson, yet opinions diverge as to the role of the carbon market in China's environment strategic policy portfolio today and in the future. Policymakers and industry experts proclaim that this market-based policy tool is capable of yielding considerable results to achieve China's "30/60" dual carbon targets. For example, a local official in an environmental protection bureau in Jiangsu described the carbon market as a handle (Zhuashou, 抓手) to their work for reducing carbon emission (Anonymous, JS/Government 03). These experts hold the view that the Chinese state's endeavour to develop a national carbon market indicates its attempt to bring ecological modernisation into its carbon governance. By introducing, adopting,

[17] Xinwen Lianbo is a prime-time news programme aired by state broadcaster China Central Television (CCTV).

and localising a relatively mature market-based policy tool from the most industrialized countries, the state has sought to achieve industrial transformation with state-industry deliberations on industrial decarboxylation. The carbon emission trading system, in their opinion, provides new investment opportunities for industries and opens 'the new track' for the market (Anonymous, JS/Association 03). However, on the other side, such a human-created market is clearly politically driven and depends on the state's ability to set stringent climate goals and detailed regulations. Some interviewees were concerned about politicians or society at large not fully recognising the role of the carbon emission trading system in China's carbon governance but regarding it as an alternative only to supplement existing climate change policies. 'It (the carbon market) is just a means for emission reduction, it is not an end…' claimed by a think tank expert in my study 'it is thus can easily be discarded and be replaced by other tools' (Anonymous, JS/Think Tank 02). This pessimistic view of the role of the national emission trading schemes in China's carbon emission reduction policy agenda is seconded by experts from the Chinese Renewable Energy Industries Association, who explained that different from western countries, China's carbon market is under operation before its carbon emissions peaked (Anonymous, PK/Association 02). Conventional industries are still considered an unwavering part of the Chinese economy, and for these industries, decarbonisation is challenging because neither producers nor manufacturers that buy their products directly gain from it. Furthermore, as industrial informants argued, these covered industries in China's carbon market have strong ties to local political and economic situations and are also part of international marketplaces. Even though businesses come under pressure to demonstrate their contributions to the dual carbon targets, trading carbon emissions seem to fail to provide adequate incentives for many enterprises with hostile opposition to carbon pricing schemes. Instead, this newly introduced carbon pricing mechanism, in some ways, has become the 'straw that broke the camel's back', as many of China's operating coal plant units are now near the break-even point given the current policy and market conditions (Mo et al., 2021). The current design of China's carbon market yields negative impacts on its market competitiveness and could further risks government revenue in certain regions (Anonymous, JS/Government 02), as firms participating in the carbon market are constrained by an emission ceiling in line with the initially distributed emission allowance given by the government each year, and they are asked to invest more in certain emission-reduction technologies and projects. There are concerns about whether the emission trading system, in its current form, is capable of helping China reach its climate goals with the benchmarking design, limited coverage, and the absence of a firm

cap on emissions (Deng & Zhang, 2019; Yang et al., 2022). China's baseline method[18] for distributing emission allowances neglects the differences among the enterprises and tends to eliminate backward enterprises. This could further lead to a certain impact on the revenue and employment of local governments in a short time. Consequently, it is far from sufficient with only local politicians in the vicinity of the carbon market but with industrial actors who may be the potential beneficiaries excluded due to the additional profit lose caused by the emission ceiling. In the subsequent sections, based on government documents and interviews with a wide range of experts, I delve into the specific features of China's carbon market policy experiment.

3.2 Chinese Experimentalist Style of Governance: The Top-down Governance Structure of China's Carbon Market

In the study of environmental governance, experimentation has become a paradigm, especially in regard to social transformations (Turnheim et al., 2018). In-depth analyses of local experimentation have shown that experiments occur in conjunction with a process of state reconfiguration that calls for new governance methods of governing and directing individuals and environments (Bulkeley et al., 2014). Policy experimentation has been frequently used in the United States and elsewhere to test, access and adapt to novel government programs and policies before they are officially adopted on a national scale (Walker, 2001). The liberal democratic nature of current studies scrutinizing policy experimentations neglects the role of the state, whereas it is generally an important driver of local policy innovations and creates the necessity for a dispersed and fragmented strategy for climate experimentation (Madsen & Hansen, 2019).

However, different from the conventional model commonly applied in democratic politics, China's experimental approach of environmental governance is a prime example of a state establishing "policy laboratories" in a proactive and methodical manner and mapping out how local experimentation is implemented, driven by various power dynamics and interest configurations. The Chinese Communist Party's revolutionary experiences are where China's policy experimentation began, and these experimentations are referred to as 'experimental regulation' (provisional rules developed for test application), 'experimental points' (presentations of models and pilot initiatives in a certain policy field) or 'experimental zones' (local jurisdictions with

[18]: The calculation of benchmarking method: Enterprise quota = national industry standard x local industry adjustment coefficient x actual output of enterprises in the current year

broad discretionary powers (Heilmann, 2008a: p5). All three experimental tools have played, and perhaps will continue to play, a significant part in China's economic and social reforms (Kostka & Nahm, 2017). The rhetoric of policy experimentation is encapsulated in famous maxims, for example, Deng's 'cross the river by feeling for the stones.' At the heart of China's experimentalist governance, according to Heilmann (2008b), is the conduct of experiments that are locally run but centrally coordinated, which are widely utilised to inform policy development and institutional reforms. By performing numerous experiments on a local basis, policy innovations can be conducted through trial and error and then learned, adjusted and formulated by central decision-makers (Xu, 2011). This implies that the governance process involved in policy experimentation is long-lasting and institutionalised (Lo & Broto, 2019).

Previous EU and US experiences, as well as studies on China's carbon market (Chen et al. 2021; Liu et al., 2021; Song et al., 2019, Zhang et al., 2020), have generated valuable lessons on how to combine the essential design elements with a set of criteria based on local varieties to form an effective, ordered, and efficient scheme for China's circumstances. Beyond this common core, I argue that China's carbon market represents a departure from previous economic-oriented policy experiments that are mainly characterised in a bottom-up fashion for the purpose of promoting local economic growth, but instead, it is dominated by strong control from the top. To support the argument, I focus more on the explorations of the governance structure of China's carbon market, which from the researcher's perspective is seen as an experimentalist form of policy governance, to see how top-down state control shapes this market-based policy attempt when situating in China's context.

If we examine the institutional structures and policy actions in the Chinese context of carbon market governance more closely, we can detect that such localising experiences have been guided by the centralised power of the state primarily through two means: releasing guiding and regulatory policy documents and ex-post adjustment mechanisms. Many studies on China's carbon market have clearly investigated and examined regulatory systems, allocation methodologies, the MRV, and compliance mechanisms (e.g., Cao et al., 2022; Song, 2022; Zhou et al., 2022). The fundamental infrastructure of China's emission trading schemes appears to be comparable because the overall design is learnt from the western EU ETS models (Chen et al., 2017). In addition, from the researcher's perspective, one distinctive element of China's top-down control of carbon market governance is the capped industry, that is, the power generation sector.

Moreover, the top-down control has undergone changes over time in terms of the state's objectives, from the initial stage of local experiments that creates significant spaces for local officials to test various tailored options in line with local conditions (October 2011- March 2017) to the latter phase (post March 2017- now). The focus of the state now is to scale up the fragmented local emission trading pilots to a national-level market by policy learning, and to improve the local implementation through an ad hoc refinement process.

The central government has made an effort to promote experimentation using different approaches throughout the early stages of the process to determine which could be most effective. In the lead-up to its ETS, China's state has regularly altered its policy to "localise" and "naturalise" this market-based approach to carbon governance as an optional policy option. The Notice on Pilot Work on Carbon Emission Trading (Guanyu kaizhan tanpaifangquan jiaoyishidian gongzuo de tongzhi, 关于开展碳排放权交易试点工作的通知) was released by the NDRC in 2011 and heralded a new start of the market-based mechanisms for achieving emission reduction targets. The State Council addressed the importance of the domestic carbon emission system in China's environmental policy portfolio and provided an impetus to progressively develop a domestic carbon market with political legitimacy as a safeguard. It specified the implementation of carbon trading trials in seven[19] provinces and cities, including Beijing, Tianjin, Shanghai, Chongqing, Hubei, Guangdong and Shenzhen, and showed the state's determination to construct a transprovincial and transregional ETS scheme. It is worth noting that this notice is deemed a benchmark of carbon market deployment in China, which has been followed by a series of local administrative policy strategies. As of now, neither the People's Congress nor its Standing Committee has passed any particular law to regulate the carbon trading market (Tang et al., 2015; Zhang, 2015). One policymaker interviewed for this research suggested that in the absence of a carbon market law, this notice allowed state involvement in constructing the carbon market and worked as a metaphor for guiding the corresponding deployment work of local governments (Anonymous, JS/Government 02).

The notice had an impact on local experimentation by highlighting certain important concerns that local policymakers needed to pay attention to and by offering the strategic goal as a blueprint for experimentation. For instance, 'to use the market mechanism to

[19] In December of 2016, the eighth pilot province- Hunan, joined the game, which was not included in the ETS starting line-up.

achieve the 2020 action target for controlling greenhouse gas emissions at a low cost (State Council, 2021)', the notice tasked local governments with establishing an expert team and arranging special funds for the pilot to ensure the preliminary preparation of the emission trading scheme was going smoothly. Instead of specifying the regulations for deploying the market, in this notice, the state offered space for local authorities to 'promptly organise the compilation of pilot implementation plans for carbon emission trading, clarify the overall objectives and tasks, and ensure the safeguard measures and arrangements', but all these needs to 'report to the NDRC for review and then can be implemented'.

After the notice, the State Council further promulgated the Decisions on Cleaning Up and Reorganising All kinds of Trading Venues to Effectively Prevent Financial Risks (Guanyu qingli zhengdun gelei jiaoyichangsuo qieshi fangfan jinrong fengxian de jueding, 关于清理整顿各类交易场所切实防范金融风险的决定). It affirmed the significance of China's carbon market and pointed out trading platforms on the unsatisfactory practices of local governments and exchanges. It required a safer market order by enhancing central control and establishing market regulations. Moreover, the administrative document, Interim Arrangements for Voluntary Greenhouse Gas Emissions Trading (Wenshi qiti ziyuan jianpai jiaoyi guanli zanxing banfa, 温室气体自愿减排交易管理暂行办法) designed approximately 30 substantive guidelines for the trade entities, measurements, the designation of authority and responsibility, and the trading procedures of offset project registration. The central state also required the attention of local policymakers on the GHG ER programmes' validation and certification and clarified the detailed requirements for market deployment, working procedures, and reporting formats. In the second half of 2013, ETS pilots began to operate officially in China, followed by a series of rigorous regulations on the market and government agencies at the national and municipal levels (Cui, 2021). These policy documents set the course for the coming years.

After years of capacity building and trial and error through several pilot schemes (Stensdal et al., 2018), the central government gained a great deal of expertise. The state continuously adjusts the design, policy framework and regulatory authority for the national scheme. For instance, many pilots have experimented with using various financial products over the years. The dynamic adjustment mechanism in Hubei, the sectoral emission control factor in Beijing, and the auction price reserve mechanism in

Guangdong, Shanghai, and Shenzhen are a few examples of the more restrictive benchmarks and allowance allocations that have been applied, tested, and examined. However, neither these initiatives nor the institutional investors' participation in trading during the market's earliest stages of operation are included in the national ETS's present architecture. The internal learning process has already enhanced the state's top-down control in terms of its policy amendments and improvements, which reduces the scope for local discretion and experimentation.

The Chinese state has sought to maintain its top-down governability by the sector covered in the national carbon market. Instead of continuously covering the previously nominated sectors in the emission trading pilots, including petrochemical, chemical, building materials, steel, nonferrous, paper, electricity and civil aviation, the ambition of the central state downsized to one, the generation sector -the largest emitting industry- to be initially regulated alone and focused on coal- and gas-fired power plants. The industry is crucial to China's dual carbon ambitions. Resource dependency and historical reliance on natural resource-based industry for the prosperity of economic development granted the power generation industries a privileged position in China's energy transition, reflected through the state ownership of the major power enterprises. China's power generation sector is dominated by a handful of state-owned enterprises (SOEs): two major central government-owned power grid enterprises (the State Grid Corporation of China, and China Southern Power Grid Company Limited), "Big Five" (China Huaneng, State Power Investment Corporation, China Energy Investment, China Datang Corporation. Limited, and China Huadian Corporation), and "Small Noble Four" (SDIC Power, CHN Energy, CR Power, and China General Nuclear Power Group). The majority of these major carbon market players are directly controlled by the central state rather than local officials, reflecting a strengthening of control from the top.

The involvement of SOEs can serve as an effective setting for the state to acquire prompt and accurate market information and reduce the principal-agent problem. One of the interviewees who works in the carbon asset management team of State Power Investment Corporation stated that:

> The power industry is one of China's fundamental industries. Its industrial structure, where central enterprises and SOEs dominate the market, makes it easier for the state to yield control of the market. The emission data are also relatively complete compared to other industries, as each year, the Bureau of

> Statistics and Energy Bureau have a record for related data on the power industry. The availability of data in the power industry is considered an important factor for its inclusion in China's national carbon market. (Anonymous, JS/Firm 07)

The dual identity of these SOEs, profit-seeking economic entities with political responsibility, makes them a vital means for the central state to "control" market demand, as their emission allocation accounted for a large share of the total allowance quota (Anonymous, PK/Think tank02). These SOEs treat emission trading as a mere political task, and their trading is mostly influenced by the administrative mechanisms rather than market factors. The central state assigned them complex roles in the early stages of carbon market construction. It is regulated in Notice on the Key Work of Launching the National Carbon Emission Trading Market (Guanyu qieshi zuohao quanguo tanpaifang jiaoyishichang qidong zhongdiang gongzuo de tongzhi,关于切实做好全国碳排放权交易市场启动重点工作的通知) that 'relevant industry associations and central enterprises should play a leading and exemplary role to create an atmosphere for key industries and enterprises to actively respond to and participate in the national carbon emission rights trading'. Instead of the emergence of a network governance mode that is advocated by several green state scholars (Craig, 2020; Haas, 2021), China's carbon market continuously reflects an institutional arrangement initiated by the central government and simultaneously is governed with corporate bureaucrat manoeuvrability. The role of the state in the market is not only an administrative executive but also a market controller under the guise of state-owned enterprises, first, the state presses the SOEs to comply with the requirements of the carbon market to stimulate the vitality of the market, and second, the state delegate governance duties such as carbon emission verification and quota allocation to professional executives of the Big Fives under the goal of controlling market supply. 'In China's carbon market governance…' claimed by a respondent, 'SOEs can be seen as part of the government as their staff are authorised strength' (Bianzhirenyuan 编制人员). The state, thus, acts both as referee and athlete in this game' (Anonymous, PK/Think tank03)

In December 2020, the MEE promulgated the Interim Rules for Carbon Emissions Trading Management (Trial)(Tanpaifang jiaoyi guanli banfa (shixing), 碳排放交易管理办法(试行)), followed by the 2019-2020 Implementation Plan for National Carbon Emissions Trading Total Allowances Setting and Allocation (Power Sector) (2019-

2020nian quanguo tanpaifangquan jiaoyi peie zongliang sheding yu fenpei shishi fang'an (fadian), 2019-2020 年全国碳排放权交易配额总量设定与分配实施方案(发电行业)) . These administrative measures offered the regulatory framework for running the national emission trading system and introduced a series of restrictions on trading eligibility, such as stating that the assembly unit includes a pure condensing generator unit and a cogeneration unit, and pure heating facilities without generating capacity are not included in this scheme. It also regulated different carbon emission baseline values for different types of units. Different from the early experimentation stages, the carbon emission baseline value of China's national carbon market reflects the energy consumption level of different types of units. It thoroughly combines a variety of aspects into measures, such as economic growth, adjustment of the industrial structure, optimisation of the energy structure, and cooperative control of emissions of air pollutants. For example, the carbon emission baseline from 2019 to 2020 focuses on the impact of three factors: economic growth expectations, the achievement of GHG emission control action targets, and the impact of the pandemic on economic and social development. Phasing out the plants also entails pricing out the industrial processes they support in a carbon market that would disincentivize inefficient captive power plants using a single industry-wide baseline (Anonymous, JS/Firm08). This came in addition to the correction coefficient in the sense that the fairness of quota allocations of the same type can be ensured, and a regional correction factor is not set in this scheme.

A number of ex-post adjustments involved in the MEE allocation plan are also applicable to allocations to more evenly distribute generational units within the same category. One of the several ex-post mechanisms in the carbon market governance is the load-factor adjustment. The allocation plan incorporates two distinct designs to 'allow coal-fired power plants to reduce their compliance burden' and to 'promote the growth of gas-fired power generation'. The plan specifically caps the number of credits coal power facilities would need to be purchased by capping the compliance obligation at 20% over their confirmed emissions. In some cases, these mechanisms provide additional allowances. For instance, a power plant would only need to purchase the number of licences necessary to satisfy its excess compliance obligation up to 20%, even if its emissions were 50% higher than its free allotment. All coal power stations that are running at less than 85% of their capacity will receive additional free allowances attributed to the load-factor adjustment. In parallel, the verified allowance is the limit of the compliance obligation for gas-fired power plants, which means that exceeding the allowance has no consequences. This price control continues to be fundamentally at

odds with the ideology of neoliberal political economics, which holds that the only way to stimulate the economy is to remove market restrictions and 'get the price right' (Chang, 2020, p.69) to utilize comparative advantages to serve the domestic market's objectives.

What we can see is that the central state has attempted to enhance its top-down control and intervene in the market by specifying the essential elements of the national carbon market and adopting price adjustment mechanisms to invigorate the market. In the current layout, China's carbon market uses a flexible emissions cap that can change annually based on the output of the regulated sites. Unlike previous ETSs in other countries, the state neither sets a fixed cap on emissions nor a cap that will decrease over time. Even though its total amount of emissions is set in a top-down fashion in line with the overall emission control target and the characteristics of the chosen industries, the cap is determined by the accumulation of each individual enterprise's emissions based on allowance allocation regulation (see Figure 3.2). This alone, however, is far from adequate to consider China's carbon market as a mix of top-down and bottom-up characteristics.

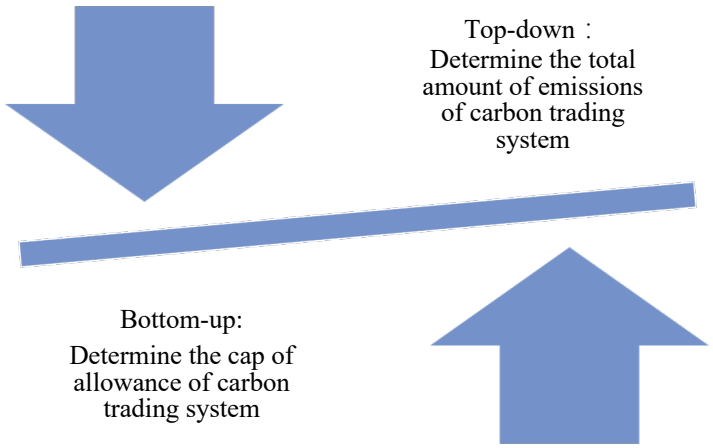

Fig.3. 2The setting of overall emission allowances in the carbon market

4. The Paradox of China's Carbon Market: A Case of Window Dressing of Ecological Modernisation under the Shadow of Hierarchy

Before going on to investigate the underlying adjustments in the state's insistence on the centralised power of carbon governance in market-based policy experimentation and the actual interactions among state actors at various levels and with nonstate agents in the coming empirical chapters, this sector addresses the paradox of China's carbon market in terms of the governance issues related to the commodification and trading of carbon. In this section, I try to investigate the state capacity in forming a green state, as well as the challenges of China's top-down experimentalist governance of carbon emission trading by drawing on insights from green state theory. Of critical importance of a green state is its commitment to the environmental discourse of ecological modernisation (Christoff, 2005). Cogent appraisals of a carbon market as an imaginative incarnation of ecological modernisation have been revealed in the precedents for the creation of markets, for example, the emission trading systems in Germany and the EU ETS (Machin, 2019). The deployment of emission trading in a global domain seems to be an excellent reminder of the degree to which carbon markets are political creations. Political measures such as enforcing private property rights (carbon), commodifying resources (carbon emission allowances), and constructing platforms for trading, regulating, and banking inhabit the complex configurations of government agencies, intricate private business interests, and nongovernmental organisations. These prerequisites of developing carbon markets, to some extent, reveal their political nature. Thomas Lemke (2001) claimed that:

> The market does not amount to a natural economic reality, with intrinsic laws that the art of government must bear in mind and respect; instead, the market can be constituted and kept alive only by dint of political interventions. (p.193)

This argument is likely to be challenged by scholars who speak for neoliberalism, and their advocacy of the need to free markets from the hand of bureaucracy stands at the very opposite side of the state (Harvey, 2005; Hayek, 1973; Thorsen, 2019). Even though state intervention in this research is considered necessary for combating the escalating magnitude and urgency of environmental issues, among the social and institutional transformations that are required by strong ecological modernisation (Mol & Spaargaren, 2000), the market then functions as an essential element of governance that aligns the interests of many agents, including policy elites, suppliers and producers,

financial institutions, and consumers, permeating ecological ideas into the existing production process. The governance structure, therefore, from the ecological modernisation perspective, is shifted from a top-down hierarchical regulatory nation-state driven by the traditional command-and-control instruments to a more decentralised state that is capable of deploying a series of new policy instruments to steer its industry along more environmentally sound lines.

Albeit sporadically, the existence of ecological modernisation in China's carbon economy reflects the challenges of a 'Eurocentric' perspective (Blowers, 1997). Work on the green state (Dryzek et al., 2003; Eckersley, 2004; Christoff, 2005; Meadowcroft 2012; Duit et al., 2016) and key contributions on the role of the state in climate governance and sustainable transitions (Bäckstrand & Kronsell 2015) contend that state institutions and policymaking procedures are essential for implementing responses to climatic and environmental change (see Chapter 2). Given its special legitimacy, as well as its resources and strength in contrast to other actors, scholars in the green state see the state as one of the most crucial actors in advancing greener agendas, claiming that a green state guides society toward ecologically sustainable goals through political commitments and the involvement of public actors and institutions in processes of regulating transformational social change (Dryzek et al., 2003). As Polyani (1944) argued, demands to re-embed markets in the framework of social control are frequently the result of laissez-faire approaches to the markets. From the researcher's perspective, Beyond the issue of the policies and guidelines that govern how China's carbon market operates, what makes it vital is the scalar politics of the new carbon economy, including the state's role in its relations with the market and the specific governance challenges it generates. Additionally, much needs to be discussed on whether this environmental discourse of ecological modernisation, which can be seen as one of the criteria for a green state, is consistent with the practice in the prevailing Western front runners (e.g., Germany and the UK). It seems too early to assert that such environmental discourse has taken a foothold in China's carbon market governance.

According to Hajer (1997), ecological modernisation can be seen either as a process of institutional learning, where responsive and adaptable institutions learn, develop and make significant progress, or as a technocratic project that only provides a short-term fix to the longer-term systemic conflict between the economy and the environment. In China's experimental process of the carbon market, I argue that this market-based approach to carbon governance seems to have been developed as a result of institutional

learning that made a formidable environmental problem more trackable. While it also shows several aspects of a technocratic endeavour, the development of the carbon market is an essential fragment of China's climate change policy portfolio but seems to be dismissed as overblown rhetoric or jumping on the bandwagon. It is regarded as the product of political consideration, partly implanting itself under weak ecological modernisation. However, it is more likely to be window-dressing of a seemly innovation policy attempt within the original institutional framework, failing to solve the contradiction to prioritising economic issues and urgent environment issues. To develop these arguments, this section first discusses how the effectiveness of this top-down-driven policy experimentation is diminished under powerful political clout and how the fragmented authority of the central state weakens its capacity for policy deployment. A general discussion on the lack of public participation in China's carbon governance follows, offering evidence on how the central state realises the centralised forms of governance from curtailing and restricting the participatory decision-making process. Empirical explorations will unfold, offering a seminal account of ecological modernisation as a policy discourse in the practice of China's carbon market to see whether the Chinese state has emerged as a green state in its carbon governance.

4.1 Centralising Carbon Governance by Decisive Political Intervention

There are significant cleavages of ecological modernisation as a plausible metaphor in the situation of China's carbon market. The message from the central state seems to be consistent with strong ecological modernisation that appeals to bottom-up actors directly involved in the policy process, while the practice on the ground was tepid, committing partly to the weak ecological modernisation but more likely to be window dressing to maintain existing political-economic structures. In line with the environmental authoritanism, a distinct feature of China's carbon market governance is that political intervention plays a central role in the decision-making and operation process. The state bureaucracy has been deploying a great range of environmental policies and regulations for steering, guiding, and regulating the market. Decision-making is reserved for elites from the central environmental authority (Anonymous, PK/Think Tank 03). The MEE barely shows any sign of conceding control to local environmental bureaucracies and does not even mention the enterprises and the public. Despite being taken as a type of market, featured by experimentation governance, China's carbon market seems to be out of the orbit of depoliticisation of the environmental domain and integrates itself as an essential element of China's grand

state-guided environmental governance blueprint with characteristics of recentralisation. Dryzek (2005, p.138) claimed that '(the proposals of economic instruments) their entry and so their design is heavily dependent on the configurations of political forces and the prevailing political-economic context.', he further added that (Dryzek, 2005):

> The concerted pursuit of ecological modernisation requires a consensual and interventionist policy style consistent with corporatism. This style is, however, anathema to governments under the sway of market-liberal doctrines, which helps explain why ecological modernisation faces an uphill struggle in the English-speaking industrialised nations. (p.170)

The hostility to ecological modernisation that the environmental state's continued reliance on ecological modernisation could catalyse by market zealots and make it the only remedy for 'environmental negative externalities' (Swyngedouw, 2005; Blühdorn & Deflorian, 2019; Machin, 2019) does not hold in China. However, it does not mean that the Chinese state's decisive intervention in the carbon market will lead to a better environmental outcome in this case. China's carbon market seems to be vulnerable to policy adjustments. There is a significant delay in developing a national carbon trading market, which was originally planned to be under operation in 2017 and was later postponed to 2020. Moreover, CCER even stopped running for almost four years (Anonymous, PK/Association 01).

Rather than viewing it as a strong ecological modernisation, China's carbon market is more likely to be 'a prosaic, and reformist way of problem-solving (Dryzek, 2005)'. The environmental problems seem to not be treated as opportunities by both the state and the market players but as a long-standing trade-off challenge between it and economic problems. During the carbon market governance, the local state actors has revealed relatively weak integrative capacity where the carbon market construction would normally concede to robust economic clout. A local official shared his insights in an interview, 'China's carbon trading is like a hoax. It is expected that the local government officials pursue positions and seek to maximise their utility...' (Anonymous, JS/Government 02). It can be inferred from the interviewee's wording of utility maximisation that achieving environmental objectives may be perceived as nonverifiable and incompatible with the existing GDP-oriented pursuit at the local level. Li and Xu (2020) stated that the promotion of competition between local official leaders always results in incomplete environmental protection. As alluded to by the regulatory

innovations from the central state to local environmental authorities, it has shown that weak supervisory enforcement from the top creates space for local governmental agencies to act for their own profit, that is, seeking GDP-oriented pursuits (the researcher will reserve discussions of supervisory institutions for the subsequent chapters in Beijing City and Jiangsu Province case studies). This seems counter to the imaginative advocation of ecological modernisation, where environmental concerns and economic concerns are in harmony. Likewise, it can hardly own the central state's drifting behaviour to what the Promethean environmentalists[20] believed was ecological modernisation's precautionary principle as nothing but dissipating environmental health with excessive and costly regulations. Instead, the central state itself, as a fragmented unit, fails to shape itself as a green state exercising capacity in carbon governance, facing both internal weaknesses and external conflicts. The following section then discusses how the state is challenged by the weak inner workings of the central administration when initiating this market-incentive policy experimentation.

4.2 Fragmenting Environmental Authorities: Eroding Integrative Capacity with Weak Inner Workings of Central Administration

Bruce Gilley declared that 'the close interdependence of politics, policy and administration means that policy approaches often fail when they are not linked to necessary political and administrative supports' (Gilley, 2017, p.729). As discussed before, the state has established a set of central environmental authorities, particularly the NDRC and the MEE, that are subordinate to the State Council, along with the local administrative departments of environmental protection (e.g., the Beijing Municipal Ecology and Environment Bureau). Different from the intricate delegation chains of the EU ETS (Maria & Pardo, 2008), the state entities that ultimately carry out the policies of China's carbon market stand at the very end of a relatively straight delegation chain while at the same time depicting a control dynamic captured by several hierarchically organised principal-agent relations. On the one hand, this seems to ensure that environmental pressure will be shared among various departments and different levels of authority instead of a scenario where environmental governance attempts to enforce environmental strategies on its agents. On the other hand, however, the complex

[20] See in John S. Dryzek (2005), The Politics of the Earth, Environmental Discourse. The "Promethean" was firstly used by Martin Lewis (1992), to describe the moderate environmentalists. Prometheans have unbridled faith in people and their technologies to solve any issue, especially environmental issues.

institutional configurations melt the long-standing conflicts on environment and economy within the state's ranking of its priorities, weakening the effectiveness of overall policy decision-making and implementation.

To understand such institutional configurations, it is essential to anchor our explorations to the core environmental authority for carbon market deployment. As discussed in the previous section, before 2018, it was the NDRC that took a considerable role in initiating and undertaking carbon market-related programs, policies, and regulations. It was also the NDRC that promulgated the key guidelines for the deployment of China's emission trading pilots and a national carbon market, for instance, Interim Measurement for Managing the Carbon Emission Trading Rights (Tanpaifangquan jiaoyi guanli zanxing banfa, 碳排放权交易管理暂行办法) and Program for the Establishment of a National Carbon Emissions Trading Market (Power Generation Industry)(Quanguo tanpaifang jiaoyi shichang jianshe fangan (fadian hangye),全国碳排放交易市场建设方案(发电)行业(NDRC 2010; 2011b). In the 2018 government reshuffle, the responsibility for climate change mitigation, including the development of a national carbon market, was assigned to the MEE, followed by the transfer of tasks to lower-level environmental authorities.

The rise of the MEE's position in the state's bureaucratic hierarchy indicates an increase in the importance of environmental protection among the state's imperatives. This could help to enhance the state's capacity to inject the environmental ideas and programs to the overall implementation of public policy and then leave an influence on the private sector activities. In this case, to some extent, China's state has sought to act as a green state, letting the voices of environmental protection that were previously hidden by the sound of economic development be heard. A specialist from the Policy Research Center for Environment and Economy, which is a public institution (Shiye danwei, 事业单位) under the MEE, commented on such a transfer of duties, saying that:

> This phenomenon (the MEE takes over climate change issues) must be attributed to the elevated status of ecological and environmental protection among the state's core functions. China's central state is now attaching importance to this issue. In the past, dealing with climate change was recognised as highly related to energy development, which means that it was a developmental issue rather than

> an environmental one. However, now, it is another story. (Anonymous, PK/Think Tank 02)

Her positive attitude towards the state's determination in climate change mitigation echoed Lo's (2016) argument that these politically driven institutional arrangements make it possible to incorporate the responsibility of environmental protection into the state's core responsibility and redefine economic issues from the perspective of sustainable development. Transferring climate change duties from a comprehensive development-oriented institution, the NDRC, to an independent ecological department that is institutionally parallel indicates that the central state has attempted to relieve the long-standing tension between nature and the economy (Ministry of Ecology and Environment, 2021). In addition, the Chinese state has sought to insert ecological modernisation into its political strategies to achieve synergic development. The policy structures that ecological modernisation requires relate not only to the decoupling between ecological degradation and economic growth but also to ideational components such as the perceived role of the state in carbon governance.

The MEE has its own advantages in running this multipollutant control program, indicating its strong capacity in making and implementing environmental policies. Through the interview with the manager of the Beijing Environment Exchange, it can be inferred that China's emission trading pilots are heavily dependent on the technical support and expertise from the MEE in terms of operational processes and administrative procedures, such as the emission tracking systems (Anonymous, PK/Exchange01). However, one of my respondents, a senior project manager in an energy consulting firm, is sceptical of the capacity of the MEE to combat climate change via a market-based mechanism. Even though Western lessons have shown that the greenhouse gas emission issue itself ought to be managed by a specialised environmental authority, such as the BUA in Germany and the EC in Canada, as suggested by the informant (Anonymous, PK/Firm02), China's environmental governance seems to be different. 'The ways in which the NDRC and the MEE have responded to the emerging environmental problems are quite different…' A manager who participated in several CCER developments added:

> …the NDRC is more aggressive and macro-oriented. The officials in the NDRC are more willing to undertake new policy experimentations, for instance, the market-based mechanisms, and they endeavour to reduce the ex-ante carbon

> emission, whereas, on the contrary, the MEE is relatively conservative and prudent to take some policy innovation. (Anonymous PK/Firm01)

The conservative, even old-fashioned "working philosophy" of the MEE is conducted in a manner that may lead to relatively loose environmental enforcement, which is reflected by the selective implementation of lower levels of environmental bureaus (O'Brien & Li, 1999; Kostka & Mol, 2013). An interview with a local environmental official indicated that 'for environmental governance, our principle is 'no accident, then it is OK' (Anonymous, JS/Government 02). Local environmental officials are inclined to fulfil the general requirements and obligations rather than actively struggle to achieve more economic-oriented tasks, for example, energy transition, which may go beyond their duties.

However, the integrative capacity in China's carbon market governance is weaken by the fragmented authority at the central level. The MEE is now breaking new ground to lead carbon emission trading systems after the 2018 government reshuffle, making itself a more appropriate regulator in such a national climate change program. However, it cannot be denied that the NDRC has yielded satisfactory policy output in guiding the ETS pilots during the earlier developing stages by promulgating regulations on its operations and monitoring. Its influence remains robust to the enterprises that are constructing the main body of China's carbon market. The MEE has always been seen with certain hostility by local enterprises as an anti-development institution, as the carbon market shifts the financial burden to the industries through environmental regulations, and they need to bear the costs of protection by sacrificing profit (Anonymous JS/Government04). In addition, also followed by the working mechanism of internalising externalities by allocating property rights, the NDRC announced the operation of the energy usage rights market, supplementing the supportive regulation, Pilot Scheme for Compensated Use and Trading of Energy Rights(yongnengquan youchang shiyong he jiaoyizhidu shidian fangan, 用能权有偿使用和交易制度试点方案). This state of affairs in which the management of two environmental and energy equity transactions are assigned to two different departments under the State Council is not a strength of the state but rather a weakness; it prevents the central state from concentrating all its forces on energy transaction lending on market-oriented policies, many of which hamstrung against each other in terms of policy implementation and responsible parties in the real process. Indeed, the central state has sought to make preliminary explorations on the coordination of energy use rights and carbon emission

trading rights. For instance, it was stated in the Pilot Scheme for Compensated Use and Trading of Energy Rights (Yongnengquan youchang shiyong he jiaoyizhidu shidian fangan, 用能权有偿使用和交易制度试点方案) that energy use rights should be coordinated with the carbon emission trading system. Additionally, in Interim Measures for the Administration of Carbon Emission Trading System (Tanpaifangquan jiaoyi zhidu guanli zanxing banfa, 碳排放权交易制度管理暂行办法), it was suggested that the carbon market also be encouraged to 'involve other trading products when appropriate'. Nevertheless, some senior policymakers in energy associations hold a pessimistic view, pointing out the problem of double counting and the considerable cost of collaboration. For example, a high-level official in a local environmental protection bureau in Jiangsu argued that:

> … There must be a conflict of interest if the two are charged by two different departments…. Additionally, nominally, the NDRC and MEE have no hierarchy of leadership relations and do not belong to the same system. It will be very troublesome to coordinate by the time. (Anonymous JS/Government02)

Another respondent, who is an expert in developing local dual carbon roadmaps, commented on the internal conflicts between the MEE and the NDRC in the central state, saying that:

> An example is that, shortly after the promulgation of certain regulations on the carbon market deployment by MEE, the Division of Resource Conservation and Environmental Protection under the NDRC will issue another similar document. The two central departments seem to have no communication with each other. This makes local officials quite confused about what exactly they need to follow. (Anonymous PK/Firm01)

He further indicated that such an independent working mode of the two departments under the State Council indicated a somewhat increasing authority of the MEE (Anonymous PK/Firm01). In this vein, he suggested that it may be wise for the MEE not to compete with the NDRC on some resources but rather to lean on its power to push the enforcement of the mandate. A plausible option for the MEE is to enhance its concrete work in ETS design and implementation while at the same time seeking cooperative support from the NDRC (Miao, 2013). This viewpoint was criticized by an anonymous expert in a think tank, however, who noted that:

> In fact, they (the MEE and the NDRC) are still in dispute. In line with the state's announcement, the NDRC has been gradually delegating its responsibility for the carbon market to the MEE, while the latter one has not fully 'received' such power. Therefore, it is a mess and has led to the delay of many policy announcements (e.g., CCER regulations). The most severe issue is that everyone in the central state wants to gain some benefits by taking charge of China's carbon market. At the local level of implementation, the competent departments have not been determined, and it becomes more confusing when carrying out certain relevant executions by local officials. (Anonymous, JS/Think Tank 01)

It would appear that the carbon market's practice of complying policy reflects what several critics have suggested, namely that fragmented intergovernmental connections have led to inadequate policy coordination and integration (Andrews-Speed, 2012). Such a win-win principle of achieving environmental protection and economic growth fails to pervade in the policy area of China's carbon market; on the contrary, it mirrors a unified state whose capacity is undermined by overlapping management, and the vagueness of responsibilities and liabilities. This will also be further discussed in subsequent empirical case studies on local carbon market governance.

The Ministry of Finance (MOF) is another central bureaucracy that plays a key role in China's carbon market construction and simultaneously rests both challenges and benefits on the MEE. Through the running of the carbon market, it is involved cooperatively with the MEE in the process of distribution and administration. The active participation of the MoF includes financial support in the early stage and the vast magnitude of the revenue stemming from market operations. Cooperative support from financial agencies has a significant impact on local performance (Qian et al., 2022). In effect, it is explicitly indicated by a market participator that the implementation of local environmental authorities is mostly determined by the financial support obtained from the central government. This is even the case for some nonpilot cities. During the interview with the policy researchers, one informant disclosed a real case that echoes this argument, saying:

> Not us, but someone in a higher position once proposed to build a carbon market in Hebei involving several emission-intensive industries, such as steel and electricity sectors. However, Hebei provincial government rejected it and

> suggested that only if the State Council can offer new funds, then this proposal can be approved by consent. (Anonymous PK/Think Tank 05)

It is prudent to be circumspect in seeking the cooperation of the MEE's financial counterparts. This shows a reinforcement of the MEE's authority in collaboration with other organs in the central government, making use of its expertise and absorbing others' help. However, such a 'hand-in-hand' working mode weakens the MEE's leading role and limits its capacity in some circumstances. The fragmented nature of carbon market governance at the central level is a significant paradox of China's authoritarian rule, where the seemingly monolithic political system is full of 'interagency rivalries, factional politics, and intense competition over the nature of policy (Beeson, 2015, p.526)'.

4.3 Restricting Public Participation in the Policy Process: State's Weak Communicative Capacity in Carbon Market Governance

It is proposed in The Report to the 19th National Congress of the Communist Party of China (Dang de shijiuda baogao, 党的十九大报告) that China's central state has sought to build an environmental governance system in which the government is the dominant body, supplemented by enterprises and the participation of civil society. The Guiding Opinions on Building a Modern Environmental Governance System(Guanyu goujian xiandai huanjing zhili tixi de zhidao yijian, 关于构建现代环境治理体系的指导意见) issued by the State Council Office in 2020 also clearly put forward the task of improving *the national action system* (Quanmin Xingdon,全民行动) to achieve China's commitment to environmental protection, resource conservation, and sustainability. Public participation called for the national action system is not entirely an identical version of democratic participation in industrialised countries. Empirical observations in China's carbon market governance show a different picture: in consistent with environmental authoritarianism, the state seems to restrict civil society from having a role in participatory decision-making spaces and fails to build an open and informed participatory processes to promote a better acceptance of the public to the carbon market, but to forms 'closed, secretive, "bounded" decision-making stratagems'(Christoff, 2005, p296) by force. Although the governance structure in China's carbon market has seemingly been occupied by a variety of actors with competing interests, unlike other countries of the Global North, such as Brazil (Menezes & Barbosa, 2021), the

formulating and implementing China's carbon market policies are charged by a group of state elites to deprive of any possibility for real opposition from the business and the public. An expert working in the Policy Research Center for Environment and Economy affiliated with the MEE observed the following about the general decision-making process of China's carbon market policy:

> During the preparation stage of an environmental policy, market research and discussions among various stakeholders will be conducted. For example, there will be an internal forum, which is usually confidential and closed to the public. After that, an exposure draft is circulated, followed by a consultation to seek opinions from the public. If the industry associations or enterprises have any opinions, they can put them forward in this consultation stage. The government will not make the final decision alone…but the whole process must be led by the government. (Anonymous PK/Think Tank 01)

His arguments indicate that the state China's state has tried to involve certain level of public engagement in China's carbon market governance, even though this cannot be regarded as a full and reliable participatory process that would usually include institutionalised arrangements such as public hearings, participatory decision-making, and feedback mechanisms. However, such public engagement is limited among specific civil society actors who are backed by the state and excludes individuals (Anonymous PK/Think Tank 01). When asked about how the public can be involved in carbon market policymaking process, a respondent, was doubtful and replied that:

> Is it truly necessary to involve the public into the decision-making stage, and how to do that? The point is, that the public, they believe they are irrelevant and excluded from the environmental-related issues. This is even the case for the carbon market. From my perspective, there is no need to involve the public, and their main responsibility should be providing supervision to both the local officials and the polluting enterprises. (Anonymous, JS/Association03)

Another interviewee, also working in the MEE, echoed this argument from a critical perspective on the extent to which the public should be involved in China's environmental governance and the role of such involvement. He commented that:

> Compared vertically, the nonstate and nonmarket participants account for a larger share (in the climate policy process) than before …now, the public, also the voice of several research and civil society organisations, can be more integrated into the government's decision-making process, indicating an improved way that the state has sought to emphasise democratic decision-making. However, the extent to which the public can play a role in environmental governance remains to be further discussed because the public is not the subject of environmental governance, and few people are willing to make a sound for the sake of the environment. They indeed construct an indispensable element of China's carbon market governance, but definitely an important one. (Anonymous, PK/Think tank 03)

Different from green pioneers such as Germany, the Netherlands and Japan who have achieved environmental policy success based on corporatism, such a developmental paradigm may not be effectively practised in China's carbon market governance which is dominated by state intervention commentary in a less participatory process with little citizen involvement and little or even no conscious scrutiny of public values. In China's carbon market policy formation and implementation, the cooperation between local government and businesses cannot be identified. The main way for the firms' voices to be heard is through industrial associations (Anonymous, PK/Association 04). However, during the interview with a vice president of a local energy conservation association, he suggested that the industrial associations "are not qualified" to be consulted or conferred with during the policymaking process, 'only if the government delegates some of its decision-making power to the association in the form of outsourcing in some certain cases or projects' (Anonymous PK/Association 03).

In China's carbon market governance, one of the most influential organisation of China's carbon market is the Alliance of Carbon Emissions Trading China Energy Conservation Association (ACET, Zhongguo jieneng xiehui tanjiaoyi chanye lianmeng, 中国节能协会碳交易产业联盟), and it is under the control of the state, but covertly. ACET is developed under the purpose of offering a channel for the participation of state and nonstate actors to generate technical knowledge. ACET is tasked with making suggestions for the implementation of China's low-carbon policies and regulations, including carbon emission trading policies, mechanisms, and measurements. It is affiliated with the China Energy Conservation Association and is under the guidance of the Department of Climate Change of the MEE, the National Expert Committee on

Climate Change, the National Climate Strategy Research and International Cooperation Center, and other climate-changed relevant authorities at the central state. The members of the technical support committee are selected by the state to guarantee the achievement of their goals and objectives. Also, the Alliance Brainpower of ACET is largely composed of state actors, including experts from the National Center for Climate Strategy, the MEE, NDRC, and the Chinese Academy of Engineering. The Alliance Members are representatives from business and industry, Environmental Energy Exchanges, and nongovernmental organisations. Important links are made with domestic climate activist networks. As such, ACET is hardly contested by certain business interests given its organisational nature backed up by the state actors. Additionally, the work of the technical support committee is closed to the public and relevant companies. This contrasts with other participatory procedures that address environmental challenges.

Indeed, the official authorities have sought to dominate its links with social organisations. However, the degree to which these civil society organisations are involved in decision-making is largely dependent on the officials' needs. An anonymous respondent from the China Environmental Protection Industry Association claimed, about their involvement in the policy process that:

> Our involvement of the carbon market policy process is very limited. We will participate in (the policy process) with various forms, while the degree and depth may vary because we are not the "first party". Generally, we have three ways to participate. First, in terms of environmental law, we are less involved and will only be asked for opinions. Second, we can submit environmental-related proposals to the National People's Congress and the Chinese Political Consultative Conference and the Chinese people's political consultative conference of the National People's Congress. Third, we participate in the research forums held by the government when they are in the decision-making stages. These are all private. When the government drafts the policies, there will be some peer-to-peer (the government to several big enterprises in the industry) internal solicitations. (Anonymous PK/Association 04)

He further added that:

> We are regarded as a relatively important organisation in China's carbon market governance. Therefore, our voice can be heard by the government. However, many other local industrial associations are not given a chance to talk to the local government, and they can only obtain the information by attending the forums and conferences organised by the key industrial associations, for example, the ACET. (Anonymous PK/Association 04)

The omission of social justice is the Achilles' heel of carbon market, and makes it less appealing. It may be overoptimistic to see the carbon market as a positive-sum game as it has yet encompassed agents within a comprehensive production-consumer supply chain (Anonymous, PK/Association02). Individuals, civil society actors, and business agents seem to be excluded from such a 'game' as either participators in the policymaking process or consumers of green products.

China's carbon market reveals different environmental governance patterns that reflect neither pluralist nor decentred partnership models. This contradicts Streck (2004)'s claim that market mechanisms epitomize the rise of new collaborative network structures that grant nonstate actors some formal roles in formulating policy responses. This has been echoed by a researcher from the organ under the MEE, who commented that:

> If the public is only "participation", it shows that they are just playing a supporting role. The Chinese state is and will always be dominated, but only in different forms at different stages (the carbon market, for example) has there been no fundamental change. The Chinese government is constantly adjusting itself to the changes in its resource allocation and constantly adjusting the way under which it governs society and the market. Therefore, as the market has gradually improved and society has been continuously developing, the voices of the market and society must be heard. However, this does not mean a trend away from the classical hierarchical modes of governance. These actor constellations including the companies, NGOs, even the indigenous groups and local communities, will not become the centre in China' carbon market governance, which is different from the so-called pluralist in the Western experience. (Anonymous PK/Tink Tank 03)

Therefore, although China's carbon market governance seems to have become a multilevel, multifactor phenomenon, with new patterns of interactions among various actors, the authority and responsibility are still in the hands of the central state, rather than being dispersed within broader networks. The perfunctory political participation of the public and civil society will not challenge the entrenched dominant role of the state in this experimentalist carbon market governance paradigm.

5. Summary

The discussions in this chapter, combined with both the empirical sources and literature on China's carbon market governance, provide answers on whether and to what extent the Chinese state has transitioned to a green state and assumed its role in this policy experimentalist governance model. In line with Peter Christoff's descriptions of a green state, it can be seen that China's state has tied to enhance its strategic capacity to embrace the ecological concepts and objectives into the creation of the public policies via the flourishing of the environmental policy system and increasing status of environmental authorities. In particular, the adoption of a carbon market as a policy innovation to China's environment policy portfolio further indicates the state's determination to achieve the ecologically sustainable outcomes for the whole society. However, the state also reveals weak integrative and communicative capacity. The fragmented features of the authorities have eroded the state's integrative capacity through weak inner workings of the central administration, the MEE and NDRC, which might be an obstacle to guiding the state along the orbit of a green path. In addition to that, the Chinese state centralises carbon market governance through complementary authoritarian and 'invisible' participatory democratic means: First, it eliminates the power of the market with strong state intervention, and second, it appeals to public involvement through the so-called national action system, yet it blocks the space for effective policy involvement. The democratic participation indicated by China's national action system is different from that advocated by Western environmentalism. In China's carbon market, the state's decision-making process on environmental issues seems still to be hold in the hands of the state elites, and only the industry associations or the NGOs that are backed by the state have limited informal participation. They performs role-playing and "participates for the sake of participating". In short, China's carbon market seems to be little more than overblown rhetoric or an example of jumping on the bandwagon. It partly is construed as weak ecological modernisation but is more

likely to be a case of mere window dressing under the shadow of a centralised hierarchy to maintain China's political status quo as an authoritarian and hierarchical political system.

Consistent with environmental authoritarianism, the top-down, regulatory powers of the central state have been at the center of China's political response to climate change via a carbon market. The central state uses a regulatory framework that specifies requirements of the key elements of the market and a series of ex-post adjustment mechanisms to wield its control over local officials and the market. China's carbon market is driven by the supply side instead of the urgent need by enterprises for low-carbon transformation. This could be explained by the fact that the necessity for long-term stability and securing benefits for the carbon market are not yet harmonised with the regulatory structure and policy design. SOEs yield significant importance in the early stage of China's national carbon market. They regard carbon trading as a political task and an administrative process. Their involvement in trading, however, guarantees the vitality of the carbon market. Moreover, the state's role in the market goes beyond that of an administrative executive; it also functions as a market controller under the guise of state-owned enterprises. First, it requires SOEs to adhere to the carbon market's requirements to boost the market. Then, it delegates management responsibilities, such as carbon emission verification and quota allocation, to skilled executives of the Big Five to maintain control of market supply.

China's carbon market is a national-scale governance instrument that embraces a wide range of local conditions. It appears that providing general responses to inquiries on the effectiveness and role of the state in the carbon market governance is only a second-best course of action. The state itself may reveal various even competing governance patterns in different local carbon markets in terms of the actual interactions between central and subnational governments, making it difficult to assess its performance at the large-scale macro level. Apart from that, to examine the state's implementation capacity of being a green state, it is necessary to delve into specific implementation process at the local sites. The following chapters provide a more qualitative, fine-grained exploration of Beijing City and Jiangsu Province. I will go on to explore how the central state has mitigated the potential undesirable political consequences of the underlying centralisation in carbon market governance structures through a series of institutional innovations. With the proliferation of actors in China's local carbon market governance, we observe an

increase in antagonistic views on the involvement of "agents beyond the state". Explorations will further emphasise how the state yield implementation capacity to orchestrate multiple actors and networks, allowing for experimentation with a new mode of governance. Exploring these interactions can provide a better understanding of some of the principal-agent issues that have emerged, and the supervisory systems employed to reduce local denial of responsibility in the carbon market.

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Chapter 4 The Case Study in Beijing City

1. Introduction

The previous chapter explored China's top-down non-participatory paradigm for governing its carbon market, and addressed the state's role in this local experimentation through an assembled concept of *Green State* and *Ecological Modernisation* from a rather macro and holistic perspective of analysis. This discussion attempted to offer a preliminary understanding about how China state has been shifting to a green state in terms of its communicative, integrative, and strategic capacity. It also tried to see whether it is possible to delink the environmental degradation and economic development and obtained a preliminary finding that the market-based environmental policy innovation, the carbon market, fails to solve the prolonged environment-economy dilemma. However, discussing China's carbon market governance on a general scale but not delving into local cases is far from adequate as there exists nuanced diversities in each local case, which from the researcher's perspective, can be seen as different manifestations of green state's implementation capacity in this local policy experimentation. Decomposed to the level of policy deployment and implementation in the local governance of carbon market, the coming two chapters anchor the analysis on a multifaceted institutional strategy that has been introduced in the process of developing the carbon market in China by focusing on the institutional configurations, organisational interactions, and the operating process and participation of the civil society in China's carbon market pilot. The previous chapter has demonstrated that there are good reasons to affirm the significance of the state in carbon market deployment for the analysis of environmental politics and policy (see Chapter 2). The state-market dichotomy puzzle is worth a deep exploration of the state's performance reflected by the institutional dynamics playing out by various agents in the market, and the carbon market is inherent to such a puzzle. By doing this, the coming two chapters aim to bring a thorough understanding of how such a hybrid paradigm of environmental governance has been operated in the local deployment of China's carbon market, and the second and third sub-questions will be investigated.

- What is the role of the state in China's carbon market?
- What is the governance model of the carbon market at the local level?

When discussing the key institutional settings of China's carbon market governance, the researcher starts from Heilmann's claims of the policy experimentation as a 'mode of governance' (Heilmann, 2008, p. 3), where it is initially regarded as being distinct from the standard top-down process of policymaking but refers to policy attempts that are innovated in particular spheres and then replicated on a massive scale. Whether China's carbon market governance at certain local regions could jump into the categories of this environmental experimentation remains to be further explored in this chapter, as it was identified in the previous discussion that China's carbon market indicates a more central-led policy attempts where the chances and avenues available to local governments to exercise their vitality and flexibility are limited. The observations partly contradicts Heilmann's description of the "experimentation under hierarchy" (See Chapter 3). However, it cannot deny that China's carbon market did start from local emission trading pilot schemes and then extended to a national trading scale, trying to offer preliminary reflections on crafting a policy attempt from a geographically "bottom-up" fashion to secure the fragile planet by a human-created market.

In parallel to state failure, market failure is also a vital issue that may hinder policy implementation but could be reduced by an appropriate institutional design (Stern, 2022). Therefore, in the local environmental governance, this chapter paid particular attention to the institutional arrangements for the problems of agency loss that are entrenched in China's central-local relations. The discussions are on the ground of our insight into the principal-agent model as an analytical framework. Through the analytical lens of the PA model, the researcher explores the issues of the supervisory mechanisms that the central state -- as a principal, applied to exert the oversight of local agents--as agents, also the compliance tools through which the market participants as agents are regulated and motivated to steer the carbon market. By doing this, this chapter unfolds whether the patterns of the central-local interactions in generating policy, experimentation under hierarchy in economic reforms (Heilmann, 2008, p.2), can also drive the repertoires of China's carbon market governance, and how they may influence the institutional dynamics underpinning the China's carbon market. It is worth mentioning at the outset that focusing on the state in this research does not mean adopting a "statist frame" view, but instead, identifying new interactive patterns from the state perspective in such a new policy experimentation governance.

This chapter uses the Beijing Emission Trading System pilot as an illustrative example. Beijing's carbon market is now partly incorporated into China's national carbon market

in terms of the trading in the power industry. For the other industrials that used to be covered in Beijing's pilot emission trading system, they remain to be traded locally in Beijing Environment Exchange. Given its relatively mature emission trading experience and diversified industry inclusion, in the researcher's opinion, Beijing's local emission trading pilot could offer more panoramic insights into China's local carbon market governance model compared to merely discussing Beijing's national carbon market practice. This chapter is structured as follows. Firstly, the socio-economic context of Beijing, which is the first batch of China's carbon market pilot cities, will be illustrated, as the characteristics of the Beijing emission trading pilot scheme. After this, there is a discussion on the institutional configurations and mechanisms in this local policy experimentation, including but not limited to the supervisory tools adopted from the central state to the subsidiary tiers of administration, and to the non-governmental entities in the market. This section also focuses on the participation of civil society actors, including industrial associations and non-governmental organisations, in the policy process of China's carbon market.

2. The Socio-Economic Context and Features of Beijing's ETS

Beijing, the capital of China, is the political centre of the whole country and the hub of international exchanges. Geographically, it maintains a significantly close distance with the central state. Beijing is at the forefront of national economic development. Since the reform and opening up, the internal industrial structure has been upgraded gradually, followed by the booming of its economics. From 2010-2021, Beijing's gross domestic product (GDP) leapt in value and was well above the local average, from 1,496,400 million to 4,026,955 million (National Bureau of Statistics, 2022). The GDP per capita of this densely populated megacity in 2020 for the first time reached twenty thousand dollars, which surpassed several developed economies in the world's North and ranked Top1 among all the provinces in the country, leaving Shanghai and Jiangsu behind (National Bureau of Statistics, 2021).

Parallel to its fast-growing economy and high level of industrialisation, Beijing has been accompanied by rampant environmental degradation in its air quality (Wen et al., 2021). It has particularly worried China's central state and the public that airborne problems such as smog can severely affect the capacity of the atmospheric environment and further lead to the emergence of severe contamination and threat to human health (Tao

et al., 2021). What makes the circumstance worse is that the economic loss caused by the environmental deterioration associated has become an obstacle to sustainable development (He et al., 2016; Koçak & Kızılkaya,2020), prompting both the central and local officials to do something to combat it. The Beijing Municipal Government so far has yielded efforts for more active and stringent environment management to deal with the ecological imbalance, especially to curb greenhouse gas emissions (Wen & Wang, 2022). To respond to the Air Pollution Prevention and Control Action Plan issued by the State Council, on 28th November 2013, Beijing officially launched a carbon emission trading program.

To propel carbon trading from an appealing concept to a palatable practice in Beijing's local context and to form an efficient, orderly and organised emission trading system, the Chinese state issued general legal foundations and delegated authority to Beijing Municipal Government on publishing detailed guidelines about the operational settings with each design element comprehensively considered. In particular, Beijing's carbon market scheme (the pilot trial) adopts a cap-and-trade system. A combination of benchmarking and grandfathering[21] is applied as a mechanism for initially distributing emission allowances. The tailored design of the carbon emissions trading market to Beijing's unique context is summarised in Table 4.1.

Sectors covered	Heat supply power, thermal power supply, manufacturing industry, etc.
Trading platform	China Beijing Environment Exchange[22]
Allocation of allowance	Grandfathering and Benchmark Method
Trading Method	Public transaction and Agreement transfer

[21] Grandfathering is a strategy that based the initial allowance on firms' historical use. The calculation for benchmarking, see Chapter3.

[22] China Beijing Environment Exchange is a professional, public, national-level market platform used for environmental equality trading and international environmental cooperation.

Punitive mechanism	A financial penalty is set for enterprises failing to fulfil their emission control target. The total penalties are based on their carbon emission that exceeds the quota permission.
Type of credits	CCERs from western China.
Offsets	No more than 5% of the current year's emission permits, excluding some exceptional cases.
Other Features	Free Allocation: Auction and counter-purchase are allowed.

Table 4.1 The essential elements of Beijing's carbon trading system
Source: Liu et al. (2015) and Beijing local policy documents

As the first batch of pilot cities carrying out an emission trading system in China, the scale of Beijing's emission trading system (exclude CCER) has been increasing in terms of cumulative trading volume, turnover, and online transactions (see Figure 4.1 and Figure 4.2). It started with a total transaction volume of 800 tons and a transaction value of 41,000 RMB on the first day of opening[23] (Beijing Electronic Trading Platform for Carbon Emissions, 2021). In 2021, after the announcement of the development of a national carbon market, the trading volume of Beijing's ETS researched a new peak, where the highest daily trade value reached 16,392,844.70 RMB and 186,057 tons of carbon quota were traded. Even though the trading volume demonstrates volatile movements together with the erratic fluctuation of the carbon price, Beijing's piloting carbon emission trading market seems to have made significant progress. So far, nearly 1,000 institutions have applied for the account.

[23] The first day for recording the transaction of Beijing's emission trading system was 28th, November 2013.

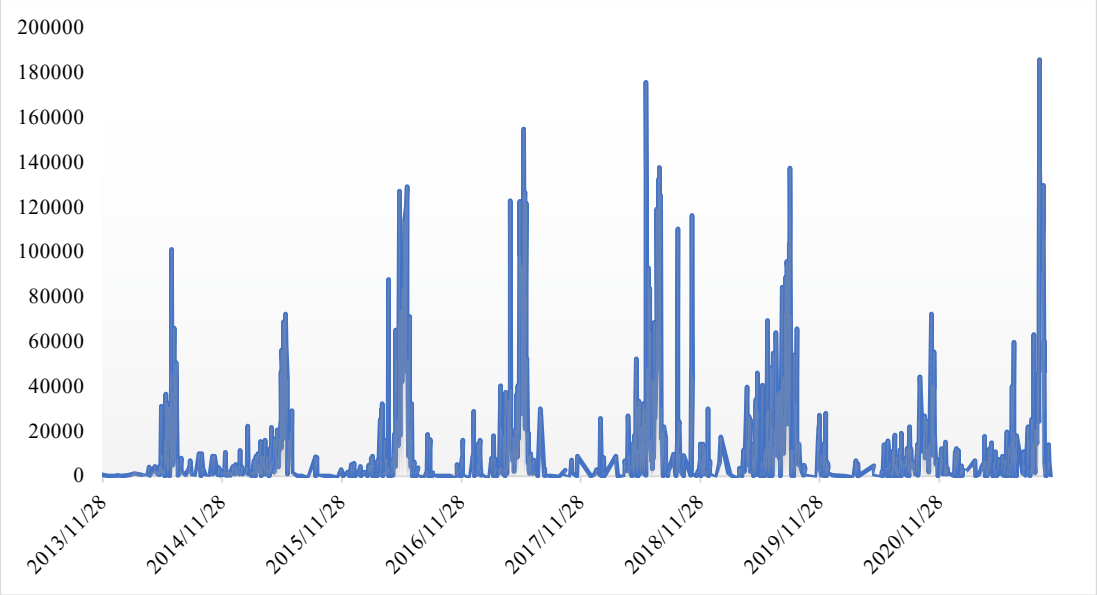

Fig.4. 1Trade volume of Beijing emission trading system, unit: tons

Source: Beijing Electronic Trading Platform for Carbon Emissions

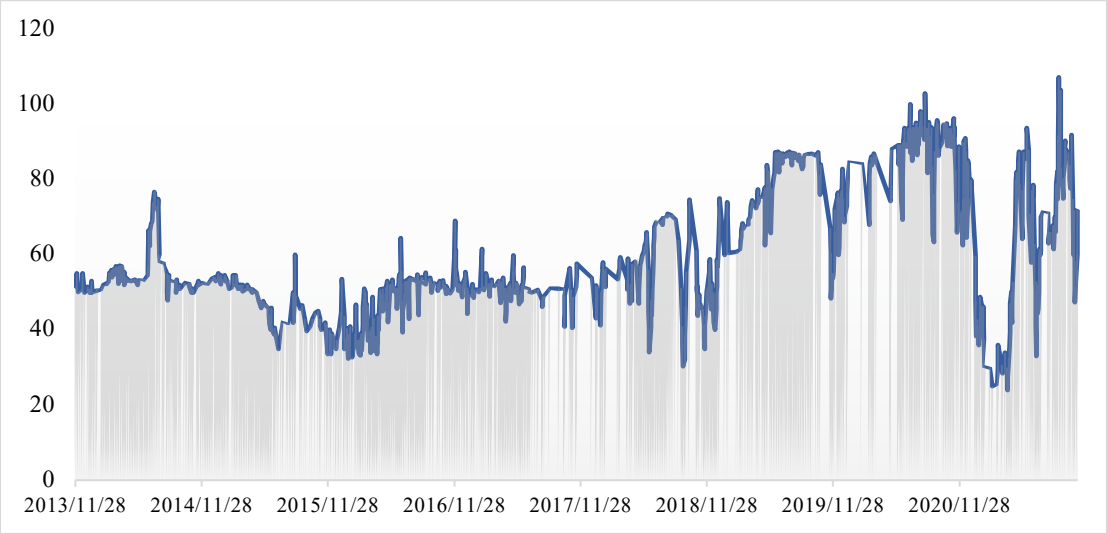

Fig.4. 2Turnover of Beijing emission trading system, unit: RMB

Source: Beijing Electronic Trading Platform for Carbon Emissions

Indeed, Beijing's ETS seems to be promising in terms of its trading results. Nevertheless, it is still too early to affirm the Beijing ETS as a successful pilot. Goron and Cassisa (2017) claimed that the benchmarks for evaluating a carbon market as a success are compliance rate and trade volumes. However, no clear evidence so far can show how effective the carbon market is in reducing absolute GHG emissions. However, the focus of this chapter is neither to examine whether the carbon emission trading system is capable of yielding expected outcomes in emission reduction, nor to replicate the setting of Beijing's ETS to a nationwide carbon trading market. Instead, through a deeper

exploration at the institutional setting and organisational arrangements of Beijing's carbon market, this chapter has sought to identify the local governance features in this policy experimentation, and seek the role of the state in this Western-initiated green practice that may be made possible and assimilated into Chinese local circumstances. The coming section delves into the key institutional settings, organisation interactions and operating process of Beijing's carbon market governance, where I argue that although the signals from the central state in the future development of China's carbon market appear to be encouraging, in the local carbon market governance, the state tightly controls the market either by the market access of the market players, or by robust regulatory setting. The state uses an exclusive mode of non-participatory governance structure to ensure that the central state's interest is taken as a guide in developing the market. Civil society remains to be on the fringes and the state fails to institutionalise new formal participatory channels for their participation. The governance features of Beijing's carbon market do not conform to a green state where there exists adequate space for the prosperity of the environmental movement (Dryzek et al., 2003), even in such an originally designed so-called bottom-up policy experimentation.

3. The Governance Pattern and Institutional Configurations in Beijing's Carbon Market

As has been discussed in the previous chapter, from the moment when the state sought to implement such a market-based policy innovation, it has been clear that Beijing's carbon market in terms of the policy implementation distinct itself fundamentally from the West's, in particular, from the EU ETS. The most obvious difference is the role of the state in the market. It has been discussed in the previous chapters that the carbon market is deemed a market-based policy that is emerged as a prominent framework for carbon emission governance. The Western practices of carbon market governance are decentralised among the interest constellations, accompanying the rise of network governance. Instead of the state-led hierarchical institutions, the carbon market is to be deployed in a framework where public and private players interact in networks that are defined by their interdependence, deliberation, and reciprocal influence in the carbon market (Ahonen et al., 2022). However, in China, the researcher argues that, it is hard to observe these networks that align both the state and non-state actors in the governance process of the carbon market. What can be seen is that the state is still dominating the carbon market governance by either controlling the industries covered in the market

through the lens of SOEs, or eliminating the delegation of power via specific policies and regulations.

In the following section, I will explore the local governance model of China's carbon market, in terms of certain institutional configurations, organisational interactions, and the participation of the non-state actors in the policy experimentation. This section also tries to seek answers to how the regulatory institutions influence the policy implementation at the local level, by focusing on the ways that the MEE adopted to oversee the subsidiary tiers of administration in their environmental governance performance, especially their work in constructing the emission trading system, and the ways that state actors oversee the non-state actors. Through the analysis anchoring on the interactions between the government sectors and other relevant agents in Beijing's emission trading system, this section captures a complex nexus among the environmental authorities from different levels, the regulatory institutions, and the economic actors in the carbon market.

3.1 Institutional Mechanisms and Organisational Interactions

In China's other local policy experimentations, the central government is inclined not to place many restrictions on the local administrators for the purpose of identifying the potential challenges and opportunities in the trial-and-error procedure. However, Beijing's carbon market has distinguished itself as a top-down initiative reflected by the strong state control of the market. The state has enhanced such top-down control by controlling the enterprises covered in the market. In April 2020, Beijing Municipal Ecology and Environment Bureau and Beijing Municipal Bureau Statistics disclosed a list of a total of 843 key emission entities and 634 reporting entities joined Beijing's carbon market in 2019; these enterprises were from different industries, spanning power and heat generators, petrochemical production, transportation industry and other energy-intensive industries. Of a significant amount of them are state-owned enterprises (e.g., China Telecom Co., Ltd, Bank of China Limited), government-affiliated institutions (e.g., People's Daily, National Institute of Metrology, Peking University), and state organs (e.g., Haidian District Government Affairs Management Service Centre). These organisations backed by the state could benefit from the policy implementation of the carbon market in its infancy and guarantee the orders from the state to be performed.

The state tried to reduce the principal-agent problems in terms of the asymmetric information by introducing large amount of SOEs which are in fact totally controlled by the state. Instead of providing financial incentives, the state can easily align the interest of these economic entities via political punishment, which seems to be most effective tools in an authoritarian state. These SOEs are equipped with a higher degree of integrity to achieve the carbon emission reduction goals given their political colours (Jin et al., 2022). A vice general manager of a third-party MRV agency stated that the participation of SOEs in the market could ensure the voice of enterprises is heard by the local government during the stages of policy implementation, even though 'it is difficult to tell who in the stance these enterprises are speaking for' (Anonymous, PK/Third Party 01). Compared to the small enterprises that are more exposed to external policy shifts, these SOEs are more willing to react to policy calls (Chen et al., 2017; Shen, 2015). Instead of profit-seeking, these SOEs are more inclined to achieve the 'political tasks' given by the government authorities (Anonymous, PK/Firm 01). However, some of the major multinational corporations are appropriating the voice of private companies in Beijing's carbon market (Anonymous, PK/Firm 02; Anonymous, PK/Think Tank 05). These SOEs usually have more bargaining power than compared to private enterprises; and they are more likely to ally themselves with local agencies to cause distorted market prices (Shen et al., 2019), then further undermine the capacity of the local environmental protection bureau by damaging the regulation enforcement consistency (Lin et al., 2020; Anonymous, PK/Think Tank 05). An interviewee who used to work in a big SOE in Beijing and is now working in an environment and energy consulting enterprise suggested that,

> Although we (SOEs) will take the political responsibilities and follow the mandates given by the central state, during real practice, we can often negotiate with the local officials if we encounter challenges in fulfilling certain targets, for example, carbon emission trading. (Anonymous, SH/Firm 01)

Therefore, these large SOEs, which are directly regulated by the central government simultaneously impose challenges for the local environmental officials during the policy implementation in Beijing's carbon market governance (Munnings et al., 2016). It should be emphasised that not every player in the game has full access to such a state corporatist channel. A governance paradox has been revealed in Beijing's carbon market that the state, on the one hand, seeks to invigorate the market by involving a large amount of SOEs; on the other hand, the local government seems to block the

market entry for the private enterprises. It seems that the state in China fails to provide incentives to industry, in a way that reveals its role in the market as both a rule maker and a player. Strong intervention dampens firms' enthusiasm for participating in the market and blocks market entry for private enterprises. A private company owner elucidated his dilemma, saying that:

> Our company wants to join the market (even though we are not required to do that), but I do not know what to do. Joining as a trading entity is of little benefit to my company due to the low market prices. However, it is impossible for my firm to undertake the carbon verification as a third party because the local government has already called for bids for the coming three to five years. (Anonymous, JS/Firm02)

In terms of the central-local institutional configuration, the policy implementation of Beijing's local carbon market seems to be a product that is elaborately designed by the central government. Apart from the market, the central state has yielded its significant top-down control to local officials in Beijing's carbon market governance by deploying a series of basic institutional outlines and guiding principles on the design, development, and operation during each stage of the market deployment, leaving little discretional power to the local officials. By doing this, the central state official has closely intertwined with local officials in the policy process of this policy experimentation governance (Shen & Wang, 2019; Zhang et al., 2020). Even though Beijing's Municipality government officials have discretion on tailoring specific features of local carbon emission trading in terms of the allocation of allowance, the MRV (monitoring, reporting, and verification) process, and the penalty system for non-compliance, they are strictly required to follow the guidance from the central state. When issuing local regulations on the carbon market, they are inclined to avoid any conflicts of interest with the central state. The Notice on the administrative measures of Beijing Municipality on Carbon Emission Trading (Beijinshi tanpaifang jiaoyi guanli banfa, 北京市碳排放交易管理办法) is one of the most important local policy regulations among the environment policy portfolio related to Beijing carbon market construction; and it was formulated strictly following the relevant guidelines from the central state and the decisions of Beijing Municipal People's Congress Standing Committee (Article 1). Also, in the Interim Rules for Carbon Emissions Trading Management(Tanpaifang jiaoyi guanli banfa(shixing), 碳排放交易管理办法(试行)), it was regulated that the

ecological and environmental authorities at the provincial level should 'comply with the relevant provisions of the MEE' in terms of the determination of the list of key discharge units in their respective administrative areas, the total carbon emission quota determination and allowance allocation plan', and 'report to the MEE on the verification of the carbon emission quota of the key emitters. In addition to that, the MEE has issued a list of third-party institutions for carbon emission verifications. Enterprises that are participating in Beijing's carbon emission trading are required to undergo a verification process by these institutions that are authorised by the central state. The central state also set a budget for the firm's verification. In this regard, the distributed funds serve as an effective financial means for the central state to yield its control to local officials and the market.

Contrary to the overwhelming state intervention in the process of policymaking and policy implementation of Beijing's carbon market governance, the regulatory institutions of Beijing's carbon market indicate a streamlining of overseeing from the top to the lower level of the state hierarchy. Different from the robust regulatory institutional settings adopted by the central state in other energy and environment policy governance (Chen and Lees, 2019; Zhang et al., 2020), the regulatory mechanisms used in Beijing's local carbon market governance reveals the lax enforcement of the central state, the MEE in particular, over the local officials' performance on the carbon market construction. The passive attitudes of the central state in terms of its supervision of the local environmental officials can be revealed by the state's leniency in the enforcement of its carbon market construction performance.

In Beijing's carbon market governance, the supervisory institutions can be tied to the grounded practice of two top-down supervisory mechanisms: the Central Supervision of Ecological and Environmental Protection (Zhongyang shengtai huanjing baohu ducha, 中央生态环境保护督查), and Target Responsibility System (TRS, Mubiao zerenzhi, 目标责任制). First, the Environmental Protection Inspection Groups of the Central Committee (*Zhongyang huanjing baohu duchazu,* 中央环境保护督查组) have been formed as part of China's Environmental Inspections Systems by the central state. It aims to evaluate, oversee, and monitor local officials' performance in environmental issues. The system, which is built on an institutionalised "Tiao" under the purpose of collecting data and providing the primary intelligence to the central government, has been passed down to the Chinese state in governing contemporary environmental issues.

In China's multi-level principal-agent relationships, the longer information flow pathways are expected to exist in more hierarchical governments and further cause a higher degree of information asymmetry between superior and subordinate government levels (Wang, 2021). The Environmental Protection Inspection Group thus is intended to shorten the hierarchy as it directly inspects local officials.

However, in real practice, it can be inferred from the information disclosed on the Beijing Government's official webpage that the oversight of the supervision groups has a focus on the apparent and urgent environmental problems; barely do they carry out supervisory work specific to the implementation of the emission trading pilot. This finding echoes what Kostka and Goron (2021) argued that the central state's inspection teams are tended to uncover and punish the "visible" environmental problems. 'Their (the inspection team member) supervisory period is not long, and usually lasts for one month…' argued by a researcher in a public institution under the MEE that, 'the local officials are inclined to ensure there are no big pollution issues happen during that period of time. For the carbon market, its performance cannot be evaluated in such a short time period' (Anonymous, PK/Think Tank 05). His argument pointed out a possible reason to what an interviewee argued that local officials in Beijing are prone to reduce and eliminate serious environmental pollution issues, rather than struggling to develop an emission trading system (Anonymous, PK/Think Tank 02).

In Beijing's carbon market governance, another supervisory mechanism used widely by the central state is the Hook Responsibility, or the Target Responsible System (TRS). The core of China's central-local relations is the idea of a target responsible system (Chen & Lees, 2019). Jin (2017) explained in detail how TRS works:

> TRS is a legal scheme with an aim to clarify the responsibility of local governments in attaining the concrete legally binding targets allocated by the central government through National Target Allocating Processes; Under the TRS, the provincial-level governments are required to achieve the allocated targets and shall take joint liability with the lower levels of local governments under their direct control; In order to ensure the effectiveness of TRS, the law is set in a way that the achievement of environmental targets not only affects the personnel evaluation of local government officials in charge but also results in punitive measures imposed. (p.72)

In other words, this system works to avoid ex-post opportunism and enhance the efficiency of policy implementation, given that the agents' potential political careers are controlled by the central authorities (Chen et al., 2017; Huang, 1996). Through stringent oversight of local states at all levels, such a so-called nomenclature system also enables the central state to 'have an impact on the individual choices made by leaders at lower levels of government or state-owned businesses' (Breslin, 1996, 18-19).

The TRS is generally linked with a Cadre Evaluation System (Ganbu kaohe, 干部考核) which is an important mechanism for the central state to control local officials with a thorough assessment of local cadres' political records (Burns & Wang, 2010). Generally, in China's environmental governance, the central state has the authority to deny promotions or remove certain officials from their positions if local provincial authorities exhibit excessive arbitrary behaviour in the implementation of policies or excessive autonomy in their evaluation reports (Schwartz, 2004, p.29). In other words, the results of the assessment of their performance, for example, local GDP growth and energy usage, are linked to local officials' promotion. It was specified in Beijing's Reform on the Vertical Management System for Monitoring, Supervision and Enforcement of Ecological Environment Institutions (Beijingshi shengtai huanjing jigou jiance jiancha zhifa chuizhi guanli zhidu gaige shishi fangan, 北京生态环境机构监测监察执法垂直管理制度改革实施方案), that the environmental assessment index is integrated into the Cadre Performance Evaluation System; and the appointment and removal of the leading cadres in Beijing Municipal Government are linked with Beijing local environment conditions. Nevertheless, in Beijing's carbon market governance, the local cadre's performance evaluation on environmental protection is far from sufficient compared to plenty of GDP-oriented indexes. The local officials are facing trade-offs between the fulfilment of environmental targets, the construction of the carbon market in particular, with other economic targets. A respondent who used to work on carbon market policymaking, but now is working in an industrial association indicated that:

> Even though the head (Shangtou, 上头, which means the upper level of hierarchy) has developed a cadre evaluation system that embodies the environmental-related indicators, the Green Development Assessment Index, its enforcement is very lax and weak. The carbon market is only a small column of it and will not affect their (officials') promotion. (Anonymous, PK/Association 01)

His response suggests that accomplishing environmental goals would be seen as being improbable and incompatible with the current local GDP-oriented effort. In Beijing's carbon market governance, cadre accountability and assessment systems make local officials to pay more attention to the quantifiable "hard targets (Yingxing zhibiao，硬性指标" with the nature of "one veto", while ignoring the vague, unquantifiable, and weak binding "soft targets (Ruanxing zhibiao，软性指标)". The completion of these economic-oriented quantitative indicators is crucial to the performance assessment of local officials and benefits for their career promotion, leading to the 'selective policy implementation' (Kevin & Li, 1999, p.167) in the policy process of China's carbon market. The findings have echoed Cai's (2004) research, where it can be observed in China's carbon market governance that the current cadre evaluation system causes the prevalence of all kinds of "achievement project (Jixiao gongcheng,绩效工程)", "face project (Mianzi gongcheng, 面子工程)", "image projects (Xingxiang gongcheng, 形象工程)".

Although the political tournament is a driving force of China's 30-year economic growth miracle (Zhou, 2017), there exists significant inconsistency between the policy input and outcome that are largely owing to the problem of incentive distortion under multi-tasks. The lax enforcement from the central state could be directly reflected by the real case in Beijing's local carbon market governance that the weak performance on the carbon market construction will not influence local environmental officials' personnel promotion; their superior vertical supervisor may pay more attention to the environmental accidents instead of the emission trading performance. A researcher working for the MEE demonstrated that the weak enforcement of local officials might attribute to the central state's inadequate supervision. 'The MEE' he argued, 'does not endeavour to supervise the local officials on their performance of carbon market development; the central state only promulgates some general and vague regulations, leaving space for the local officials to achieve more "important" targets' (Anonymous, PK/Think Tank 05)'. A similar idea was presented by Zhang et al. (2020) about the omission of cadre evaluation on ETS building on the ground. The competitions among the local official leaders in different government departments on their personal promotion always led to the discharge of incomplete duty on carbon market construction. In this regard, Beijing officials seem to lack motivation for effective environmental enforcement in promoting a carbon market; and this is even the case where a clear

delineation of their responsibility under regulations is missing (PK/Think Tank 03). They are vigorously seeking their self-interest and have an unbalanced preference between economic development and environment conservation (Ran, 2013). The "overlapping interests" between the central and local level of governance suggested by Kostka and Nahm (2017) seems to be invalid in Beijing's carbon market governance. Instead, there exists contradictory interest between the central and local authorities.

Research on the principal-agent model has shown that the principals can exert control over their agents either with a shared interest (Vabulas & Snidal, 2013) or skewed information flows through the monitoring mechanisms (Mitnick, 1980). However, in Beijing's carbon market governance, the existence of agency loss reveals the inefficiency of supervisory tools adapted by the central state to the local environmental protection bureaus. A practice of agency loss in carbon emission trading was unfolded by one of my interviewees, who is the senior project manager of a Beijing carbon energy consulting firm:

> What I experienced may drive the concern. Around the year 2015, we set up a fund. This is a fund of trust (FOT) which was issued by CIC Trust, a large state-owned company. We signed a CCER purchase agreement with a local company with a price of 17 Yuan. The carbon price at that time was about 22 Yuan, which means that we could earn some profits through replacement and trading. After preparing all the filings, the Exchange stopped us from continuing. Because the two local officials at that time run a private company by themselves. They also signed a contract with the company with a meagre price, 7 Yuan. They used their privilege to stop our transaction with us, and gain their own profit. (Anonymous, PK/Firm 01)

This case reveals that there does exist a strong link between the state-owned enterprise and local environmental officials in Beijing's carbon market governance; the institutional arrangements for overseeing the local officials in their carbon market performance are not strong enough. On the surface, it seems that the local governments should be blamed for such agency loss in the market. However, from an institutional perspective, the insufficiency of supervision from the MEE may be the key driver behind these *opportunism*s. During the policy process of Beijing's carbon market deployment, the challenges that the MEE faced as a principal in monitoring its agents may attribute to the institutional defects where the weak inner corporations of the central

administration occur (see Chapter 3). Schillemans and Busuioc (2015) further suggested that such a deficiency could explain the passive attitude of the principal in the capacity and expertise, and they described it as 'forum paralysis (p.191)'. That is to say, the passivity of the MEE in their oversight to local officials can be seen as a form of weakness. This can be recognised as the "abnormal" behaviour patterns of principals whose potential cannot be fully acknowledged and controlled (Maggetti & Papadoulos, 2018; Moe, 1985). Summarising the interview data, it can be identified that the MEE is facing internal constraints that are associated with the inadequate financial and personnel budget. One of my respondents showed a case of the shielding of public servants at the local level, arguing that:

> Sometimes, the "local government officials" may go unpaid due to the lack of financial budget from the MEE. It is often the case that those "government officials" who are in charge of the supervisory work to local enterprises are not confirmed to the permanent establishment (Bianzhi, 编制[24]). That is why they may accept bribes from the enterprises (Anonymous, PK/Association 04).

Apart from the institutional constraints inherent in China's central-local relations faced by the environmental authorities, another possible reason for explaining the MEE's "forum paralysis" may owe to the limited recognition of the carbon market on whether it is an effective remedy for China's environment-economy dilemma in practice. It remains an unsolved task for the Chinese central state to figure out the role of this market-based instrument in China's overall environmental policy strategies. As described by a vice president of a third-party carbon emission verification institution:

> Developing and promoting Beijing's carbon market under the current governance system takes a high cost for policy coordination. It will be suspended as long as it fails to achieve a particularly good outcome (e.g., carbon emission reduction, local economic growth). For local officials, it is almost impossible to prioritise the carbon market construction as it is not as urgent as other social problems. The construction of the carbon market does need a constellation of entities who are in

[24] Establishment, in the Chinese context, is the personnel establishment, which refers to the quota, personnel structure ratio and posts allocation of the internal personnel of an organ or unit approved by the authorised organ or department, in order to complete the functions of the organisation.

high positions and are given significant authority to push it forward. (Anonymous, PK/Third Party 01)

His response indicated that, the environmental authorities, both at the local and central levels, appear not to be purely environment-focused but bounded by other constraints during the process of policymaking or implementation. Beijing's practice in carbon market deployment has, to some extent, indicated that the local experimentations are generally incapable of generating satisfying outcomes because of the inadequate and inattentive central government enforcement.

Even though acting passively in supervising the performance of local environmental authorities, for the interactions with the non-state actors, the state actors depict a different picture. In Beijing's carbon market governance, there exists a robust supervisory and compliance system for the economic entities covered in the carbon market. These supervisory tools are set by the local environmental authorities under the guidance of the central state, and they are intended to guarantee the compliance of non-governmental market participators in this experimentation-based policy process (Anonymous, PK/Third Party 02). In Beijing's governance of emission trading pilot, the agency loss occurs, given that scattered trading and opportunistic investors inherent in the market can never cease to exist and remain to be handled (Hu et al., 2017). A sound policy system combined with a formal infrastructure is essential to developing a policy-driven market (Anonymous, PK/Association 01). It is worth noting that the MEE and Beijing Municipal Government adopted strong regulatory intervention to facilitate the carbon market. It is summarised that the formal regulation and policy portfolio for Beijing carbon market governance is named "1+1+N", including: the legislation of Beijing Municipal People's Congress, that is, the Decision of Beijing to Carry out Carbon Emission Trading Pilot Work under the Premise of Strictly Controlling Total Carbon Emissions (Guanyu beijingshi zai yange kongzhi tanpaifang zongliang qiantixia kaizhan tanpaifangquan jiaoyi shidian gongzuo de jueding, 关于北京市在严格控制碳排放总量前提下开展碳排放权交易试点工作的决定)**(1)**; the regulation from the Government of Beijing Municipal, that is Administrative Measures of Beijing Municipality on Carbon Emission Trading (Beijingshi tanpaifangquan jiaoyi guanli banfa, 北京市碳排放权交易管理办法) **(1)**; and more than 20 accompanying policies and technique support documents issued by Beijing Municipal Ecology and Environment Bureau **(N)**. Such a legal basis cannot be found in other local carbon

market (except for Shenzhen's emission trading system) (Anonymous, PK/Association 01). It is designed to work as a powerful legal foundation to ensure the compliance of the agents in the market.

Apart from that, in Beijing's carbon market governance, the local government officials also adopted a series of oversight mechanisms to supervise the enterprises, also the third-party institutions who are undertaking the MRV duties in the market. An interview with a high-level officer of the Beijing Environment Exchange revealed that there are four main supervisory mechanisms to oversee the regulatory agencies in the market (Anonymous, PK/Exchange 01). They are (a). credit linkage mechanism (Xinyong liandong jizhi, 信用联动机制); (b). online monitoring; (c). self-monitoring; (d). double filing system (Shuangbeian yu jiaocha choucha zhidu, 双备案与交叉抽查制度). The following discussion focuses on these four mechanisms in detail.

First, the credit linkage mechanism was initially adopted by the NDRC and State Taxation Administration, who are sharing a list of taxpayers with tax violation cases and credit information. Later, it was applied to the carbon market governance. Some third parties (non-governmental regulatory agencies) and Beijing Municipal Ecology and Environment Bureau share a white list and a blacklist. The white list is a recommendation and filing list, and only those enterprises on the white list can do the transaction in the future, whereas the blacklist covers the enterprises with falsifications of the emission data (Anonymous, PK/Third Party 01; Anonymous, PK/Association 03).

Second, online monitoring. For some emission-intensive enterprises, they are required by the Beijing authority to conduct 24-hour continuous online tracking through remote supervisory types of equipment. The local government and enterprises themselves jointly invest in such types of equipment. The online monitoring mechanism aims to ensure the compliance of the agents in a relatively time-efficient way.

Third, self-monitoring. The enterprises report to Beijing Municipal Ecology and Environment Bureau by themselves. In this regard, the effectiveness of these mechanisms is subject to firms' consciousness and their corporate social responsibility.

Fourth, a double filing system. This is a supervisory tool used by regulatory agencies. The Beijing Municipal Government implements a verification process involving multiple regulatory parties, expert cross-checks review of the carbon emission report to

guarantee the quality of carbon emission data, and to reduce the problems caused by asymmetric information among various market agents. These non-governmental verification institutions and inspectors are under the oversight of the Beijing Municipal Commission of Development and Reform.

In addition to these four main measures, the Beijing Municipal Ecology and Environment Bureau has tailored other channels to garner the relevant market information and ensure the compliance of the enterprises; for example, the front-line supervisory system (Yixian jianguan zhidu, 一线监管制度), supervisory risk system (Fengxian jianguan zhidu, 风险监管制度), information disclosure system (Xinxi pilu zhidu, 信息披露制度), and trade dispute settlement system (Jiaoyi jiufeng iiejue zhidu, 交易纠纷解决制度).

The practice of the Beijing carbon market shows that intense supervision tools targeting the *ex-post* punishment work efficiently in ensuring firms' trading in the carbon market. After the MEE acts actively in incorporating a series of supervisory mechanisms into this local policy experimentation through the lens of the Beijing Municipal Ecology and Environment Bureau, the enterprises may be forced to keep the deadlines of commitment. A vice-general manager of a third party also commented on the compliance situation, saying:

> In the first year, I was deeply impressed because 13 enterprises in Beijing were punished. They had to pay a great walloping fine, close to three to five times the price in the market. At the very beginning, in Beijing, the compliance rate was around 98% or 99%; it then became 100% in the following two consecutive years. (Anonymous, PK/26/09/2019)

However, in an interview with an expert from the think tank, he expressed his doubts about Beijing's 100% compliance rate. He argued that:

> Once when I conducted on-site supervision of third-party regulatory agencies, it was identified that these non-governmental institutions were inclined to speak for the enterprises because they could gain a large amount of money for data fabrication. Also, these third-party agencies have no enforcement power. Their supervisory process is based on the concerted actions taken by the

> enterprises…they cannot break into the firms and conduct the supervision … (Anonymous, PK/Think Tank 03)

He further commented on the online monitoring mechanism, saying that:

> The government has its policies, and people down below have their own ways of getting around them (Shangyou zheng'ce, xiayou du'ce, 上有政策，下有对策). It is frequently observed that enterprises discharge pollutants without permission or beyond the pollution limit by data corruption, such as putting plastic bags on remote supervisory equipment. (Anonymous, PK/Think Tank 03)

It seems that firms are forced by these supervisory mechanisms, not voluntarily, to respond to the policies and finish their transactions. There is little evidence to show that firms are equipped with improved environmental awareness and ability for carbon asset management due to the development of a carbon market (Liu et al., 2015). Every six months, the Beijing Municipal Ecology and Environment Bureau verifies the contractual entities on their transaction. The carbon emission trading volume is significantly correlated to the deadline of the commitment (Anonymous, PK/Third Party 02). It is revealed that the trading volume peak always occurs one or two months before the compliance deadline (Deng & Zhang, 2019). A senior manager of the Carbon Trading Center under the China Beijing Environment Exchange stated that:

> There were substantial complaints among the enterprises. They were unwilling to pay the additional charge for the emission. At that time, the most punished enterprises were foreign firms, for example, Microsoft, Parkson and McDonald's. We did some training for the firms' staff, notified and issued fines and gave some days of grace, but they failed to honour the agreement on time. Later, our energy conservation monitoring team, along with a TV station (Beijing TV station), went to their firms directly. They then realised the seriousness and accepted the punishment. (Anonymous, PK/Exchange 01)

The foreign firms' passive attitude towards the carbon market may be explained by that their corporate headquarters are located in areas where the environmental supervisions are relatively loose. 'These foreign enterprises did not attach enough concern to the regulations of the government at first…'argued the senior manager that, 'they thought the government was doing face job, and they would not be published' (Anonymous,

PK/Exchange 01). From the process of compliance, Beijing's carbon trading systems also experienced a period of exploration.

In all, in Beijing's carbon market governance, the supervisory mechanisms help to achieve the level of compliance of those regulated enterprises before the annual trading deadline. Still, the aligned interest among the non-state agencies (for example, the third-party regulatory institutions and the enterprises) weakens the effectiveness of the seemingly robust supervisory mechanisms. These MRV third parties are intended to eliminate the agency loss inserted in China's central-local relations; in Beijing's carbon market governance practice, they seem to worsen the principal-agent problems with opportunism. Figure 4.3 summarises the overall supervisory and monitoring Process of Beijing's carbon market governance.

Fig.4. 3The Institutional configuration of Beijing emission trading system

3.2 Participation of Non-state Actors

After analysing the key aspects of actor interactions in institutional contexts in the deployment of the carbon market, this section of the chapter explores more details about the operation of Beijing's carbon market. In Beijing's carbon market governance, the local environmental authorities seem to maintain intensive informal interactions with several key local associations. The participation of the industrial associations in Beijing's carbon market enriches the state's information channels for facilitating the market. The Deputy Secretary General of the Renewable Energy Committee of China Circular Economy Association described that:

> Our energy conservation association has always been under the control of the state. I have assisted local officials in Beijing's carbon market policy decision-making. Given the limited personnel and human resources in local government, the involvement of our association can help the local state to complete tasks such as policy interpretation or implementation…the state official will also *outsource* (Waibao, 外包) part of the carbon verification tasks to us. There are many cases in Beijing's carbon governance where an information gap exists between the state and the industries. We thus can fill in such a gap by communicating with both the state and the enterprises. (Anonymous, PK/Association 01)

He further added that the association he works in has been actively involved in the construction of China's carbon trading market since 2015 and established the ACET in early 2017 (see Chapter 3). 'Our work is largely supported by the NDRC, the MEE, the Ministry of industry and the National Strategy of Energy Conservation Center, and we were intended to develop an information-sharing win-win cooperation platform with the enterprises. That is why we developed the ACET (Anonymous, PK/Association 01)'. Such a ACET has provided an information channel between the state and the non-state market actors in China's carbon market governance, and the interviewees overwhelming concur with this viewpoint. These institutions work as a magnifying lens for the local officials to better acquire the intention and master the performance of the enterprises. It was suggested by a technical director of a non-governmental organisation in Beijing that the social organisations can also help the local government to improve the aforementioned white-list and blacklist so that the enterprises with good performance can be incentivised, and those with bad performance can be supervised more strongly (Anonymous, PK/Think Tank 05). It seems that a 'negotiated symbiosis' relationship,

argued by Ho and Edmonds (2008), where the "semi-authoritarian framework" is inexorably "embedded" with NGOs and their informal relationships with the local officials, can be reflected in Beijing's local carbon market governance. These associations potentially have a wide reach on industrial businesses, as well as wide access to data and information about the businesses' carbon trading behaviour, which would be a critical complement to the influence of the government and groups that are not affiliated with enterprises.

A close tie between certain associations and the government agency can also act as a fire alarm to ensure the compliance of enterprises with binding interests. In an interview with a think tank researcher, he claimed that 'local officials have a close connection with EHS (environment, health, and safety) association. Some larger-scale corporations have an EHS manager who takes the responsibility of guaranteeing the environmental issues of a firm. If there occurs an environmental accident, he is one to charge (Anonymous, PK/Think Tank 03).'

However, from the conservation with the deputy secretary general of this association, it can be inferred that even though such an association is not a state actor, it is firmly backed, supported or even control by the state. In addition, these industrial associations have no formally institutionalised channels to take part in policy decision-making in Beijing's carbon market governance. They are performed more as external consultants outside the government (Anoymous, SH/Third Party 01). For other local associations and NGOs, who with small scale or no state support their connection with the state is relatively loose (Anoymous, PK/Association 01).

The involvement of civil society actors does not mean that Beijing's carbon market governance is shifting to a new form of network or pluralistic governance. A director of a non-governmental organisation stated that:

> We can see that the Chinese government is trying to implement a pluralistic governance model. However, in terms of the carbon market construction, the Chinese government is more of a nanny-style, patriarchal government that the state covers everything. Although this (the carbon market) is a market-driven policy experimentation, the state still uses more mandatory policies. (Anonymous, PK/Think Tank 05)

This argument is also echoed by another researcher, who is a researcher at International Institute for Environmental Policy under the MEE, that 'of course, the carbon market involves many agents, but definitely it is the government who lead the overall construction (Anonymous, PK/Think Tank 01). In terms of local governance structure, Beijing has barely seen an environmentalist bottom-up alliance push up toward the state to advance a carbon market strategy.

4. Summary

In this chapter, the discussion at the beginning is about Beijing's socio-economic context, and the features of Beijing's carbon market on its general design elements. Evidence has shown that Beijing's carbon market is now on an increasing scale in terms of its transaction volume and price, but there are scattered trading and opportunistic investors. The analysis of the institutional arrangements of Beijing's carbon market from the perspective of principal-agent theory drives the research inquiry on Beijing's carbon market governance structure. This chapter focuses on the organisational interactions between the state and its interplay with other relevant actors, the oversight mechanisms that are adopted by the state to either supervise its lower levels of bureaucracies or the market participators. It can be seen that, China's carbon market involves overwhelming state intervention during the process of design, form and implementation. The related regulations and the extensive account of state-owned enterprises covered embody the decisive intervention of the state.

The MEE at the central level fails to involve itself sufficiently in overseeing the performance of local officials but blurs them with other competing objectives. The target responsibility system and the protection inspection groups adopted by the central state fails to perform effectively as regulatory tools to make the local officials obey the central state's requirement in terms of the carbon market construction. Such ineffectiveness may owe to the difficulties of measuring the actual policy outcome of the carbon market. More importantly, the researcher identified that it is the weak intention from the central state that invalidate these mechanisms. Beijing's carbon market governance is partially captured by the canonical principal-agent model but is not limited to that. The supervisory mechanisms adopted by the central state to local officials confront the envisaged situations that the principal delegating a task always cares about an agent, but empirically bears out what Schillemans and Busuioc (2015)

termed as the problem of ‘drifting principals’, or ‘forum paralysis’. In addition, from the interview data, it is inferred that the MEE’s drifting of the supervision to local officials on China’s carbon market can be a response to its internal weaknesses which are lacking financial and personnel resources, and the external conflicts with other departments under the State Council.

Different from the passive supervisory actions towards local officials, the MEE has guided a series of regulatory innovations to exert control over its non-governmental agents. The involvement of the SOEs in the carbon market can be seen as an effective tool as they are bounded by the political tasks. The local environmental bureau also applies a series of fire alarm and policy patrol mechanisms on behalf of the MEE, such as double filling, credit linkage mechanism, online monitoring, and self-monitoring. However, these monitoring tools seem not to be an effective solution to the longstanding principal-agent problems. These exist agency losses where alliances between the supervisory agencies and enterprises occur. The state fails to steer the market by with financial motivations in trading. In addition to that, some state-backed industrial associations and non-governmental organisations work as an informal information channel for the state to control the carbon market. However, such involvement does not fundamentally change the governance pattern where a top-down, patriarchal government still show in practice. It is fair to argue that the “power of the market” seems not “invisible” but has vanished in the case of China’s carbon market practice in Beijing. The next chapter will focus on another case in Jiangsu Province.

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Chapter 5 The Case Study in Jiangsu Province

1. Introduction

The previous chapters discussed the Chinese state's efforts in combating environmental degradation from a broader macro-level perspective. It is related to the formation of administrative institutions for ecological issues, the re-anchor of the environmental policy portfolio with market-oriented domination, and the involvement of civil society actors, including the industrial associations and the NGOs within the policymaking loop (see Chapter 3). Illuminated by the environmental discourse of the green state, the political economy analysis presented in Chapter 3 suggests that the state in China has revealed features of being a green state in terms of strategic capacity but fails to yield communicative and integrate capacity in its carbon market governance. Among the policy process of constructing a carbon market, the state seems to employ the rhetoric of ecological modernisation but leaves it as "old wine in new bottom". Later on, the case study in Beijing's pilot emission trading scheme offers a local-level insight into how the carbon market is shaped on the ground, and how the complex institutional configurations and organisational interactions are embedded in the principal-agent analysis. In particular, in Chapter 4, the prolonged central-local relationship during the policy process of Beijing's carbon market was discussed in terms of the supervisory mechanisms adopted by the central state, either institutionalised or non-institutionalised. Such a central-local dynamic is not unique in China's carbon market governance but own to the long-standing "tradition" where China's state has allocated and delegated its power to agents at the bottom of the administrative hierarchy. Departing from the possible reasons that are behind those nested hierarchy issues, the question addressed in Chapter 4, instead, is *what is the governance structure of China's carbon market at the local level?* Chapter 4 also offered local insights concerning the first sub-question of the thesis on the possible delink between environmental protections and economic growth in China's carbon market governance. To answer these research questions, the researcher has laid focus on the complex interactions among the interest parties involved in this environmental policy experimentation, encompassing the state actors, NGOs and industrial associations, third-party regulatory institutions, and firms. These micro-level questions have continuously driven the following explorations on Jiangsu's carbon market.

The following exploration on Jiangsu's carbon market is not trying to borrow the conventional wisdom of the Western-inspired environmental governance theory and contextualise it into China's local practice, nor to far-fetch China's market-based policy attempts into the shop-worn discussions of the state-market dichotomy. Instead, this chapter aims to unfold the regional carbon market governance patterns including the institutional setting and the possible dynamic interactions among the market participators. This analysis presented here can be considered as a broader, synthetic perspective as the thesis recognises the interactions among the state actors and explores the rationale and possible ways that civil society can be involved in this environmental experimentation, while at the same time discussing the research question in terms of the environmental politics by incorporating the state into the analysis. By doing this, we can see a hybrid model that is paradoxically featured by state intervention and liberalisation in China's carbon market governance.

Parallel to the analysis of the emission trading pilot in Beijing, the discussion of Jiangsu's practice on the carbon market is also started with the socio-economic context and general characteristics of Jiangsu's emission trading system. Such a discussion can provide relatively solid reasons underlying the choice of Jiangsu as the research site of this thesis. Secondly, the top-down institutional configurations in the Jiangsu case will be explored till the very bottom of the policy line, namely from the province level to city-level, and to the county-level of governance. Through the lens of the carbon market, this section unfolds the complex interactions of the state actors during the implementation of the carbon emission reduction targets. It also discloses the dilemma between economic development and environmental protection facing the officials in Jiangsu when deploying the carbon market in practice. Next, the participation of the market entities and the civil society actors in Jiangsu's carbon market governance is discussed to see the extent to which civil society is involved in the policy deployment and implementation. Finally, this chapter ends with a general discussion of the governance patterns of Jiangsu's carbon market.

2. The Socio-Economic Context and Performance of Jiangsu's Carbon Market

As a major coastal province in eastern China, Jiangsu Province has made remarkable progress in its economic and social development since the reform and opening up. Jiangsu Province has promising development opportunities given its unique geographic

location (He et al., 2022). It has the superposition of several important national strategies, for example, the integrated development of the Yangtze River Delta, and the development of the Yangtze River Economic Belt (You et al., 2022). It also has a high degree of urbanisation (Liu et al., 2019). As part of the Yangtze River Delta urban agglomeration, together with Shanghai, Zhejiang, and Anhui, it belongs to one of the six world-class urban agglomerations (You et al., 2022). Given such geographical advantages and its unique cultural legacy, Jiangsu Province has formed its own development advantages compared to inland provinces (Bo, 2013). In terms of the industrial structure, in the early days of the establishment of the People's Republic of China, the added value of the agricultural industry accounted for more than half of Jiangsu's GDP. After the Reform and Opening up, the secondary industry has gradually become a significant element of Jiangsu's overall economic development, and the industrial structure shifted from "one two three" to "two one three[25]" (Jiangsu Bureau of Statistics, 2019). In 2015, Jiangsu issued the Implementation Opinions on Accelerating the Development of Producer Service Industry to Promote Industrial Structure Adjustment and Upgrading (Guanyu jiakuai fazhan shengchanxingfuwuye cujin chanye jiegou tiaozheng shengji de shishi yijian,关于加快发展生产性服务业促进产业结构调整升级的实施意见), followed by the Implementation Opinions on Accelerating the Development of Consumer Service Industry to Promote the Upgrading of Consumption Structure (Guanyu jiakuai fazhan shenhuoxing fuwuye cujin xiaofei jiegou shengji de shishi yijian, 关于加快发展生活性服务业促进消费结构升级的实施意见) in 2016. Since then, the proportion of the tertiary industry in Jiangsu's GDP has soared and exceeded that of the secondary industry. In 2020, the primary, secondary, and tertiary industry accounted for 4.4%, 43.1%, and 52.5%, respectively (Jiangsu Bureau of Statistics, 2021). The industrial structure of Jiangsu Province achieved a symbolic transformation to "three two one". It is fair to say that Jiangsu's industrial development is gradually moving towards high-end, followed by an optimisation of the demand structure.

The optimisation and the upgradation of Jiangsu's industrial structure can be reflected by its GDP growth. Over the past ten years, Jiangsu's GDP ranked among the top three in China, together with its comprehensive market competitiveness, and regional development. After entering the 12th Five-Year Plan, Jiangsu responded to the national call for the economic model to shift from rapid economic growth to high-quality growth

[25] The one, two, three refers to primary industry, secondary industry, and tertiary industry, respectively.

(Wang et al., 2020). In 2020, the GDP of Jiangsu Province (10.2719 trillion RMB) accounted for 10.11% of the country, and its urbanisation rate reached 72% which was far exceeding the national average of 63.89% (National Bureau of Statistics, 2021). The manufacturing industry in Jiangsu Province has been developing at a fast speed, and in 2021 for the first time, the value added of its manufacturing sector ranked first in China, whereas its share in Jiangsu's regional GDP has declined slightly from 43.9% to 34.5% in the past five years (Jiangsu Bureau of Statistics, 2021). In addition to that, Jiangsu's Development and Life index (DLI) is in the high ranks among a list of provinces in China.

However, Jiangsu Province has inevitably faced significant energy challenges. Jiangsu is characterised by limited energy and rare resource (Wang et al., 2020), and its energy self-sufficiency is situated at a lower level in comparison to other provinces who are with similar economic volume. This limited energy self-sufficiency is caused by Jiangsu's increasing energy consumption, but simultaneously with inadequate energy resource reserve: according to the data from the Statistical Yearbook of Jiangsu Province[26], from 2010 to 2020, there is an increasing trend of total energy consumption in Jiangsu, from 8,612.43 (million tons of coal equivalent) to 32,672.49 (See Figure 5.1). The total energy consumption in 2020 accounted for 6.56% of China's total energy usage, and for the past decade, Jiangsu's annual average electricity consumption has been the Top 2 among the other 33 provinces in China. To complement to its energy inadequacy, Jiangsu's energy supply relies heavily on external imports, even though it is far from adequate. It is also shown in Figure 5.1 that the energy import takes almost half of the total energy supply in Jiangsu.

[26] http://tj.jiangsu.gov.cn/2021/nj09.htm

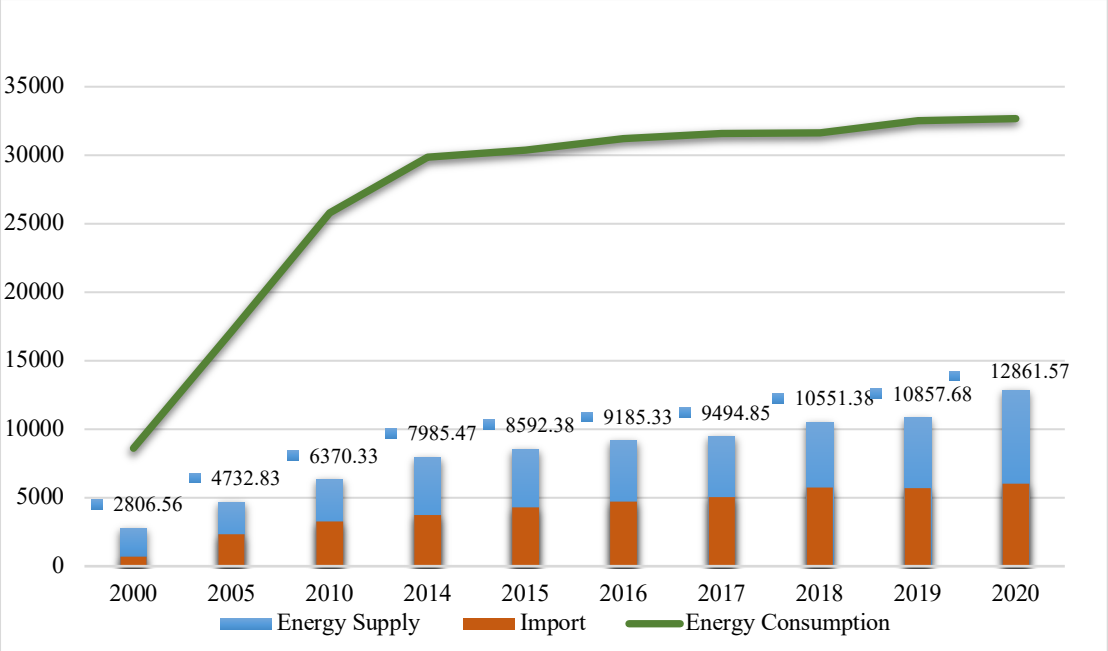

Fig.5. 1 Total energy consumption and supply of Jiangsu Province from 2000-2020[27], unit: Million Ton of Coal Equivalent

Source: Jiangsu Provincial Bureau of Statistics, http://stats.jiangsu.gov.cn/2021/nj09.htm

Secondly, Jiangsu is a significant greenhouse gas emitter (Hu et al., 2022; Xiong et al., 2022). From 2006 to 2019, the total CO_2 emissions in Jiangsu Province increased from 525,391,314 to 869,937,015 tons (See Figure 5.2). Under the jurisdiction of the Jiangsu government, in 2022, there are in total of 9,103 key emission polluters (Department of Ecology and Environment of Jiangsu Province, 2022). The air pollution issues in Jiangsu Province have caused several accidents in recent years. For example, the extensive resource exploitation in Xuzhou led to the collapse of coal mining areas; and the economic development intensity along the Yangtze River in Changzhou exceeded the carrying capacity of the ecological environment[28]. All these pose challenges for the Jiangsu government to take action to relieve environmental stress.

[27] The energy supply means the total energy available for use, including the primary energy production, import, export, and recycling amount.

[28] Xuzhou and Changzhou are two prefecture-level cities under the jurisdiction of Jiangsu Province.

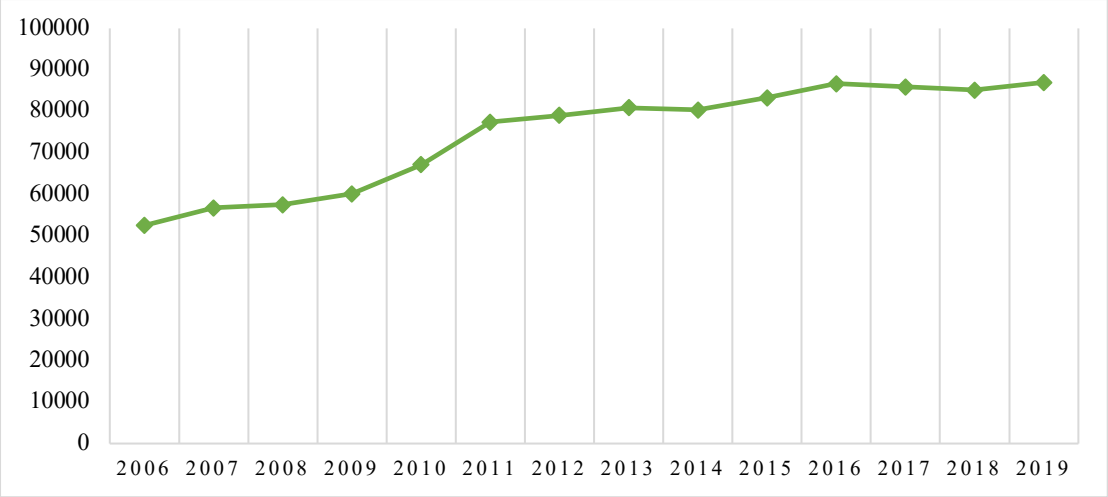

Fig.5. 2The CO_2 emission in Jiangsu Province

Source: Chinese Energy Statistics Database (CESD)

Thirdly, Jiangsu Province is experiencing fast urbanisation and regional development gaps. It reveals significant local varieties and unbalanced economic development among the regions. Jiangsu has three regions in line with the geographical location, namely, Southern Jiangsu, Central Jiangsu, and Northern Jiangsu. Such a co-existence of unbalanced development in different parts of Jiangsu, argued by He et al. (2022), is consistent with the development position in eastern and western China, and even comparable to the North-South divide between developing and industrialised countries. The GDP of the economically developed cities represented by Suzhou, Nanjing, and Wuxi in Southern Jiangsu is about four times that of economically underdeveloped cities represented by Suqian and Lianyungang in Northern Jiangsu. Jiangsu's overall high level of development status in China is largely related to the development level of Southern Jiangsu. In addition to the GDP gap, the industrial structure also varies in different parts of Jiangsu, for example, the high-tech industry is developing rapidly in southern Jiangsu and Northern Jiangsu is constrained by historical and geographical reasons during its process for high-tech industry development. Meanwhile, the industrial structure of southern Jiangsu is more stable than that of northern Jiangsu and central Jiangsu. The internal impetus and external demand in line with the consumption, investment, and net export of southern Jiangsu are more robust than those of northern and central Jiangsu. In addition to that, compared to Southern Jiangsu, Northern Jiangsu face the challenge of brain drain: the lack of the assembly of university towns that can provide high-quality human resources. The economic and social gaps among each city indicate Jiangsu's comprehensive regional economic layout based on complementary advantages has been far from enough.

Different from Beijing, Jiangsu is not included in the first batch of China's emission trading pilot scheme. However, this does not mean that Jiangsu's deployment of the carbon market starts from zero. Under the direction of the 12th and 13th Five-year Plans, Jiangsu has proposed a new standard for energy consumption and emission reduction with the goal of reducing energy intensity below 0.38 tons of standard coal by 2020 and attempting to approach 0.36 tins (National Bureau of Statistics, 2018). To better fulfil such a goal of carbon emission reduction and combat environmental degradation, as a non-pilot province, Jiangsu Province has actively embraced carbon emission trading and undertaken preliminary preparations. It accelerated the establishment of the greenhouse gas emission data accounting and reporting system, which was fully launched in 2013. Jiangsu Provincial Development and Reform Commission organised technical institutions such as Jiangsu Provincial Economic Information Center to coordinate and undertake research on greenhouse gas reporting systems and platform development. In April 2014, with the official launch of the emission reporting platform, the Jiangsu province organised enterprise training. After two years, the reporting platform has been gradually optimised and now become a nation-level accounting system. The existing reporting platform in Jiangsu Province covers the functions of enterprise reporting, emission accounting, online management, data storage, and statistics summary, and can work for the multidimensional data management of activity level, emission factors and emission volume, and support official departments at all levels in carrying out statistical analysis and assisting decision-making.

Meanwhile, Jiangsu Provincial government has proposed and organised training activities since 2014. For the enterprises and institutions included in the greenhouse gas emission report in Jiangsu, the local officials have established a long-term capacity-building training programme on the greenhouse gas emission accounting report. The Provincial Development and Reform Commission *outsourced* the tasks of training to third-party think tanks and industrial associations, and the experts in these organisations are required to prepare training materials and tutorials, and conduct training. Down to the city level, local officials are responsible for convening key enterprises within their jurisdiction, entrusting professional institutions to carry out training and publicise policy requirements, reporting methods and platform use. A conversation with a senior government official from Environmental Protection Bureau in Changshu indicated that the main objectives for those training programmes are: 1. to facilitate the communication between the state and non-state actors on policy documents, including

the update of policies; 2. to guide the enterprises on emission reporting (Anonymous, JS/Government 04). After the training, the training certificate will be issued uniformly, and the linkage management of the certificate number and online submission platform account number will be implemented. One respondent from an SOE commented on the necessity of a training programme and said that:

> Changshu[29] Environmental Protection Bureau held a training session on filling in the carbon emission report every year. Although our company has its own carbon asset management company and knows how to fill in the report, the carbon emission reporting is a blank space for some small businesses, especially private enterprises. The Environmental Protection Bureau of Changshu, therefore, *outsource* such a task to a third-party institution, Suzhou Daobo Environmental Protection Technology Service Co., LTD, to undertake a training programme for the business leaders. This institution is also responsible for data auditing for Changshu Environmental Protection Bureau. (Anonymous, JS/Firm 07)

These third-party institutions that take charge of the training programs work as an information channel bridging the local officials and the industrial emitters. However, such a connection is constrained by the lack of environmental professionals from the enterprises' side. Once the training certificate management system is established, and it is clear that enterprises with significant carbon emissions need to arrange for special personnel to attend the training. Generally, enterprises with large scale, for instance, international firms, have an EHS manager, or an environmental specialist responsible for energy and emission strategies. The local government officials in Jiangsu will contact them for training. While for private enterprises with a relatively small scale, it is usually the business owner to participate in the external training sessions and seminars, and they are inclined to be absent due to their tight schedules (Anonymous, JS/Firm06; Anonymous, JS/Government 04). The lack of firms' specific personnel for emission reduction undermines the effectiveness of these training activities and blocks the information channels implicitly. Apart from undertaking training tasks, for the role of the other industrial institutions and other civil society actors, it will be unfolding d in the coming sections of this chapter (see Section 4).

[29] Changshu, a municipality under the jurisdiction of Suzhou City, Jiangsu Province.

In addition to that, the Jiangsu government has sought to provide a legal foundation for greenhouse gas emission management and issued a series of interim management measures in 2015. In response to the issue of the Notice of the National Development and Reform Commission on organising the Reporting of Greenhouse Gas Emission from Key Enterprises (Public Institutions) (Guanyu zuzhi kaizhan zhongdian qi(sh)ye danwei wenshi qiti paifang baogao gongzuo de tongzhi)关于组织开展重点企(事)业单位温室气体排放报告工作的通知), the Development and Reform Bureau from Jiangsu provincial-level drafted the Interim Measures for the Management of Greenhouse Gas Emission Reporting of Key Entities in Jiangsu Province (Jiangsushen zhongdian danwei wenshiqiti paifangbaogao zanxing guanli banfa,江苏省重点单位温室气体排放报告暂行管理办法). It was the first regulation that was issued and implemented in the name of the general office of the Jiangsu provincial government on April 17, 2015. The management measures aim to comprehensively grasp the greenhouse gas emissions of key enterprises and institutions, to improve the statistical accounting system of greenhouse gas emissions, and to provide data supporting the implementation of total greenhouse gas emission control, carbon emission trading and other related work.

Even though much work has been done for governing the greenhouse gas emission, considering its limited experience in running a regional carbon trading system on the ground, Jiangsu province needed to catch up with the official launch of the national carbon market and factitively participated in it in 2017. ‘So far…’ claimed by an expert in Jiangsu’s SOE (Anonymous, JS/Firm07), ‘Jiangsu has yet to issue stricter or more detailed regulations than the central government. In the carbon market, there were eight pilot areas, but Jiangsu was not one of them. Compared to the pilots such as Shanghai, Beijing and Guangzhou, Jiangsu needs to do more.’ In this case, focusing on the dual carbon goal[30] and the national carbon market integration, Jiangsu established the Provincial Environmental Protection Group in May 2020, under the purpose of strengthening the development and promotion of low-carbon technology, coordinating the governance of carbon reduction among different levels of hierarchy, and enhancing the capacity construction of carbon monitoring, accounting, consulting. It was claimed by a respondent from Jiangsu Province Environmental Protection Group that:

[30] “Dual Carbon" refers to China's goal of "carbon peak" by 2030 and "carbon neutral" by 2060.

> As a large province with a large number of trading enterprises and quota resources, Jiangsu should seize this opportunity to actively participate in the carbon market. This requires the cooperation and efforts of the government, trading platforms, enterprises, financial institutions, and other aspects. (Anonymous, JS/Report 01)

It can be inferred from the interview that the involvement of the carbon market in Jiangsu's environmental protection strategy seems to pose challenges to Jiangsu's existing environmental governance structure, and push the local government to seek new channels, both formal and informal, to incorporate the emerging interest constellation into its local carbon market governance. The researcher does not discount the policy input that Jiangsu's officials have done for combating the carbon emission, and its effort to join the national carbon market so far. The policy outcomes and details on how the carbon market is deployed melted within the complex interactions among various actors will be discussed in the following sections. In fact, Jiangsu's local experimentation governance or its carbon market governance cannot be simply discussed with a state-market dichotomy but contains more complex situations to unfold the blackbox of the carbon market deployment at the local level.

Jiangsu's emission trading system aligns itself with China's national carbon market. To ascertain the features of Jiangsu's carbon market, it is necessary to trace back to the constructions of China's national carbon market recorded in the policy documents, and to see how it is endowed with China's characteristics (see Chapter1). Now Jiangsu's carbon market seems to be in the process of carrying out the emission trading in the market, but it has yet to expand the scope of industries that participated and trading varieties. After the launching ceremony of the national carbon market simultaneously held in Beijing, Shanghai, and Wuhan, firms in the power generation industry started to undertake trading in the national carbon market. By December 31, 2021, Jiangsu's total 209 key emitters in the power generation industry included in the national carbon market achieved a compliance rate of 99.5% (MEE's Press Conference, 2022)[31]. An expert from a third-party carbon emission verification institution commented on Jiangsu firms' nearly one hundred per cent compliance that:

> In fact, if you take a deep look at the calculation method for the compliance rate adopted by the MEE, it is interesting to see that such a calculation method is not

[31] https://baijiahao.baidu.com/s?id=1722803797482703860&wfr=spider&for=pc

> in accordance with the number of enterprises that default, but with the total emission. A large number of quotas are held in large power companies, such as the five big power SOEs. Therefore, although the compliance rate is 99.5%, there are almost two hundred enterprises defaulting in the first round, and most of them are private enterprises. From this point of view, the overall performance did not reach the government's expectations. (Anonymous, JS/Third-party 02)

His critics towards the compliance rate seem to unfold a possible vulnerability of China's emission trading setting under the veil of a prosperous market. This problem was echoed by a default, where the Ecological Environment Bureau of Suzhou City reported to the public that a firm in Zhangjiagang failed to account for and settle the carbon emission quota of 2019-2020, suspected of violating Article 10[32] of the Interim Rules for Carbon Emissions Trading Management(Tanpaifang jiaoyi guanli banfa (shixing), 碳排放交易管理办法(试行)).

However, it cannot be denied that the construction of the carbon market has raised the environmental protection awareness of certain enterprises. Those enterprises paying close attention to Jiangsu's carbon market can be classified into two types. The first type of enterprises is those who are the key emission polluters and are required to do the carbon emission trading by local officials. In other words, they are passively participating in the market. The second type of enterprises is not covered in the trading list issued by the local government; while the inclusion of upstream companies or parent companies in the carbon market has promoted their awareness of carbon emission trading, and they 'turn passive involvement into active participation' (Anonymous, JS/Government 04). An anonymous chief executive officer of a privately owned power company in Jiangsu echoed this account by saying that 'my firm is not included in the compulsive list for carbon market participation, but my raw material supplier said they would carry out the trading, which encourages me to learn more about the carbon emission (Anonymous, JS/Firm08).'

Instead of judging the performance of Jiangsu's carbon market from various perspectives, the coming sections explore much on how the different state actors interact via a set of institutional arrangements and how different interest parties are involved in

[32] Article 10: Key emitting units should control greenhouse gas emissions, report carbon emission data, clear up carbon emission quotas, disclose information on trading and related activities, and accept supervision and management by ecological environment authorities

the market. By doing so, the state's implementation capacity in constructing the carbon market at local can be explored, and a distinct model of Jiangsu's local carbon market can be identified.

3. The Governance Pattern and Central-local Institutional Arrangements in Jiangsu's Carbon Market

3.1 Institutional Mechanisms and Organisational Interactions

To follow up on the work of the NDRC and the MEE, Jiangsu Province has issued a series of policy regulations to promote Jiangsu's carbon market construction. Firstly, carbon emission trading is included in Jiangsu's medium and long-term planning. The Department of Ecology and Environment of Jiangsu Province has promulgated the 2015-2020 Climate Change Plan of Jiangsu Province (Jiangsusheng yingdui qihou bianhua huihua (2015-2022nian), 江苏省应对气候变化规划(2015-2020 年), with a special chapter set up to clarify the deployment of carbon market, arguing to 'make the full use of market mechanism to enhance the internal motivation of enterprises to reduce greenhouse gases, and gradually establish and improve the carbon emission rights trading market' (Jiangsu Provincial Government, 2021). Secondly, Jiangsu Province has formulated implementation plans for the construction of the carbon emission trading market. In 2015, the General Office of the Provincial Government issued the Implementation Plan for the Construction of Carbon Emission Trading Market in Jiangsu Province (Jiangsusheng tanpaifangquan jiaoyi shichang jianshe shishi fang'an, 江苏省碳排放权交易市场建设实施方案) to transform the national strategic deployment and general requirements into the practical and operational local plans, and to clarify the key tasks and measures for the construction of Jiangsu carbon market. The Plan defined five major tasks, including carbon emission reporting, quota allocation, inventory inspection and verification, management platform and market cultivation, and proposed four safeguard measures, including establishing working mechanisms, clarifying the responsibilities of all interest parties, increasing financial support, and strengthening the capacity building. Thirdly, Jiangsu Provincial government issued a series of supporting documents on the carbon market trading data. In 2015, in order to fully grasp the emission situation of key carbon emitting units and obtain reliable carbon emission information, the General Office of the Provincial Government issued the Interim Management Measures for Greenhouse Gas Emission Report of Key Units in

Jiangsu Province (Jiangsusheng zhongdian danwei wenshi qiti paifang baogao zanxing guanli banfa, 江苏省重点单位温室气体排放报告暂行管理办法). The issuance of the Measures has improved the greenhouse gas emission management system of Jiangsu, established a provincial and municipal two-level management mode, and provided essential data support for the realisation of total carbon emission control in the province and the development of carbon emission trading.

In terms of the carbon market construction, the role of the Jiangsu province is to supplement the central government's directive and propose policies that are appropriate for the local circumstances, provided that it does not conflict with the general instructions provided by the central state. Similar to the Beijing case, Jiangsu's local carbon market governance reveals that the central state has sought to enhance its top-down control over the local officials. As indicated by a senior policymaker in the local environment protection bureau, 'What we can do is to facilitate the implementation of the policy and not to run counter to the central state's mandates' (Anonymous, JS/Government 01). The interviewees largely concur with the viewpoint. For the carbon market construction, the central state leaves little discretion for Jiangsu's provincial-level government, and they cannot make their own plans for engagement but follow the introduction of the centrally stipulated policies, not even mention the city-level governments (Anonymous, JS/Government 02; Anonymous, JS/Government 04). On the regular press conference of the MEE in November 2021, Xinming Lu, the Deputy Director General of the Department of Climate Change under the MEE, claimed that 'the voluntary greenhouse gas emission reduction trading is a national trading system, and local governments should not issue any policies that run counter to relevant national policies'. In other words, when publishing the local policies on the carbon market, Jiangsu's local levels of government officials are required to ensure the consistency of policy and follow the general guidelines from the central state. In addition to that, the city-level governments, such as Suzhou's Ecological and Environment Protection Bureau, and Changshu's Ecological and Environmental Protection Department, are not given the authority to regulate the key SOEs, nor can they have the right to verify and monitor the carbon emission data recorded in the reporting system developed by the Jiangsu Provincial Ecological and Environmental Department (Anonymous, JS/Government 02; Anonymous, JS/Government 04; Anonymous, JS/Firm 07). This may contradict the well-argued advocation of a decentralised form of governance by certain scholars (Elvin, 2006; Hilary, 2014; Zhou et al., 2013), and further reveal a

pattern of re-centralisation of carbon market governance that is featured in a top-down fashion.

There are two reasons underlying such actions of the central state: First, the central government is legally permitted and able to compel local provinces to pay taxes, which it can then distribute to other levels of government so they can carry out its directives (JS/Government 02). In this aspect, the central government has adopted the financial mechanism to effectively yield political control to its local agents. Through a financial mechanism to proactively prevent moral hazard by providing incentives, the central government as a principle tries to align the local governments' interests with its own. However, such financial incentives seem to be far from adequate. A policymaker in Jiangsu's local environment protection bureau pointed out that:

> In Jiangsu, the financial budget for environmental issues comes from two main sources: first, in the name of large projects funded by the state and provincial governments, such as power plants, and steel mills targeting the key industries and enterprises, for example, Jiangsu Province receives around 100 million RMB for a big project, and Changshu City will get a share of around 20%; second, the funding is in the name of economic development. To some extent, environmental governance is inherently linked to technological improvement. These funds are not meant for environmental protection, but for technological input and support to enterprises. (Anonymous, JS/Government 04)

The second reason is that similar to the Beijing case, the central state applied the hook responsibility, which assigns duty and obligation in a hierarchical manner, starting with the central government and moving down to the provincial level, the municipal level, and finally, the township level. 'If an issue arises after a policy is implemented, the central state will hold the responsible superior accountable.' (Anonymous, JS/Government 03). By doing this, the hook responsibility is used as a vital mechanism for the state to prevent ex-post opportunism and ensure the policy is efficiently followed by local officials. Compliance has increased, to some degree, under the mechanisms for focusing on supervision, both *en avance* and *ex-post,* enabling a significant extension of hierarchical compliance in a chain of principal-agent relations that aim to provide consistency at each level of interest and policy mandate in China's carbon market governance.

The complex interactions between the MEE and the NDRC can still be revealed in the Jiangsu case. It has been discussed that in 2018, the task of developing China's national carbon market was formally assigned to the MEE, followed by the task being transferred to the lower-level environmental authorities. It is also the MEE that is responsible for issuing a series of regulations and guidance for covered industries (see Chapter 3). However, from the level of policy implementation to the bottom of the administrative hierarchy, the Development Reform Commission still dominates the all-around process of carbon market deployment. A deputy administrator of a local Environmental Protection Bureau in Jiangsu responded to the researcher's interview question about who is in charge of the issues on the carbon market by claiming that:

> The Environmental Protection Bureau in Jiangsu is mainly in charge of emission accounting, and the Provincial Development Reform Commission takes full responsibility for the overall institutional setting and regulation formulations. Although since 2018, the MEE in the central state has taken charge of the carbon market, at the local level, it is all the Development and Reform Commission's business. This (carbon market) is related to massive tasks, such as industrial development, energy structure transformation and so on, and we, the Environmental Protection Bureau alone, cannot handle it. The Environmental Protection Bureau is relatively operational. Therefore, from top to bottom, the Development and Reform Commission is undertaking the role of coordination and mobilisation. Environmental Protection Bureau merely offers support to assist Development and Reform Commission's work. (Anonymous, JS/Government 04)

His arguments revealed that the MEE's external conflicts with other central departments, mainly the NDRC, have continuously extended to local levels of governments, and given relatively "narrow" responsibilities (mainly on environment protection), the local environment protection bureaus yield a limited power in the real practice of carbon market, and have to heavily rely on the Development and Reform Commission during its policy process of carbon market deployment. This may be a transient outcome of the entanglement of diverse and stratified interest configurations on carbon market governance. In addition to that, Jiangsu has the issue of unclear division of responsibility of each official department during its process of carbon market construction, and this may be attributed to a lack of clear, relevant policy documents at both the central and local levels. The missing of a legal foundation and clear regulations in responsibility

divisions could weaken the bargaining power of the Environmental Protection Bureau when encountering conflicts with other horizontal state agents (Anonymous, JS/Government 03; Anonymous, JS/Government 04). In this case, the local environment protection bureaus are inclined to take the role of assisting in the regional carbon governance.

It is interesting to notice that the issue of fragmented authority among the state actors does not cause many functional problems between the local government and the enterprises. From the perspectives of the enterprises, they hold an opposite view to what the local officials claimed as "the problematic fragmented authorities" in carbon market deployment. 'The MEE and the NDRC don't fight much, and basically, I think there is a clear division of powers and responsibilities…' claimed by an interviewee from an SOE in Jiangsu, 'In the past, it was the NDRC that issued policy plans and regulations. Now, after being transferred to the MEE, all regulations are formulated and published by the MEE. It can be clearly shown on their official websites. From a corporate point of view, the whole responsibility division now seems pretty clear (Anonymous, JS/Firm06).'

However, when asked about which department at the local level they would contact for carbon market participation, the market participants being interviewed indicated contradictory answers, with some of them answering the local environmental protection bureaus, and others answering the development and reform commissions. One of the respondents from a private power company provided a possible explanation for such a situation by saying that 'The carbon market in Jiangsu is still a novel thing. The policy is usually general and has no significant contradiction. Therefore, we (firms and local officials) can all sit down and discuss.' (Anonymous, JS/Firm01).

Even though carbon emission reduction may be instilled in the imperative of environmental protection, the state actors at the local bureaucracies are agile and pragmatic in choosing operational means. An anonymous administrator of the environmental protection bureau in Changshu City elaborated on the long-standing battle between environmental protection and economic development, and he argued that:

> The environment and the economy are definitely at war. Economic development is always the priority as it is the best indicator of local performance. The more it is down to the grassroots, the more they pay attention to economic development.

> The battle between economic development and environmental protection can also be reflected by the management boundaries of specific projects. However, before, the central state was not stringent on environmental management; now, we are under vertical supervision and constrained by a series of policies. It is difficult to "fool" the top. (Anonymous, JS/Government 04)

His comments explicitly unfold an environmental and economic dilemma that the local officials face in policy implementation. He further explained the dilemma and added that, 'The central government does not provide any specialised financial support to local governments for environmental protection, especially the carbon market construction (Anonymous, JS/Government 04)'. The lack of financial support from the central state in Jiangsu's policy experimentation governance of the carbon market exacerbates the incompatibility between environmental protection and economic development during the level of policy implementation.

Such "selective" implementations and the room for "choosing" may lead a long way for the carbon market to mature. The cognition that 'environmental protection is a pursuit when the economy develops to a certain extent, just like people will pursue some spiritual and cultural pursuits when they have the basic necessities of food, clothing and warmth' still dominates actual practices (Anonymous, JS/Firm 04). Also, the problem of corruption exists in Jiangsu's carbon market governance. It is indicated by an anonymous interviewee from a third-party regulatory institution that 'Local governments sometimes seem to turn a blind eye, especially in some undeveloped areas. They cannot offend the very large local enterprises that guarantee their revenue. A lot of the data is heavily manipulated by the local bureau of statistics. There are too many 'facial projects' (Anonymous, JS/Third-party 02)'.

3.2 Participation of Non-state Actors

It has been a most distinctive feature of Jiangsu's carbon market governance, which is fundamentally different from most Western countries, especially the EU ETS, that 1. the SOEs play a significant role in the scaling-up process, and 2. the private-owned power companies covered in the market still account for a limited share of emission quotas in Jiangsu's carbon market (Anonymous, JS/Think Tank 01; Anonymous, JS/Government 03; Dent, 2015). The emergence of the carbon market is based on a

neoliberal governance framework, where the principle is to promote an open and efficient market for all stakeholders (Bryant, 2016; Rosenzweig, 2016; see Chapter 1 and Chapter 3). However, in Jiangsu's carbon market governance, SOEs have not only been considered as the gatekeepers of energy security offering to safeguard of energy supply, transmission, transformation, and diffusion (Pearson, 2005; Tunsjø 2013), but also undertaken the "political task" for carbon emission reduction which is usually considered as a priority over the profit-seeking (Anonymous, JS/Think Tank 02). In this case, it can be inferred that compared to the financial penalty, the administrative punishment working as *fire-alarm* mechanism adopted by the state seems to be more effective in overseeing those SOEs. Such an SOE-dominated carbon market could be unusual in the Western context, and to some extent, contrasts the market-based thinking of this novel local policy experimentation. An interviewee who is from a well-known power company in Jiangsu, the State Power Invest Corporate (one of the five big state-owned power groups), pointed out that:

> SOEs account definitely a dominant share in Jiangsu's carbon market, not in terms of the number of units, but from the amount of carbon emission quota they hold. Thus, as long as those SOEs can reduce the carbon emission, then the carbon emission of the whole society will definitely come down. (Anonymous, JS/Firm 05)

This argument indicates a significant role of SOEs in Jiangsu's carbon market to guarantee the achievement of the overall carbon emission reduction. He further added that:

> Carbon emission reduction, more or less, is a political issue. In China, SOEs work as ballast stones. As SOEs, we must execute the command given by the central government because they are political tasks, and we stand for a political position. We are tagged with "political colour" and will not merely focus on profit-seeking. (Anonymous, JS/Firm 05)

This statement was also echoed by a respondent from another SOE, who confirmed the role of SOEs in energy security and carbon emission reduction by noting that:

> For SOEs, our priority is not the profit, but social responsibility. For example, last year's coal price went up all the way and increased by ten times, but there is

> no change in the feed-in tariff. We, therefore, were experiencing a profit loss but had no choice. This is the same for carbon emissions (joining the carbon market). It is a political task, and we must do it. There are no other considerations. (Anonymous, JS/Firm07)

In the carbon market governance in Jiangsu, SOEs, in this case, blur their role with a state actor and an enterprise. They seem to be hybrid in nature as they have to adhere to the state mandate to join in the carbon market, disseminating knowledge, knowhow, while at the same time operating on a for-profit and business-like basis. Similar to the Beijing case, the vital role of SOEs in Jiangsu's carbon market governance has not only been revealed in the policy implementation, but also during the stages of policymaking. The respondents of this research confirmed that government officials would organise private consulting meetings with the leaders of some big enterprises. It is argued by one of the interviewees working in an SOE in Jiangsu that 'Our firm's carbon asset management team did participate in drafting the local regulations on the carbon market, and generally these consulting meetings are held privately and not faced to the public (Anonymous, JS/Firm 07).' In contrast, the voices of small private-owned enterprises in Jiangsu can barely be heard by the state, and they lack information channels to offer their feedback to the overall deployment of the carbon market. In this case, the state has reinforced its centralised form of carbon market governance by enhancing the power of SOEs and unwittingly diminishing other small private firms in the carbon market. Even though it seems to be radical, a respondent who used to work in SOE and now is working in a carbon emission research centre in Jiangsu shared his view by declaring that:

> (In Jiangsu's carbon market governance) We can find that everything is in the hands of the government, and the rules of running the market are in the hands of central and state-owned enterprises. Even some industrial associations are firmly controlled by central and state-owned enterprises. There are many small power enterprises in Jiangsu's carbon market, and their capacity is very backward. They do not have more money to upgrade their capacity. Through the market mechanisms of such market-based policy experimentation, the state aims to put the power industry into several big units to monopoly, like five big power groups. In this way, a big, unified group firmly held by the state can be set, and then the state can easily transform the energy structure and do whatever we want. (Anonymous, JS/Think Tank 02)

While the domination of SOEs in Jiangsu's carbon market may lead to the issue of inequality among different enterprises in terms of the ways to obtain information. In Jiangsu's carbon market, whether an enterprise can make profits is not directly linked to the carbon price but is highly associated with whether it can quickly grasp and fully understand the market signals revealed in the policy documents (Anonymous, JS/Association 03). With the backup of the state, different from the small private-owned enterprises, those big enterprises positively embrace the carbon market and are heavily "armed". For them, participation in carbon trading is more like an opportunity, rather than a requirement from the state or a challenge. It has been suggested by one of the interviewees from the carbon asset strategic team of an SOE that:

> Although it was in 2021 that our national carbon market was allowed for trading, our companies have been conducting training and simulations since early 2015. We also make some preparations in terms of carbon emissions management, including its accounting and data management. Apart from that, we established a special team in 2018, which is mainly responsible for research on carbon asset strategy. The team consists of several company leaders, financial managers, consumer engagement managers, and production managers. (Anonymous, JS/Firm07)

However, compared to the SOEs, private firms are disadvantaged in achieving timely information. It is suggested by one of my interviewees, who is the manager of a private-owned enterprise in Jiangsu, that:

> Some big companies participate in the policymaking of the carbon market, for instance, the five key SOEs, and their obtainment of information is about one year earlier than ours. Therefore, in the process of carbon emission, some of their detection work has been done in advance. For us who do not obtain timely information, this has resulted in great unfairness in the whole implementation process. (Anonymous, JS/Firm06)

However, some respondents hold different views, and they believe that the whole market environment in Jiangsu is relatively fair. 'In China, its (the carbon market) rules are relatively fair. It has set a baseline value when allocating allowances. It does not set different standards for SOEs and private-owned companies. They are all the same.' is the opinion of an SOE manager (Anonymous, JS/Firm08). Apart from that, it seems that

the situation of 'inferior business being protected at the expense of good players' in other energy industries, identified by Chen (2016, p.181), will not be seen in Jiangsu's carbon market. The carbon market is used to play the role of closing and crowding out backward production enterprises. Li, the Executive Director of China's Renewable Energy Institute, expressed that:

> You cannot find any regulations saying that SOEs can go into the market and private enterprises cannot. However, for some small enterprises with extremely low energy efficiency, they are not taken into consideration when we are designing the carbon market. (Anonymous, JS/Association 03)

Such unfairness caused by information asymmetry has resulted from the lack of industry associations and NGOs in Jiangsu's carbon market governance. When asked questions about how industrial associations or NGOs play a role in the carbon market, the interviewees responded to the researcher that there is no specific industrial association focusing on the carbon market, and they averred that they have neither communicated with those institutions, nor received any training programs on the carbon reduction strategies and carbon market participation directly organised by the local industrial associations and NGOs. 'We are a solo now' described by a manager of a Jiangsu's private-owned enterprise about their experience in participating in the carbon market (Anonymous, JS/Firm06). This situation is echoed by another respondent, saying that:

> There are some scientific and technological associations, but they will only provide us with some technical-level suggestions, and we will barely have a talk on the carbon market. The carbon market is too new. It is all because we have an independent carbon asset management enterprise that we can obtain some cutting-edge information promptly, otherwise, it is also difficult for us to capture the dynamics of policies. I believe that the government at the provincial level may have a clear strategy for carbon reduction. However, from firms' perspective, the ways for getting the information in time are still limited. (Anonymous, JS/Firm07)

The lack of involvement of industrial associations and NGOs working as a bridge and providing information channels among the state actors and enterprises may limit the performance of Jiangsu's carbon market. A manager of a small privately-owned company complained to the researcher that:

> We only have two requests now. First, the policy should be released in a timely manner. For example, if I am expected to follow the compliance period in 2021, the government should release related policy documents in 2020, and they should not release them in 2022. Otherwise, by the time I have completed all the work in 2021, they will then check my emission and judge it as substandard. It will be a nightmare. Second, the training should be strengthened. For example, there should be a unified standard for what to do after the policy is released. You (the government) need to light a path. (Anonymous, JS/Firm06)

His argument has pointed out that in Jiangsu's carbon market governance, there lacks the involvement of NGOs and industrial associations that are expected to undertake more bridging roles in linking the state and enterprises, offering information channels to let the enterprises' voices be heard and obtain prompt relevant information on carbon market deployment. Since the reform of the administrative system and the put forward of the "streamline the government, delegate power, and improve government services (Fangguanfu, 放管服)", the industrial associations are gradually decoupling their link with the local governments. They are now outside of the state apparatus and are no longer quasi-governmental, state-affiliated organisations or government-organised associations (Anonymous, JS/Association 02). An interviewee, who is a policymaker in one of Jiangsu's local government argued that:

> We have a close connection with two NGOs, namely, Jiangsu Society of Low Carbon Technology, and Energy Association of Jiangsu Province. The government's effort is limited, so we will buy some third-party services from them (the two associations). Sometimes, we will ask them to do preliminary research, or *outsource* some training programs to them, letting them to tell the enterprises how to join the carbon market. (Anonymous, JS/Government 03)

Even though, in Jiangsu's carbon market governance, the officials in both the environmental protection bureau and the development and reform commission will organise private consulting meetings with the NGOs, these local industrial associations have no formal institutionalised channels to take part in the policymaking and implementation in terms of the carbon market construction. It is echoed by a director of one Jiangsu's energy association, arguing that,

> Our association has already delinked with the government. Now the state has made it clear that government officials are not allowed to hold positions in associations. The impact is very significant in terms of the funds and personnel. We now have no funds from the local governance, also have no personnel support. In addition to that, when making some (carbon market) policies, the government officials will not consult us. (Anonymous, JS/Association 02)

Different from a "negotiated symbiosis" relationship between the specific industrial associations and authority in Beijing's case (Ho and Edmonds, 2008), we have seen a considerable degree of exclusivity in Jiangsu's carbon market governance. This exclusivity is revealed by the closeness where the local government in Jiangsu has selectively closed the communicating space between industrial associations and non-governmental exchanges.

The lack of civil society participation in Jiangsu's carbon market governance structure can be seen as a manifestation that China's state has sought to enhance its control and oversee the market. Aghion and Tirole's (1997) distinguished between formal and real authority, where the formal authority is prescribed by the formal structure, and the real authority rests with those with more information. Drawing on the principal-agent issues, in Jiangsu's carbon market governance, it seems that the state officials as principal choose not to delegate real authority to the civil society actors as agents who hold such information. To avoid its authority being vague and symbolic, Jiangsu's state actors have attempted to avoid the actual control right of the market being shifted to other parties through such a non-participatory governance model.

4. Summary

In this chapter, the first discussion was of Jiangsu's socio-economic context, and its efforts in combating greenhouse gas emissions in terms of the policy-setting and data reporting system development, and the province's practice in participating in the national carbon market. This chapter also explored the central-local institutions, and how different interest parties, including the political, civil society, and market actors interact with each other, and what the governance pattern of this local policy experimentation in the Jiangsu region is. In this chapter, I argue that: first, similar to Beijing carbon emission trading pilots, the pattern of centralisation in Jiangsu seems to

be embodied in a governance structure where the central-local relations are strongly guided, supervised, and monitored by the state. This centralised pattern is indicated by the limited authority local officials have in issuing local-tailored regulations and policies on carbon market deployment. The central government monopolised its jurisdiction regarding the provision of general guidance on market operation and the appointment of regulatory institutions for carbon emission data verification.

It can be seen that SOEs in Jiangsu's carbon market fall in line with the state priorities, which being a key characteristics of local carbon market governance. Their interests are linked by the administrative punishment that work as fire-alarm mechanism adopted by the state. In terms of the principal-agent issues based on the central-local relation, controlling the financial sources and using the hook responsibility, both *en avance* and *ex post,* are two main supervisory mechanisms adopted by the central state (as principal) for ensuring the compliance of the local officials (as agent) in its carbon market construction in Jiangsu. These supervisory mechanisms aim to provide consistency at each level of interest and policy mandate in Jiangsu's carbon market governance, but similar to Beijing, they are far from enough to guarantee local official's effort in carbon market construction. From the level of policy implementation to the bottom of the administrative hierarchy, it can be identified that environmental issues are still implicitly "excluded" at the local level. Using the term "excluded" does not mean that they are subjective to governance "discrimination", and indeed, the importance of environment protection issues is clearly shown either in the political announcement or social rhetoric. However, it is identified that the carbon market is often not the priority when local officials encounter the dilemma between economic development and environmental protection. Such a finding may indicate a possible delay of political will from the central state to its lower level of bureaucracies, or more likely, it can be seen as a realistic concession of the local officials to the industry. The 'turning a blind eye' of local environmental officers in data fraud and 'stability maintenance' of the central state described by one of the experts seemed to be a well-fitted expression for such concession (Anonymous, JS/Think Tank 01). Therefore, the findings in this part may disappoint those who are optimistic about the carbon market for its ability to combat environmental degradation and ensure economic growth simultaneously. The synergies and conflicts between economic growth and environmental protection, at least in the governance of the Jiangsu carbon market, will continue to exist in the long term.

Fragmented authority of the state also reveals a clear pattern in Jiangsu's carbon market in real practice, where the Provincial Environmental Protection Bureau act like an agent borrowing 'power' from the 'tiny government'-Development and Reform Commission (Anonymous, JS/Government 04). When the policy is implemented at the grassroots level, it seems that the NDRC administrative line plays a more significant role in undertaking a series of state interventions. The problems of unclear responsibility division may result from a lack of clear and unambiguous certain relevant policy documents both at the central and local levels. However, regardless of the internal tensions of the relevant administers themselves, it cannot be denied that the state has paid enough attention to green consensus formation and policy implementation.

Concerning local carbon market governance in Jiangsu Province, it can be seen that the market players are offered information channels with the government organisations, and such channels usually are in the form of training programs featured by the informal direct links between the local environmental protection bureau officers and those who are in charge of environmental issues (EHS manager, for example) in the firms. Though the Provincial Department of Ecology and Environment drafts the policy, it may unilaterally seek constructive information from the enterprises that it considers of great importance, and these enterprises are usually the big SOEs, given the large proportion of emission allowance they have and the political responsibility they take, and the voices of small private-owned firms are hard to be heard (Anonymous, JS/Third-party 03). Just as what a local governmental official suggested, 'we will not ask opinions from all cats-and-dog[33], it is impossible, also unnecessary' (Anonymous, JS/Government 03).

There exists a trend of decoupling between the local government and these civil society actors in Jiangsu's carbon market governance. Such a non-participatory process is consistent with the environmental authoritarianism but shows state's weak communicative capacity in its carbon market governance. It is interesting to see that civil society actors such as the NGOs that should forge links with local officials and firms only works as an agent of a think tank, offering policy implication and suggestions to the governments. These civil society actors are no longer internal semi-official agencies, but instead, now they work as external consultants and 'do what the government officials dare not to do' (Anonymous, JS/Association 01). Even though these industrial associations and NGOs have offered adequate industrial information to

[33] Cats-and-dogs, in the Chinese context, means someone with tiny importance.

the local officials, their role of bridging the state and the enterprises seems far from adequate. In the opinion of firms, especially small private enterprises, the industrial associations and NGOs barely provide effective information channels. Specifically, in Jiangsu's deployment of the carbon market, the real work of these associations and NGOs seems to be invisible. Apart from that, the incorporation of individuals by the ways of creating a personal carbon account in the market is still in a very preliminary stage.

In addition to that, the market players in this "carbon game" have yet enjoyed the benefits of this new policy attempt, where they thought would be a lucrative market. In other words, profit-seeking seems not to be a priority for engagement in Jiangsu's carbon market. The 'political task' is of more importance for the enterprises, especially the big SOEs (Anonymous, JS/Firm 06, Anonymous, Jiangsu/Firm 07). Thus, compared to the financial penalty, administrative punishment in the form of theoretical *fire-alarm* mechanisms adopted by the state seems to be more effective. From the observation of Jiangsu's carbon market, it should be noted that it is still in the stages of "mind first (Yinian xianxing, 意念先行)".

To conclude, the main points summarised above indicate a centralised state-led non-participatory governance structure in Jiangsu's carbon market. Jiangsu's practice in the carbon market challenges the general impression of shared governance (Quanmin gongzhi, 全民共治) in environmental management in China, and such a kind of participation is taking a less visible form of what the I call, the "facial make-up participation[34]" where the state dominates the carbon market and the civil society performs as agents of role-playing. Also, rather than deviating from the expectations in light of widely-adopted the green state practices in Western countries, the exploration based on Jiangsu's carbon market undertook an inductive outlook on the specific governance features of China's carbon market that views the state as on its dynamic path towards a "real" green state. This may not serve as a trajectory pre-ordained by present-day environmental authoritarianism, but instead, full of uncertainty due to the complexity of each element of state organs.

[34]Facial make-up is the face painting of traditional Chinese opera actors, used for stage performance make-up modelling art. In this chapter, it is used as a metaphor to describe a superficial, window-dressing mode of carbon market governance in Jiangsu.

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Chapter 6 Towards a China-style Green State in Carbon Governance: Contradiction and Vacillation?

1. Introduction

Inspired by the growing academic interest in environmental politics to re-incorporating the state into local environmental governance, this thesis explores China's carbon market governance model through the theoretical lens of green state and principal-agent model to enhance our understanding of the issues of decarbonising emissions-intensive political economics in China. Through two case studies on the market-based policy experimentation at the local level, Beijing City and Jiangsu Province, the study has demonstrated that China is seen as an *emerging* green state and reveals a hybrid form of top-down, non-participatory paradigm in its carbon market governance. Also there exists an irreconcilable contradiction between economic development and environmental protection in China's green practice of carbon market governance revealing mainly by the policy implementation process at the local level. In this regard, strong ecological modernisation is hard to be observed in China's approach to transform into an established green state based on the existing political-economic system. The current findings of the thesis extend the knowledge of the Chinese model of addressing climate change which is usually described by some as 'environmental authoritarianism' (Beeson, 2010). They challenge the prolonged debated premises of the Western wisdom of environmental governance on the essential elements for facilitating sustainability, in terms of decentralised administrations, and public participation (Bardhan & Mookherjee, 2007; Bevir 2009; Manor, 1999; Rhodes, 2007; Stoker, 1998). In a broader context of environmental authoritarianism, China's executive agencies of environment protection manned by a group of political elites both at the central or local level of bureaucracy have, deliberately or unwittingly, become obstacles to practising inclusive policy approaches of a deliberative process. The limited participation of civil society in China's carbon market governance, especially the constrained roles of the NGOs and industrial organisations (with no state support) in the policy process of decision-making and policy implementation of China's carbon market, more or less, makes it more difficult for the state to permeate the ecological modernisation discourse into the overall deployment of the carbon market. Meanwhile, the civil society actors in China's carbon market are also unable to act as watchdogs overseeing mighty semi-public actors, given their far from enough connections with both the state actors and the firms in the market. The practice

of China's carbon market cannot proceed in tandem with the widely accepted assumptions of environmentalism that are dominated by those western green pioneers, where a high value is placed on active and engaged citizens under decentralised forms of political organisation.

The creation of the 'green' carbon market was intended to stimulate the industry's internal motivation for reducing carbon emissions, stitching the environmental protection and the market power to solve the dilemma between the environment and the economy. In China's carbon market governance, however, the state seems to enhance its strong control through the lens of SOEs and robust regulations of the market, demonstrating a form of exclusively governance with strong top-down control. In the phase of either the emission trading pilots or a national-scale trading scheme, the state has sought to exercise its centralised intervention over carbon market governance by incorporating a large share of SOEs. These SOEs are given a dominant share of the carbon allowance and yield decisive power in China's carbon price. In China's carbon market governance model, they perform a dual role, both as a market player and as a market entity with "political colours".

There are three important points to reiterate in this thesis: first, the analysis of the thesis is not anchored on normative claims by questioning whether China's state should or should not enlarge its intervention in China's carbon market. Instead, what drove the concern in this research is the certain carbon market governance structure in such market-based policy experimentation, including the inquiry of what is the role of the state in China's carbon market governance and how China's state steers its capacity in pushing such a green attempt a step further to deal with the climate change issues. The mutually constitutive conception of state-market relations is implicitly revealed across the overall analysis, especially when discussing the role of the state in the construction of China's carbon market to avoid digging into a statist perspective, neither to separate the state and market, nor to debase the value of other stakeholders in shaping China's carbon market. Second, this thesis lands a stand that the "state" itself could be neutral, while the politics of the carbon market will reflect power and interest struggles between various agents that are involved. Third, this study tries to establish China's carbon market governance model, but not in a comparative approach. That said, when a specific region was investigated, it cannot be neglected that there exists local divergence attributed to different socio-economic backgrounds or other possible factors in each individual city/province. For instance, the Beijing and Jiangsu has shown different

features in their state-business relation: Jiangsu government yields less direct command intervention to the industry; in Beijing, the features of corporatist can be seen. These local differences, to some extent, may result in the different attitude of market entities towards the carbon market, and also the different forms of supervisory mechanisms that are identified in Beijing and Jiangsu case. The case studies in Beijing City and Jiangsu Province in this thesis thus address the complexity of China's local carbon governance in this policy experimentation showing the embracement of local diversities during the policy process. However, we still can see more similarities than difference in the local carbon market governance in these two cases, and they reveal a trend of convergence of a China-style carbon market governance model in general.

This study aims to enhance our insight into China's carbon governance by addressing the main research question, that is, *how, and to what extent China's state can manage its climate change adaptation through the carbon market -- a market-based policy experimentation?* In other words, how China's state can incorporate such a market-conforming policy experimentation into China's policy portfolio for climate change mitigation and adaptation has been an essential driving force behind the current research inquiry. I decomposed this key research question into several sub-questions by firstly investigating the possible delink between environmental protection and economic development within China's carbon market governance structure; and secondly, I try to seek the role of the state in the policy process of China's carbon market construction through the theoretical lens of the green state; thirdly, the I explored the governance model of the carbon market at the local level, and finally to see if there exists a form of carbon market governance indicating a new pattern of political behaviour in a market-based form of policy experimentation emerged in China's context of environmental authoritarianism. To provide solid answers, a total of 36 elites and experts from local governments, think tanks, environment and energy exchanges, MRV institutions, NGOs and industrial associations, and enterprises that participated in the carbon market were interviewed. The findings are also based on the review and analysis of a significant body of documentary research, including, the central and locally tailored regulations, white/green papers, committee reports, and research reports.

The firstly two sub-questions are mainly discussed in Chapter 3. Based on Duit et al. (2016, p.6), the term 'green state' (or environmental state in their description) can both mean 'the specific institutions concerned with the environmental sphere of state activity' or 'to the larger polity within which they are found', which is in line with the current

usage of ‘state’ in policy science. The analysis in Chapter 3 addresses to what extent China’s state yield its capacity to a green state and sought to mitigate the ongoing environmental degradation by shifting the environmental policy template from a single command-and-control one to a multi-dimensional environmental strategy portfolio. The carbon market is thus discussed in the larger environmental policy complex and is seen as a top-down experimentation that represents the policy incarnation of ecological modernisation discourse, partly injecting the local experience and knowledge into national policy process. In contrast to the envisaged cross-interoperability of the green state in line with ecological modernisation, the practice of China’s carbon market shows blending state-market patterns characterised by the decisive political intervention in the market, the eroded state integrative and implementation capacity with weak inner workings of central administrating, and weak communicative capacity with restricted public participation in the policy process. While indeed, the reconfiguration of China’s state toolbox to incorporate more cooperative, market-conforming, and voluntary instruments and precautionary solutions are linked to the emergence of ecological modernisation in China’s environmental governance and reveals the state’s strategic capacity to be on the trajectory of achieving a normative dimension of the green state. The development of China’s carbon market reflects the government’s increasingly savvy political reaction to the widely perceived environmental challenges. However, there has not been adequate signal indicating the environmental protection has emerged into the state’s core function at each level of bureaucracy. China’s carbon market appears to be dismissed as overblown rhetoric, rooted in a narrow version of ecological modernisation that fails to reflect any massive shifts in business, public, and political values in line with environmental objectives. It can be seen as a case of window dressing under the shadow of a centralised hierarchy to retain its political-economic status quo of authoritarianism. The findings of the current study could be partially explained by Heilmann’s (2008) argument that, experimentation is susceptible to increased restrictions from both the supply and demand sides as soon as expectations and interests. Also, these findings are consistent with Hajer’s (1995, p.25) description of a weak form of ecological modernisation, that 'recognises the structural character of the environmental problematique but nonetheless assumes that existing political, economic and social institutions can internalise care for the environment’.

The third sub-question about *what is the governance model of the carbon market at the local level?* is addressed by two case studies in Beijing and Jiangsu (see Chapter 4 and Chapter 5). By delving into the two local emission trading practices that were initiated

from different phases of China's carbon market, this thesis investigated the local policy governance structure of China's carbon market and analysed the possible divergence in the pattern of local governance via the theoretical lens of rational choice institutionalism. With the emphasis on the institutional configurations, key organisational interactions, and the operating process and participation of the civil society actors during the carbon market deployment process, both formal and informal, the two case studies share common features, where I have identified that the carbon market is dominated by top-down control of governance; China's state takes over the whole policy process from its preliminary preparation to the subsequential implementation. While at the same time, the subtle nuance of the local divergencies also exists. These local divergencies is mainly revealed by the extent to which the civil society are involved in the policymaking process. Even though there exist no formal channels institutionalised in the governance structure for civil society participation in both Beijing and Jiangsu, Beijing's case of carbon market governance shows a 'negotiated symbiosis' relationship (Ho & Edmonds, 2008) between certain state-supported industrial associations and authority, whereas Jiangsu's civil society involves a considerable degree of exclusivity in its carbon market governance. These divergencies in China's local environmental governance structure reveal the different extents of ecological modernisation that are addressed by different scholars, and the theory's boundary was extended by being valid and complying with China's carbon market context.

The principal-agent issues are also addressed in the two empirical carbon market cases. It is demonstrated how the state generates capacities in shaping agents' behaviours via supervisory institutions by using a principal-agent approach. In western experience, (e.g., the EU ETS), a carbon market is often 'proposed, designed and implemented by non-state actors, sometimes working alongside state actors, but sometimes also independently (Jordan et al., 2005, p.481)'. From a normative standpoint, this new mode of governance calls for an overarching regulatory framework provided by the state to guarantee the function of such a novel tool (Jordan et al., 2013), while at the same time, the state itself is perceived as a facilitator, rather than a regulator (Mol & Janicke, 2009). Instead of relying on a robust networking to yield the power of facilitating the market, China's key environmental authorities (as the principal), especially the MEE, have tended to develop a series of regulatory innovations which is intended to exert control over the non-state agents (as the agent) involved in the market. However, in reality, the passive performance of the environmental authorities at the central level in monitoring the local officials erodes the capacity of the state to facilitate a well-developed carbon

market. These findings offer empirical evidence to support what Schillemans and Busuioc (2015) argued as 'drifting principals', or more accurately the 'forum paralysis'; the findings also contribute to a wider understanding of a canonical principal-agent model that tends to oversimplify the complex nature of China's regulatory institutional arrangements in environmental governance, as well as the torrid relationships among a constellation of stakeholders in the market. The empirical grounds in the emission trading schemes at Beijing and Jiangsu show that the prolonged discord of environmental protection and economic development lies in the heart of China's local environmental governance, and the carbon market alone, as a policy experimentation, is far from enough to delink the economy and nature at fundament. Also, I argue that the implementation deficits of local authorities in this policy implementation process should be more attributed to China's exclusive governance structure with limited public participation and strong state control.

This chapter, as the last part of the thesis, aims to provide a summary of the empirical study findings from the previous chapters, and to find possible answers to the final sub-question: Can we see a form of carbon market governance indicating a new pattern of political behaviour in a market-based form of policy experimentation emerges in China's context where state intervention dominates? To provide a solid answer, this chapter is structured as follows. In the following section, it summarises the patterns of China's carbon market governance and lays a foundation for further discussion on a hybrid carbon market governance model. Thereafter, there is a further exploration of the possible emergence of a green state in China's environmental authoritarianism regime, drawing on theoretical accounts from literatures, Western experience, and any existing discrepancies that these findings may imply. Finally, on the basis of the discussion, the limitations, future research orientation and directions will be presented.

2. Empirical Analytic Paradigm of China's Carbon Market Governance

2.1 Conflicting Interest, Centralised Power, and Fragmented Authority

China's carbon market governance is marked by a mix of uncertainty and conflicts among the different ministries at the central level. These uncertainty and conflicts are manifested in goal setting and department function allocation. Environmental policy decision-making is portrayed as a vibrant arena where under the authoritarian control of the CPC, the power of converting the policy discourse into specific policy documents is

fragmentedly dispersed among a series of ministries and commissions of the state council. However, a mismatch of authority and responsibility can be seen in China's carbon market, where the greater the environmental responsibility, the weaker its position in the political authority, and *vice versa*. Such a weak position is revealed by the external deficits and the internal constraints that the MEE has (See Chapter 3 and Chapter 4). Given the relatively low status of the MEE at the central level, the MEE and other ministries in the State Council seem to lack adequate communication and coordination. The effective cooperation and coordination mechanisms are conducive to overcoming the negative effects of "fragmentation" (Rosenbaum, 2010). These inadequate coordinations sometimes are exemplified by equivocations in local regulations and policies, for example, the targets of energy intensify, carbon emission trading, pollution discharge and energy usage. Disputes among the bureaucratic departments also exist in the division of environmental responsibilities among various central departments. In China's carbon market governance, the government's responsibility for the overall construction of the carbon market underwent a duty transfer: it used to be assigned to the development-oriented departments (e.g., the NDRC), and later moved to the environment-specific department, the MEE. Such a duty transfer has still been in process at the local level, leading to duty uncertainty in the real practice of carbon market construction. The ambiguity of responsibility division in China's carbon market governance can be demonstrated by the central state's ambiguity on environmental issues at the time; it is more likely to be entrenched in the prolonged economy-environment dilemma. To a certain extent, this could attribute to the 'policy implementation gap' (Kostka & Mol, 2013, p.3), or the 'selective implementation' (Kostka & Nahm, 2017, p.570) in China's carbon market at the local level.

The conflicting interest and fragmented authority of China's carbon market governance can also be seen at the local level of administration. In China's environmental political system, local governments are policy enforcers responsible for translating the central government's political discourse, environmental strategies and guidelines into specific regulations and policy documents in their jurisdictions through concrete actions. In political science, it tends to distinguish policy decision-making and implementation as two different policy stages. In the actual practice of environmental governance, however, for the sake of effective policy implementation, it is possible to conceive a comprehensive full-round policy process including these two stages. A holistic approach to governing, argued by Baker and Eckerberg (2013), is perceived as critical for sustainable development; rather than being assigned to a specialised state

administration, environmental responsibility should be shared across sectors, allowing public policies and practices to be reassessed or at least reformulated in line with sustainable development. However, in China's local carbon market governance, the environmental policy execution system is characterised by a paradox of excessive centralisation and fragmentation, where a constellation of officials with diverse interests occurs. In the real practice of market deployment, it is still the development and reform commission that is taking charge (see Chapter 5). The conflicts of interests and the poor policy coordination and integration among the local government officials impacted the policy implementation of the carbon market. In the lack of a proactive and well-defined responsibility division for the carbon market at the local level, more contingent outcomes have evolved which are not associated with the environmental goals. In other words, China's local carbon market governance is featured by a state institutionalisation based on functional differentiation and specialisation which magnifies the negative side-effects such as compartmentalisation and departmental worldviews. This may lead to broader perspectives being neglected, the misalignment of jurisdictions and responsibilities, and detrimental spillover between sectors.

The fragmentation of the carbon policy implementation system itself is not enough to describe China's governance structure of the carbon market as the pattern of fragmented authority is not unique in China's environmental governance. It is also seen in an industrialised state where the environmental policies are scattered among different government departments and levels, such as the United Stated. However, China's case offers a possible explanation, where I argue that, such a carbon market governance structure with conflicting interests and fragmented authority, is less attributable to passive characteristics of weak capacity, but highlights a bigger issue of an apparent unwillingness of the central state to build a planned and purposeful decarbonisation transition through a market-based tool, as it may threaten the entrenched interests of still powerful actors for economic development. Policy interventions based on the principle of 'paying for the environment' are thought to incur economic costs that may cause larger inefficiencies than climate change costs. When it comes to altering priorities on the ground, the environmental policy integration[35] agreement (Jordan & Lenschow, 2010) under the purpose of prioritising environmental conservation has been more symbolic, rather than functional, in China's carbon market governance.

[35] Environmental policy integration, according to Erik Hysing (2017), entails incorporating environmental challenges and aims into non-environmental policy areas instead of dealing with them separately within a distinct environmental policy domain.

2.2 Political and Market Incentives: The Inverted Incentive Structure and The Vanishment of Market Power

The conflicts between environmental protection and economic development seems to be permeated into each policy stage of China's carbon market governance. In this case, the complex central-local relations in terms of the policy implementation of the carbon market are, to a large extent, cemented by the supervisory and incentive mechanisms to ensure the consistency of the preference and interests between the central and local authorities. Having said that, if taking a look at the supervisory and incentive arrangements in China's carbon market governance, it can be seen that such arrangements created by the central government is perverse, meaning that it leaves more space for local governments to exploit loopholes for economic growth rather than the environmental protection.

The Central Supervision of Ecological and Environmental Protection and the target responsibility system are to key top-down supervisory mechanisms used by the central state to oversee the local officials' efforts in carbon governance. The oversight of the supervision groups, however, mostly focuses on the obvious and pressing environmental issues; they hardly ever perform supervisory work specifically related to the execution of the carbon emission trading. In terms of the target responsibility system, the cadre assessment index system is an institutional supervisory arrangement used by the central government to encourage local officials to carry out environmental governance, featured by a pressure-type system (Zhou, 2007). In China's carbon market governance, the indicators used for evaluating local officials' environmental performance are vague and contradictory. In particular, there exist no indicators related to the local carbon market construction. In other words, local officials' efforts to implement the carbon market is not directly linked to their personal career promotion. Such supervisory institutional arrangements that are inclined to access the "easily measured" performance of local officials have institutional defects in terms of the index setting and supervision, making the local officials manipulate statistical data as a shortcut to local environmental governance. This has further caused the loss of government credibility in its carbon market governance.

The financial incentives are not enough to motivate local governments to faithfully implement policies in a carbon market. The “project system” is the main channel for the central government to provide financial incentives to local environmental policy implementers in carbon market governance. The majority of the central state's budget for environmental protection is allocated and managed by ministries entrusted with projects. The fund of the carbon market construction is usually in the name of “technology development” or “energy transition” (Anonymous, JS/Government 02) In this case, the local environmental protection department is challenged by its ability to obtain information, maintain relationships with other departments, acquire resources. Rent seeking and corruption in the process of running projects are, therefore, inevitable. On the contrary, passive implementation of environmental policies may bring more financial benefits to local officials, in the forms of: (a) the regional economic growth and fiscal revenue obtained by the relaxation of environmental standards; (b) pollutant discharge fees and fines levied on polluting enterprises (for those who break a contract in the carbon market); (c) government officials’ personal income from environmental corruption (Anonymous, JS/Government 03; Anonymous, PK/Think Tank 01).

There exists a robust supervisory and compliance system to oversee the enterprises participating in the carbon market, including a legal base: 1+1+N, and several supervisory mechanisms (e.g., credit linkage mechanism, online monitoring, and a double filing system for regulatory agencies). In addition to that, industrial associations and nongovernmental organisations also work as an information channel for the state to control the carbon market. By delegating supervisory tasks to third-party regulatory agencies and these civil society actors, the local environmental bureau undertakes what is noted in the principal-agent model as fire alarm and policy patrol mechanisms on behalf of the MEE. These monitoring channels are intended to be an effective solution to the longstanding principal-agent problems. However, in real practice, there exists agency loss where alliances between the supervisory agencies and enterprises occur.

In addition, the incentive schemes yielding market power to motivate enterprises voluntarily join the carbon market are also firmly tied to the policy implementation of China’s market-based policy. The state fails to steer the market by enhancing firms’ motivation in trading. Firms are forced by these supervisory mechanisms, not voluntarily, to respond to the policies and finish their transactions. It is reasonable to argue that in the instance of China’s carbon market practice, the “power of the market” appears to have disappeared rather than being “invisible”.

3. An Emerging Green State in China?

In recent years, there has been an intensifying trend in academic research of bringing the state back into the domain of environmental governance, surrounded by lively skeptics holding that the state lacks the capacity to deal with complicated environmental challenges. This study complements the lack of attention to the role of the state permeating the environmental governance scholars, and illustrates a rather different governance story of China in its carbon market construction. The findings of the research revealed an insurmountable incompatibility between environmental protection and economic development that manifests a window dressing of ecological modernisation discourse in its practice of carbon market governance. This may be rooted in the fundamental political logic of environmental authoritarianism. Further, the findings also showed that China's state remains far from a green state, neither from a normative nor an empirical perspective. In other words, the Chinese state's performance in China's carbon market governance model for climate change mitigation is associated with mixed intentions that are not merely made for ecological sustainability; but, instead, the state tends to, more or less, legitimise environmental claims primarily on economic grounds through a carbon market attached by the green growth discourse.

China's carbon market is seen as a product of political consideration, masking itself as a seemingly effective solution for mitigating or even eliminating the tension between economic and ecological values. Say it differently, the state seems to use this market-based policy innovation to reiterate the importance of environmental protection but also give priority to the economic development to serve the political-economic status quo (as mentioned in Chapter 3). The market efficiency is not the priority when constructing a carbon market (Anonymous, JS/Firm 05; Anonymous, JS/Firm 07), nor is the market intended to transgress local boundaries in order to handle the cross-border carbon emission pollution problems by enhancing the participation of a diverse set of actors through market power (Anonymous, PK/Association 02). In the exterior of modernised network governance, the politics of carbon in China conforms to a shift from a model that addresses *de facto* decentralisation and market incentives, to a Weberian bureaucracy where centralisation of authority lies at the heart of China's model. This finding extends Zhou's (2007) description of Chinses governance model to a broader environmental domain. A network which seeks a dialogue with social and business

actors under the purpose of 'incorporating forms of knowledge and interest, forestalling implementation deficits, and producing a more legitimate and response government (Hysing, 2017, p. 35)' is eroded by strong state authority. In this case, China's state has not been eclipsed by the decentralised approaches to carbon governance but tends to reinforce its dominance in the policy process.

The findings of this research paint a picture that might make many green state scholars who are optimistic about the state's capacity to orchestrate a collective response to current environmental problems uneasy. Developing a carbon market and turning to market-oriented solutions for climate change mitigation does not necessarily mean that China has now been shifted to a liberal state, especially given that such a market-oriented approach in China selectively covers an SOE dominated industry (the power generation industry); accordingly, China's carbon market governance is captured by overwhelming state intervention that is partly manifested by a plethora of state-owned actors in the market and the removal of civic engagements in the decision-making and implementation policy process. This confirms a long-held view that China's state lacks the essential strong state capability for environmental stewardship and has not entered the state of 'post-materialism'. Not only signs of fragmented authority exist during the policy implementation of China's carbon market to a national emission trading scale, but also it is shown that there has been an emphasis on top-down approaches in China's climate change policy circles, even in the carbon market.

The mode of the Chinese state in its carbon governance reveals mixed patterns where a kind of emerging green state at its base, incorporating limited network governance. Such a limited network governance is featured by heavy reliance on the authority-based style of governing complemented by exclusively selective interactions and negotiations with the civil society actors. Such a form of carbon market governance can partially align itself with the idea of environmental authoritarianism. However, classifying China as an 'emerging green state' is inconsistent with Duit et al.'s (2016, p.9) environmental state classification[36]. But drawing on Peter Christoff's criteria of state's capacity in

[36] In Duit et al. (2016) study, in line with the four basic aspects (the administration, regulation, redistribution, and knowledge production) of state actions in the environmental sphere, there are four distinct environmental governance regimes, that are: established, emerging, partial, and weak environmental state. States are labelled as '*established*' environmental states with an early establishment of a solid administrative framework, average green research spending, adequate use of taxation to promote desirable ecological outcomes and comprehensive industrial processes policies, and high levels of policies on diffuse-source and products; an '*emerging*' environmental state have a far poorer administrative competence than established states, but they have well-developed capacities for knowledge production and taxation; a '*partial*' environmental state tends to exhibit the lowest average levels of administrative capacities, coupled

forming a green state, we can see that China's state has revealed considerable strategic capacity in constructing a carbon market, but fails to indicate strong communicative, integrative, and implementation capacity. The difficulty of forming a green states in China may be the results of the structural constraints in China's carbon market governance, including high priority of economic development, limited financial support, under-resourced social movements, and the limitation of environment movements (Gough, 2016). Given that, the focus of the following two subsections aligns perspectives of a green state with discussion on China's emerging green state path from: (1) incorporating environmental imperatives into the state's core functions; and (2) the interactions between the state and civil society that drive the incorporation process.

3.1 State's Incorporation of Environmental Imperatives

China may be seen as an emerging green state based on the discussion on its state capacity in the second section of this chapter, but when evaluated against normative frameworks in terms of the compatibility between sustainability goals and regimes of economic development, its performance is far from satisfaction. A green state can be seen when the ecological objectives are priorised above economic objectives using the state's political power, regulatory, and redistributive activities (Barry & Eckersley, 2015). This emerges as a deep ecological critique that is distinct, but also in a tangle of the long-held inveterate academic discussion on liberal democratic ideas, welfare, or neoliberal states. Underpinning the discussion is the prioritisation of environmental issues which has become a constant source of debate and contention (Duit et al., 2016). China's carbon market is seen as one of the most comprehensive policies in an attempt to integrate the ecological dimension into governmental policy, but it, as we have seen, have problems when focusing on the extent to which the dominant discourse of ecological modernisation affects the actual governance of carbon market. As Hajer (1995, p.3) argued, 'it is only through empirical work that we can come to an assessment of the effects of ecological modernisation on the regulations of the environmental conflict', in the mixed model of China's carbon governance, environmental issues and their long-term effects on human wellbeing remain incidental to the state's legitimisation and accumulation roles.

below-average levels of research and development expenditure, taxation, and regulations compared to other states, and the environmental state remains in arrested development; the fourth and final group, '*we*ak' environmental state reveals a very limited state response to the environmental issues, and shows low performance in all four aspects.

China's carbon market governance implicitly shows that Chinese state environmental activities are both political- and market-supporting. The state top-down intervention reflected through China's carbon market, in Offe's (1975)[37] sense, seems to be a blending form of both allocative mode (applying strong authority to control the overall access to the quality and state of the resource in the carbon market); controlling emissions significantly through governmental ownership of polluting businesses and infrastructure, and productive mode (injecting financial support into the market, and state-funded capacity building for business actors in order to create a new track for economic growth). When the state facilitates economic growth and environmental intervention overall, what can be seen is the state's ambivalent stance on carbon management. In China's carbon market governance, especially at the local level, the state is increasingly divided against itself ecologically and economically along a green fracture line, where a combative stance is taken by the Department of Ecology and Environment within the bureaucracy versus their development-oriented counterparts in Development and Reform Commission, and Department of Industry and Information Technology. This echoed Christoff's (2005) claims that the state is fundamentally torn between the imperatives of economic growth and legitimation, and that grafting on a sustainability function will exacerbate this conflict. Scholars, (e.g., Jessop, 1990; O'Connor, 1998; Poulantzas, 1978) offer their explanations that these competing imperatives within the state are attributed to an intrinsic part of the capitalist social structure of the modern state, and capital disregards the biophysical constraints of land and natural exploitation. Even though most advanced industrial states also faced such conflicts historically and made a series of compromises through a series of institutional innovations (Christoff, 2005), China's responses in its carbon market governance perform as a powerful doubt towards such a game of commodifying the nature. In China's context, carbon governance via a market-based experimentation is intended to be an effective institutional innovation at major economic restructuring in accordance with sustainability (as what most industrialised states do). However, given China's complex institutional configurations based on central-local relationships, it is still entangled in a conflict between environmental and economic interests at both the central and local levels, and the carbon market alone cannot set a green path for China's state

[37] Claus Offe (1975) identified two modes of state intervention that are: allocative and productive. The allocative model emphasises the state's regulatory and strategic capacity, that 'creates and maintains the conditions of accumulation in a purely authoritative way' (p:128), and the productive mode emphasises the state intervention as a remedy for market failure to offer essential materials for capital accumulation.

on climate change mitigation. The carbon market has failed to erode well-entrenched patterns of prioritising economic growth over environmental amelioration.

The tension between economic and ecological values lies at the heart of China's market-based approach to climate change mitigation in terms of strategic planning, policy coordination and integration, and policy implementation. China, it could be argued, currently has significant national and local environmental authorities, environmental law, and a slew of environmental regulations. However, during the actual policymaking and implementation of the carbon market, the central government's long-term integrated social and economic planning for ecological sustainability may face obstacles concerning the local implementation, where environmental-oriented policies may yield a concession to other more 'utilitarian' political goals, such as the local economic growth. Accordingly, the limited capacity of the environmental agencies at the local level can be explained by a longstanding neglected role of environmental concerns that were barely incorporated into all stages of decision-making before. Even though currently, with the rhetoric of policy slogans underscored by the central state (see Chapter 3), in the phase of discourse institutionalisation, hardly can it be permeated to the very bottom levels of administration, not even mention that the citizens still have no real legal standing on environmental matters. In this case, the observation made by Paterson (2011) that as the validity of new means to generate capital accumulation is at the heart of the environmental conflict, and the increasing mix of the state's dual imperatives in legitimacy and economic expansion cannot be seen in China's carbon market. Neither can we see what Chandrashekeran et al. (2017) argued, the advent of more far-reaching political changes.

3.2 State-Society Relations in China's Carbon Governance

The carbon market is a loadstone for galvanising new waves of civil society participation. To address the development of a nation-scale market, additional resources and policy support from business and civil society are required. The discourse of ecological modernisation offers insights that are of great significance to today's dilemma facing the state and society. State and society shape one another in a circular manner, and for a state to become green, ongoing pressure from civil society is necessary. Recalling Dryzek et al.'s (2003) work on deliberative processes and green state, social movements and their deliberation in the public sphere outside formalised

channels perform as critical drives for a green state; a passive-inclusive state is regarded as most amenable to the "green" when it accepts and accommodates a constellation of interests, groups, and movements, and leaves the stakeholders independent from the political intervention but allows access to the political process. However, in China's carbon market, it is interesting to see that civil society actors such as the associations and NGOs that should forge links with local officials and firms only works as an agent of a think tank, offering policy implication and suggestions to the governments. There is a trend of delinking between local government and these civil society actors. They are no longer internal semi-official agencies, but instead, they now work as an external consultant.

China's model of carbon governance varies from the orthodox experience of carbon governance, revealing features and characteristics beyond the Western environmentalism that has long stressed the value of decentralisation and participatory actions. What is lacked in the empirical operation of China's carbon market is the autonomy of new market participants, or a partnership relationship between the state and those non-state actors embodied in each stage of the policy process. Partnership interaction, suggested by Bishop and Davis (2002), provides effective channels for environmental policy implementation either by enhancing the quality or strengthening the legitimisation in the actual practice of Organisation for Economic Co-operation and Development (OECD) countries. Instead, in China's carbon market governance under the shadow of hierarchy (Scharpf, 2004), state actors have held control over the conditions and ground rules for the network, consciously bypassed such form of participatory process most of the time and failed to create institutional arenas for encouraging alternatives voices. This is also in line with what I argued previously, a limited network governance pattern revealed in China's mixed governance model.

Overall, though, based on Beijing and Jiangsu's actual performance, there is a clear division in civil society's participation in China's carbon market governance. On the one hand, there are industry associations and NGOs, such as ACET, that have been integrated into the policy deliberation process, and have tried to permeate the discourse of environmental modernisation and sustainable development into the industries. Their adherence to environmental issues, and at the same time sticking to state economic imperatives, could be explained by its organisational structure that is consisted of a series of state actors from both the environment administrations and national development administrators. These groups nominally are seen as nongovernmental

organisations, engaging predominately in state-sanctioned consensual practices of policymaking and dialogue. However, their responses to the carbon management issues are significantly resorting to the guidance from the state. On the other hand, more bunches of industrial associations and NGOs are absent in carbon politics or only loosely related to the state, preferring to act on a local basis through networks. Their ability to undertake the role of a bridge between state actors and industries in China's carbon market is weakened by limited information, which may result from an exclusive involvement in the state's policy strategies. The participation of civil society is a vital movement amenable to the building of a successful green state (Dryzek, 2013), but in China's carbon market governance, civil society actors have a restricted role in the governance structure. Specially, the state yields a diminished ability to engage in contradictory local policies of contention, cooperation, and participation in different industrial associations and NGOs through its political rhetoric of ecological modernisation. Dryzek and his colleagues (2003) summarised two paths for achieving ecological modernisation that:

> Moderate mainstream groups seek the connection of environmental concerns only to the economic imperative of the state. More radical groups in the public sphere…raise legitimation questions. Such groups both highlight issues of environmental risk and promote the more participatory aspects of modernisation. (p. 193)

As such, the reason for this backwardness in China's green state in the policy areas lies in a seemingly start but a window dressing vision of weak ecological modernisation embraced by a lack of inclusion in society. This could then be extended in a stronger direction - the environment is still perceived in an opposite policy direction from the economy.

4. Final Remarks

This thesis discusses China's carbon market governance and offers a mixed governance model based on an emerging green state, while at the same time meshing with a limited network governance. In the exterior of modernised network governance, the politics of carbon in China conform to a trend toward a Weberian bureaucracy that places the state's authority as a central role in this top-down nonparticipatory carbon market governance structure. By bringing the state back as a central analytical category in

environmental governance, this thesis underscores the indispensable role of the state in responding to the growing salience of environmental issues and enriches our understanding of the environmental authoritarianism by empirically examining it in China's carbon market governance. In addition to that, China's experience of carbon market construction reveals a long-held inveterate conflict between the economy and environment in the policy process, where I argue, a seemingly weak but window-dressing version of ecological modernisation exists as a veil for the state to legitimise itself in its green trajectory. Such findings do not necessarily mean that China should embrace a decentralised, masticatory and emancipate approach for its way to an *established* green state, but to see that this mixed model is still bounded to flaws that need to be addressed.

This thesis can be further extended to a deeper debate on the effectiveness of environmental authoritarianism and environmental democracy. Some scholars' accounts for environmental authoritarianism, such as that of Eaton and Kostka (2014) and Beeson (2010), contend profound criticism of the environmental democracy, but in reality, it cannot prove that the environmental governance performance of the authoritarian regime is better than that of the democratic regime. The case of China's carbon market governance may complement to a proposition that is pessimistic to the state's capacity to deal with ecological degradation, and those who speak for the doctrine between efficiency and democracy. This has rekindled a prolonged question that, for environmental authoritarianism and democracy, one is a 'less bad' alternative to environmental governance. Areas for further study, therefore, include the exploration of such problems.

Several limitations to this thesis need to be acknowledged. First, the qualitative analysis is based on elite interviewing data where a local perspective is dominated because the majority of the interviewees are from the local level. It is hard to reach the officials from China's central government directly. Their arguments can only be implicitly inferred by other respondents, for instance, the experts working in the research institutions that are directly under the control of the MEE. Second, the limitation of this thesis also can be reflected by a defining characteristic of elite interviewing. That is, the local officials and the experts involved in the process of policymaking and implementation of China's carbon market count more than others. Third, this research focuses on Beijing and Jiangsu can have advantages due to their critical socio-economic positions, but it may also dismiss the local diversities of other carbon market cases to provide a full picture

of China's carbon market governance. Other piloting emission trading schemes, and the national carbon market deployed in other regions can also be under spot in future research.

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Appendix

List of Interviewees

Code	Interview Background	Date of Interview
JS/Association 01	Director of Suzhou Green Inclusive Carbon Neutral Promotion Center	23/05/2021
JS/Association 02	Director of an energy association in Jiangsu	23/05/2021
JS/Association 03	Member of Wind Energy Committee, Renewable Energy Institute, Consultant in China Photovoltaic Industry Association	22/02/2022
JS/Firm 01	Department Manager of a steel company in Jiangsu	22/08/2019
JS/Firm 02	General Manager of an electric power technology company in Jiangsu	13/09/2019
JS/Firm 03	General Manager of a manufacturing company in Jiangsu	14/09/2019
JS/Firm 04	General Manager of a renewable resource utilization company in Jiangsu	12/03/2021
JS/Firm 05	Director of Environment Strategic Office of State Power Investment	23/02/2022
JS/Firm 06	A senior executive of a privately owned power plant company in Jiangsu	24/02/2022
JS/Firm 07	Leader of carbon asset management team of State Power Investment Corporation	25/02/2022
JS/Firm 08	General Manager of a manufacturing company in Jiangsu	15/09/2019
JS/Government 01	A high-level official in Suzhou Economic Development Committee	10/09/2019

JS/Government 02	A high-level official in a local environmental protection bureau in Jiangsu	06/09/2019
JS/Government 03	A high-level official in a local environmental protection bureau in Jiangsu	21/02/2022
JS/Government 04	Deputy Director of Changshu Environmental Protection Bureau	20/02/2022
JS/Government 05	Head of an environment monitoring station in Jiangsu	19/02/2022
JS/Think Tank 01	Researcher in an energy and environment consulting firm based in Jiangsu	18/02/2022
JS/Think Tank 02	Researcher in an energy and environment consulting firm based in Jiangsu	18/02/2022
JS/Third Party 01	Manager of an environment monitoring agency in Jiangsu	05/02/2022
JS/Third Party 02	General Manager of Suzhou Daobo Environmental Protection Technology Service Co., Ltd.	06/02/2022
PK/Association 01	Deputy Secretary General of Renewable Energy Committee of China Circular Economy Association	26/05/2021
PK/Association 02	Researcher in Renewable Energy Committee of China Circular Economy Association	27/05/2021
PK/Association 03	Vice President of a local energy conservation association	28/05/2021
PK/Association 04	Researcher in China Environmental Protection Industry Association	02/08/2021
PK/Think Tank 01	Researcher in International Institute for Environmental Policy under the MEE	03/08/2021
PK/Think Tank 02	Researcher in a public institution under the MEE	05/08/2021

PK/Think Tank 03	Researcher in the Environmental and Economic Policy Research Center under the MEE	11/07/2021
PK/Think Tank 04	Researcher in a public institution under the MEE	12/07/2021
PK/Think Tank 05	Researcher in Beijing Chaoyang District Public and Environmental Research Center	16/07/2021
PK/Third Party 01	Vice President of Zhongchuang Carbon Investment Co.,	19/07/2021
PK/Third Party 02	General Manager of Centre Testing International Group Co.,Ltd	19/07/2021
PK/Firm 01	Senior Project Manager of a Beijing carbon energy consulting firm	03/06/2021
PK/Exchange 01	a high-level officer in Beijing Environment Exchange	03/06/2021
SH/Exchange 01	Head of Membership Department in Shanghai Environment and Energy Exchange	16/06/2021
SH/Firm 01	Deputy General Manager of Shanghai Putai Enterprise Management Service Co., LTD	17/06/2021
SH/Third Party 01	Researcher in an energy and environment consulting firm based in Shanghai	18/06/2021

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