



# Assembling China's Carbon Markets: The Carbons, the Business, and the Marginalized

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### China's National Cap and Trade Program

- Spearheaded by the National Development and Reform Commission (NDRC)
- Expected to launch in 2017
- Built on the experiences of seven pilot carbon markets
- Scale larger than the European Union Emission Trading Scheme (EU ETS)

**FIGURE: CHINA'S PILOT CARBON MARKETS—BEIJING, TIANJIN, SHANGHAI, CHONGQING, SHENZHEN, HUBEI PROVINCE AND GUANGDONG PROVINCE**



At the end of March 2016, the National Development and Reform Commission (NDRC) passed its Carbon Trading Bill<sup>1</sup> to the State Council for review, hoping to kick off its national cap and trade program in 2017. Although the legal process remains unpredictable, few doubt the Chinese government's determination to establish such a program. This new market is expected to be the largest of its kind in the world and epitomizes a monumental step for China to join the global action to address climate change.

A cap and trade program, or carbon market, is an artificial market that allows emitters to exchange “emission allowances”—i.e., government-sanctioned pollution rights—with each other. As the total amount of such allowances is “capped” at a certain limit, the government authority can achieve the intended emission target. Because emitters have different abilities to reduce their emissions (the marginal abatement costs, in economics jargon), in theory, trading allowances can bring about economic efficiency to achieve emission reduction at a lower cost.

Building such an artificial market for a substance as elusive as CO<sub>2</sub> is a demanding effort. At this moment, Chinese regulators are busy figuring out the specific design features of the new system, and luckily, they can directly draw on the experiences of the seven pilot carbon markets. Since 2013, the NDRC has intentionally run the pilots in five cities and two provinces of diverse economic structures and conditions. Each pilot wrote its own market rules and implemented the program with varying degrees of success. Yet, for the national program, many key design questions linger—e.g., how to set a cap, how to allocate allowances, how to set up a reliable legal framework, and how to incorporate the power sector while the electricity prices are controlled by the state. These are all critical issues for Chinese policymakers to consider. The proposed 2017 launch date seems challenging, if not over-ambitious.

As Chinese bureaucrats tend to be pragmatic and technical in their approach, much of the carbon market conversation focuses on the top-tier market rules. To fully consider the impacts of this policy, we need to contemplate the new economic relationship the Chinese regulators are about to create. I argue that it is useful to conceptualize the fledgling carbon market as a network of actors—the regulators and the regulated, the financial intermediaries, the market information providers, the citizens who are impacted by carbon projects and carbon, as well as the instruments that we use to measure them. While not downplaying the importance of top-tier design, I highlight that the Chinese government needs to engage seriously with three less-concerned actors—the carbons, the business, and the marginalized—to realize the full potential of the carbon market.

## THE CARBONS

The first actor is the carbon molecules. To make a market work, we need to detect them, to measure them, and to record them with accuracy and reliability so that market participants believe that each ton of carbon is equivalent across sources, times, and locations. This “pacification” of carbon has never been easy. In recent years, many notable research projects highlighted the uncertainties in China’s emission data. In 2012, a *Nature* paper<sup>2</sup> pointed out the existence of a difference of 1.4 gigatons between China’s national and provincial energy statistics—a gap as large as Japan’s national emission. If we put a \$10 carbon price on the gap, it means 14 billion dollars! The same research team also argued that the emission from fossil fuel combustion and cement production should be 14 percent lower than previously reported, yet their results are vigorously contested.<sup>3</sup> Given the scale of the uncertainties, the stakes are high.

The data uncertainties reaffirm the paramount importance of Monitoring, Reporting, and Verification—commonly noted as “MRV” in the carbon world—provisions when setting up a carbon market. To China’s credit, it has made significant progress in improving its MRV rules; yet, the overall data infrastructure remains weak and opaque—a systematic problem not unique to emission data. We need to recognize that there are strong economic interests involved in carbon accounting. Choosing one way to measure—for instance, drawing organizational boundaries, defining default values, or setting up audit rules—often creates winners and losers.<sup>4</sup> The politics of carbon accounting is often hidden in the mundane technical details.

Taking a closer look at the draft Carbon Trading Bill, the NDRC specifies a national standard for the credentials of third-party verifiers—the auditors of carbon emission data—and that the provincial authorities will be responsible for implementation. With preparation for the national carbon market at full speed, this carbon rush has resulted in a unique political economy of carbon accounting. For example, some regions give strong preference to local carbon verifiers, even in the absence of adequate expertise. Verification, a profitable business as it is, becomes an issue of regional protectionism. There is also a protection originating from a higher level—China currently forbids foreign companies to perform data verification services in the seven ETS pilots, possibly in the national program, too. These protective measures do not help improve China’s

data quality and transparency. Moreover, due to the shortage of carbon professionals, many of China's third-party verifiers are also involved in managing and trading carbon while serving as data gatekeepers. In light of the conflicts of interest, it is an open question as to how much we should trust these verifiers. In sum, these MRV loopholes might harm the market operation in the long term, and potentially discredit China's claim for its climate actions.

Lastly, engaging with carbon molecules also means fully embracing carbon's "materiality." Not all carbons are created equal; some are easier to be measured and standardized than others. Social scientists have raised the question that, in some cases, nature is too "uncooperative" to be brought into a market exchange relationship.<sup>5</sup> Fugitive gas might be one example, and the limited scope of water pollution trading is another. As the carbon market is a means to an end, policymakers should not be too tied up with market-based mechanisms. In China's contexts, we might find that administrative measures could be equally, if not more, effective when apparent low-cost emission reduction options are available.

## **THE BUSINESS**

The second actor is the business. When a carbon market is created, buyers and sellers do not spontaneously meet up to trade. The market needs intermediaries like traders, consultants, verifiers, and market intelligence providers to provide the lubricant; the market also requires participants who *know* how to buy and sell. As carbon trading requires highly specialized expertise, companies often face a steep learning curve to learn how to account for carbon within their organizations. Organizational inertia might slow down the learning process. For example, as the EU experience shows, carbon market affairs are usually dealt with by companies' Environmental and Legal Department—a unit with a very command-and-control mindset.<sup>6</sup> Therefore, instead of holistically incorporating the carbon assets into business operations, many companies treat the carbon market as another regulation with which to comply. As a result, when companies can profit from selling their allowances by making cheap reductions, they may continue to do business-as-usual, as they have enough free allowances to comply.

In China's pilot carbon markets, the business has yet to grapple with the new and unfamiliar territory. The trading volume usually surged in the last days before the end of the compliance cycle, indicating that many entities only traded to meet their emission obligations. Few businesses understand that the system can also help them to achieve emission goals at a lower cost. The key insight: Economic agents need to be taught to act rationally. The supposed economic benefits of carbon markets hinge upon active participation to liquidate the market. It is in the self-interest of Chinese regulators to facilitate the learning process.

Granted, Chinese policymakers have made noticeable efforts to prepare the business for the new regulations. Countless conferences, workshops, and training sessions are taking place all over China. Just in the last few months, two national carbon market capacity-building centers were established in Shenzhen and Wuhan. Such efforts, understandably, focus on the capacity to conduct proper monitoring, reporting, and verification (MRV). The Clean Development Mechanism (CDM) veterans and other environmental technology professionals are playing critical roles in providing expertise. Nonetheless, their niche lies in developing offset projects. The true carbon asset management skills, which enable companies to operate in a carbon-constrained world, seem to remain scarce in China.

Apart from the elusive market expertise, the biggest obstacle to the pursuit of the ideal high-liquidity and low transaction cost carbon market is probably the Chinese government itself. Earlier research<sup>7</sup> has shown that China's SO<sub>2</sub> emission trading experiment is characterized by government-organized transactions, discretionary trading arrangements, and thin markets. In a way, these SO<sub>2</sub> markets are state-led pseudo-markets instead of autonomous markets, and hence, do not live up to their policy potential. The emerging national carbon market arguably enjoys stronger leadership within the Chinese government, and it can avoid repeating failures. If the Chinese regulators are serious about adopting a market-based policy, they must recognize that the business should be the central player in the carbon market, and the state has a limited role beyond setting up the basic terms of trade and monitoring market functions.



## THE MARGINALIZED

Finally, we need to take marginalized communities seriously in the carbon market. The social justice critique of carbon markets ranges from the unjust windfall profits for heavy polluters and the regressive tendency of carbon pricing to the livelihoods ruined in the name of “green” development. Indeed, the carbon market, as a new social institution, often leads to unequal consequences among the different populations across regions. It is not always a win-win situation for all players. In the pursuit of the carbon market, we must pay special attention to marginalized regions, organizations, and individuals to ensure the program’s benefits and costs are distributed in an equitable fashion.

In this regard, Chinese regulators face the challenge to honor the United Nations’ core principle of “Common But Differentiated Responsibility” within their own country.<sup>8</sup> China can roughly be divided into three categories regarding economic vis-à-vis emission profiles—the high-income-but-low-emission Coast, the middle-income-and-high-emission industrial North, and the low-income-and-low-emission West. While the emissions in the richer coastal area will soon plateau, if not yet so, the economically lagged inland still needs to catch up. The old industrial bases can experience some serious socioeconomic disruptions (e.g., large-scale unemployment) if the aggressive carbon-reducing policy comes too fast too soon, and the recent economic slowdown further complicates the picture. Given the drastic inequality within China, coordinating regional interests seems to be a more delicate balancing act than other existing carbon markets. Failure to do so may result in pushbacks from below. Fortunately, the NDRC, as China’s chief economic planning apparatus, is in a good position to make such a command—they just have a lot to consider to bring everyone on board.

Also, a carbon market does not dictate where emission reduction will take place, as it is determined by the market. This key characteristic implies that we are likely to observe “unequal reduction” across different regions, and furthermore, it is a theoretical possibility that some areas may witness an increase of emissions—the so-called “hotspot” problem. Environmental justice research has shown that low-income and marginalized communities often bear the extra burden. As carbon emissions usually associate with other harmful co-pollutants such as SO<sub>2</sub> or particulate matters, the distributional effect should be a real concern to the Chinese regulators. In fact, the

California cap and trade program was delayed because of the potential environmental justice implications. There is no quick solution to this problem but, at least, Chinese regulators want to be vigilant of the interaction between the carbon market and air pollution patterns.

Finally, do not forget about carbon offsets. The NDRC has been administering a domestic carbon offset program—the Chinese Certified Emission Reduction (CCER)—based on the infrastructure of the UN’s Clean Development Mechanism (CDM). In the seven pilot carbon markets, regulated entities can use CCER credits to fulfill 5–10 percent of their compliance obligation, with varying restrictions on project types and origins, and CCER is very likely to continue to feature in the national carbon market. Carbon offsets, however, are plagued with the perennial challenge of lacking “additionality” or environmental effectiveness. Moreover, these carbon-offset projects often are conducted in rural, poor, and disadvantaged localities. CDM’s experience has shown us that egregious deeds can happen in the name of “low-carbon” development—such as negative impacts on livelihoods, large-scale displacement, and violence.<sup>9</sup> It is in NDRC’s interests to establish some kind of safety valve mechanism to monitor the social impacts of carbon offsets, especially pertaining to the more socially sensitive project types such as large-scale hydropower.

## **TOWARD A SOCIALLY AND ECOLOGICALLY EMBEDDED CARBON MARKET**

Sociologists tend to stress the “embeddedness” of market systems—markets do not exist in a vacuum, but are shaped and constrained by norms, values, cultures, and social relations. I want to add one extra layer here: a market, especially an “environmental” market such as carbon, need also be embedded in our ecological world.<sup>10</sup> This insight is particularly important when regulators from China and beyond are trying to create carbon markets out of thin air. In a way, they are trying to “embed” the carbon market into our existing social fabrics and environmental conditions. I highlight three key actors—the carbons, the business, and the marginalized—to consider during the embedding process. Carefully accounting for the carbons makes the market environmentally sound and effective, engaging with the business renders the market

economically efficient, and safeguarding the marginalized ensures the market is socially just. With the 2017 launch date fast approaching, let us hope that China's carbon market can achieve all these goals.

## **NOTES**

1. Leaked draft text can be accessed here: <http://goo.gl/oEL4RZ>
2. See "The gigatonne gap in China's carbon dioxide inventories" doi:10.1038/nclimate1560
3. See "Reduced carbon emission estimates from fossil fuel combustion and cement production in China" by Liu et al. (doi:10.1038/nature14677) and the response by Teng and Zhu: <http://www.kjdb.org/EN/abstract/abstract13182.shtml>
4. For examples please see MacKenzie (2009) "Making things the same: Gases, emission rights and the politics of carbon markets" and Cooper (2015) "Measure for measure? Commensuration, commodification, and metrology in emissions markets and beyond"
5. Example please see Karen Bakker's "An uncooperative commodity: Privatizing water in England and Wales" or economists Fisher-Vanden and Olmstead's discussion on water pollution trading "Moving pollution trading from air to water: potential, problems, and prognosis"
6. Please see Anita Engels (2009) "The European Emissions Trading Scheme: An exploratory study of how companies learn to account for carbon" and (2008) "Preparing for the 'real' market" for the EU's experience
7. See Tao and Mah (2009) "Between market and state: dilemmas of environmental governance in China's sulphur dioxide emission trading system" and Zhang et al. (2016) "The indecisive role of the market in China's SO<sub>2</sub> and COD emissions trading"
8. For the equity concern on China's climate policy, see for example Zhang et al. (2016) "Equity and emissions trading in China" and Feng et al. (2013) "Outsourcing CO<sub>2</sub> within China"
9. Please see Carbon Market Watch's website for how carbon offsets can go wrong.
10. Sociologists are developing the concept of "ecological embeddedness," please see Kaup's (2015) "Markets, Nature, and Society Embedding Economic & Environmental Sociology"



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