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**'Net Zero' and the State:  
What can we learn from China's experience?**

**By Le-Yin Zhang**



# Focus On

## ‘Net Zero’ and the State: What can we learn from China’s experience?

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We may well be entering a new era. Since 2019, a new phrase, ‘net zero’, has entered popular lexicon. It stems from the Paris Agreement (PA), which aims to limit global warming to well below 2°C (preferably 1.5°C) above pre-industrial levels by 2100. The PA requires that, to safeguard this goal, the parties must reach a global peaking of greenhouse gases (GHG) emissions as soon as possible and undertake rapid reductions thereafter to achieve a balance between anthropogenic emissions by sources, and removals by sinks of GHGs in the second half of this century (UNFCCC, 2015). This set off a flurry of pledges in 2020 and 2021 by PA parties to achieve ‘net zero’ by and around 2050. Moreover, at the recent COP26 in Glasgow, new pledges have been made on ending deforestation, cutting methane, reducing coal, and upscaling climate finance in the next ten years.

By sheer coincidence, since late 2019, vast tracts of the planet have become affected by a devastating pandemic, Covid-19, that has claimed more than five million lives so far. While this caused merely a momentary halt in the upward trend of global emissions in 2020, the social impact may be long-lasting. The handling of the pandemic by nation states, encompassing lockdowns, furlough schemes, mass vaccination programmes and the like, prompted serious rethinking about the role of the state, with the potential to reverse the controversial ‘retreat of the state’ since the 1990s. The UK’s Climate Change Committee (CCC, 2021) observed that ‘Covid-19 casts a long shadow, but there are three broad lessons from the pandemic:

first, we have seen the critical importance of effective planning for high-impact eventualities; second, we have experienced the ability of government to act with pace and scale when it is required; and third, we have learned that people are willing to support change when they have the information before them.’ (p.7). This suggests that a philosophical shift may be afoot. The inaction and transactional leadership that prevailed in the past looks increasingly out of place in these new circumstances.

However, making bold commitments is only the first step in an epic journey. We must not underestimate the extent of the challenge that we face. Achieving mid-century ‘net zero’ means an acceleration of the decarbonisation rate in the next three decades, by a factor of five times, compared with what was achieved in the past decade (PwC, 2020) (see the infographic below). It is also necessary to recognise that, on a more fundamental level, the sluggish climate action in the past resulted from an intellectual bias, namely, a strong preference for voluntary and market approaches over state-led actions. In the studies of climate governance, the state has become a ‘no go’ area. Indeed, attention has been focused on individual actions at one extreme and international politics at the other. Few seem to be interested

in what the state could or should do within their borders for the climate.

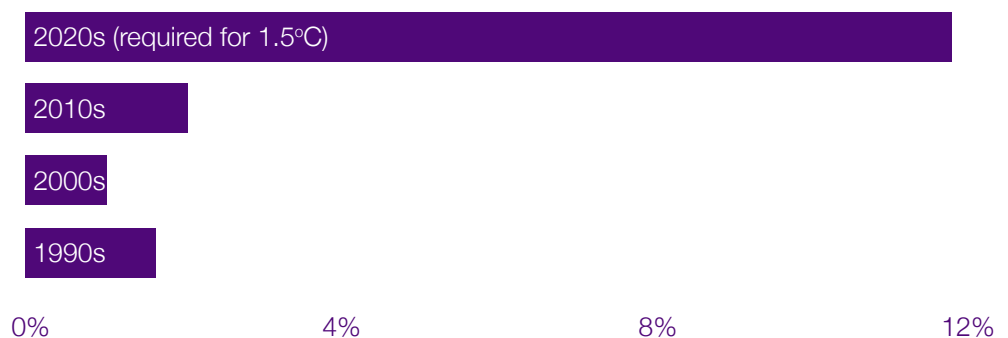
In this wider context, China’s experience with its jieneng jianpai (‘energy conservation and emissions reduction’) programme in the last 15 years offers some helpful lessons. It shows that, when it comes to decarbonisation, the state matters. It also reveals that fast decarbonisation requires a new kind of state. While for a long time we have debated the relative merits and demerits of the developmental and the neoliberal state, a carbon governmental state is now needed. If the experience of China is anything to go by, this new kind of state will only grow in the context of ‘net zero’.

### China’s decarbonisation experience

While there has been growing interest in China’s climate action, the common view is often skewed. Newspapers in the West tend to focus on China as a contributor to the climate crisis, rather than a frontrunner in reducing carbon emissions and how it has done it. My recent book, titled ‘Conducting and Financing Low-carbon Transitions in China’ (Zhang, 2021), attempts to correct this. I was initially drawn by three aspects of the ‘China phenomenon’.

Decarbonisation rate is measured by change in tCO<sub>2</sub> per \$m of GDP per annum. Source of data: PwC (2020).

### Average global decarbonisation rate per year (%)





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1. On the positive side, China has made a great deal of progress in decarbonisation. First, since the mid-2010s, China has increasingly been regarded as a leader on climate actions by diverse institutions including UNEP, PwC and Germanwatch. Second, China is the second fastest decarbonising economy among the G20 countries from 2000 to 2019, according to PwC's Low Carbon Economy Index (LCEI) league table. China decarbonized by 2.9% per annum over 2000-2019, compared with a rate of 1.5% per annum for the world as a whole and 3.7% for the top performer, the UK (PwC, 2020). Third, from 2011 onwards, China's fossil fuel related emissions and per capita emissions have plateaued, while its economy continues to expand. For instance, between 2012 and 2019, while China's GDP grew by 7% per annum, its energy consumption grew by only 2.8% per annum (State Council, 2020). In other words, a de-coupling of economic growth and emissions growth has taken place. Fourth, China has been effective in fulfilling its climate objectives and continues to raise its climate ambitions. Its carbon intensity fell by 48.1% from 2005 to 2019 (State Council, 2020), exceeding its Cancun Pledge by a year. Moreover, China has steadily increased its climate ambition and has committed to 'net zero' before 2060. Fifth, China is by far the most active investor into low-carbon technologies in the world. Between 2010 and 2019, China invested a cumulative total of USD 819 bn in renewable capacities, accounting for 30% of the global total (State Council, 2020). According to the IRENA (2021), by the end of 2020, China accounted for 32% of all renewable capacities in the world, more than those of the EU and USA combined. Sixth and finally, China has emerged as a major manufacturer and exporter of climate mitigation products and equipment. At the end of 2019, for example, China produced 79% of photovoltaic (PV) panels and 41% of wind turbines worldwide (State Council, 2020).
2. On the negative side, China's decarbonisation performance has some notable shortcomings. First, as the largest emitter, it currently accounts for around 28% of global emissions, significantly more than its fair share on a per capita basis. Having said that, China's share of global responsibility for emissions since 1850 has been only 13% as of 2020, compared with 23% for the USA and 19% for EU-28 (Eco-equity and SEI, 2021). Second, measured by CO<sub>2</sub> emissions per unit of GDP, China has one of the most carbon-intensive economies among the G20 countries. Third, China's decarbonization so far has been mainly driven by improved energy efficiency, manifested in declining energy intensity, rather than by large-scale decarbonization of the energy system. Despite its massive renewable investment, its carbon intensity energy index has hardly changed since 2000 according to the IEA. Fourth, whether China can sustain its recent success is uncertain. In the most recent LCEI league table by PwC (2020), China ranks 10th among the G20 in reducing its carbon intensity in 2018-19. China's carbon intensity fell by only one percent in 2020 (the lowest since 2011), according to official sources. Fifth and finally, China's nationally determined contributions (NDCs) are still 'highly insufficient' for holding warming to below 2°C according to the Climate Action Tracker (CAT) (2021). Leading researchers in China acknowledge that achieving the 1.5 °C goal would require China to reduce its energy-related emissions by 8% to 10% per annum between 2030 and 2050. In other words, China would need to more than double its decarbonisation effort to help achieve the Paris Goals (Zhang, 2021).
3. In addition, there is a third aspect to the China phenomenon. This concerns how researchers have perceived and interpreted China's decarbonisation performance. In a nutshell, pre-existing academic studies failed to anticipate, acknowledge, and account for China's success. Most studies choose to focus on the failures rather than the successes. What I found troubling is that such a negative tendency seems to be engrained in our intellectual tradition. There is a general fascination with what goes wrong, but not what goes right. Furthermore, when China's achievement is acknowledged, it is often simplistically attributed to authoritarianism in the country and an abundance of capital. After reviewing the existing literature under three models (public policy model, politics model and governance model), I decided that it was necessary to change the lens.

## Through the lens of governmentality

The lens that I adopted was governmentality, interchangeable with ‘the art of government’ or ‘rationality of government’. This originates from the work of Michel Foucault, the French philosopher and historian. By governmentality, he refers to a particular type of technology of power that the Classical Age invented and that spread during the 18th century in western Europe. He characterises such an art as follows: it is a positive technology of power; it does not function by means of deduction, but by means of production and the maximization of production; it individualises; it is linked to the formation, investment, accumulation, and growth of knowledge. In 1978, he developed the concept of governmentality more systematically in his ‘governmentality’ lecture at the Collège De France. Here, Foucault (2007) distinguishes the ‘problematic of government in general’ from ‘the political form of government’. While the former covers the government of many different objects (e.g. children, families, states), the latter refers only to the government of the state. Thus, government refers to the ‘conduct of conducts’ in general and the management of the state in particular. The governmentality perspective represents a way of thinking about the nature of the practice of government for specific ends in terms of who can govern, what governing is, and what or who is to be governed. It acknowledges the intertwinement of the different kinds of arts of government, including juridical power, administrative power and what Foucault calls ‘government power’.

The relevance of the governmentality perspective is that it directs our attention to China’s art of carbon government, that is, the strategies, policy, and

programmes with which the various authorities have attempted to shape, direct, and modify key subject groups’ ways of conducting themselves around carbon emissions. My book demonstrates that, what has enabled China to achieve its decoupling in the past ten years is the growing entrenchment of a carbon governmentality that penetrates multiple levels of the administrative hierarchy and diverse fields of the economy and society. The carbon governmentality consists of two broad vectors: political rationalities; and governmental techniques and technologies (GTTs). It is characterised by a focus on affecting the actions of a wide range of individual and collective subjects, with a ‘subject’ defined as an actor in possession of their own identity by a conscience or self-knowledge; yet being subject to control by someone else and dependence at the same time. In this regard, the Chinese regime of carbon government targets eight groups, including sub-national governments, major energy-using units (including power plants), manufacturers and suppliers of energy consuming appliances and equipment, power grid companies, renewable energy developers, financial institutions, households, and individuals. However, crucially, the greatest emphasis is placed on subnational governments and their officials, major energy users, and financial institutions. It is also manifested in discursive change, embodied first in the Scientific Outlook of Development (from the mid-2000s), and then in the adoption (in 2007) and institutionalisation (in 2012) of ‘ecological civilisation’.

A wide range of GTTs have been deployed to conduct the carbon usage of the target groups. By no means exhaustive, my book identifies a set of ten GTTs, ranging from legislation, bureaucratic restructuring, re-prioritisation of performance criteria for

subnational governments and officials, to reformed public finance, and market mechanisms such as auctioning vehicle licenses, emissions trading, and green finance. Yet, by far the most effective and impactful has been the Energy Conservation and Emissions Reduction Target Responsibility System (ECERTRS) applied to subnational governments and major energy users since 2007. It encompasses five-yearly and annual plans setting decarbonisation targets, annualised and regulated monitoring, assessment, evaluation, and finally, reward and sanction. On the other hand, China has introduced the most comprehensive programme for greening its financial system in the world. An indication of this is that, according to the Climate Bonds Initiative, by end-2020, China accounted for 36% of the climate-aligned bonds worldwide (CBI, 2021). My research shows, however, that by far the most important financing instrument for low carbon transitions has been green credit, followed by the green bond. Their development has been built upon an elaborate green finance governmentality consisting of policy learning, administrative support, regular reporting and statistics procedures, financial incentives, and capacity building.

My study reveals contrasting features in the arts of carbon government between those represented by the ‘advanced liberal government’ (ALG) in the West (Oels, 2005) and those in China. While ALG targets individuals and social groups, guards against ‘excessive’ state bureaucracy, governs by using markets as organising principles and presupposes individual entrepreneurs; China’s carbon government targets many groups, but most importantly subnational governments and officials, as well as major energy users. It uses legislation, planning, markets, and even ethics, and presupposes calculating officials, producers, and consumers. In other words, the latter creates a much wider field of visibility and uses a far wider range of GTTs. Perhaps most crucially, China’s carbon governmentality not only treats decarbonisation as an opportunity for development, but places subnational governments and their officials at the forefront of this process.

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## Lessons from China

Readers of my book will draw their own conclusions about what the lessons from China are. For the field of development, four stand out. First, it demonstrates that while fast decarbonisation is possible, it is also extremely challenging. One of the greatest challenges is to maintain investment flows while economic growth slows down under the pressure of decarbonisation. All three cities (Shanghai, Qingdao, and Hangzhou) where I did field work have experienced significantly reduced economic growth in the past decade, as the whole country has done. In fact, this dynamic underlies the recent slow-down in China's decarbonisation. Second, there is significant scope for market-based mechanisms in decarbonisation. Yet, the latter take time to develop and may result in undesirable effects. Based on its 'Socialist Market Economy' rationality, which puts market and planning on equal footings, China has experimented with many market-based mechanisms for decarbonisation. These range from emissions trading, energy pricing reform, feed-in-tariffs, to auction- and lottery-based vehicle license allocations. For example, under a system of vehicle license auction, the average price of a private car licence in Shanghai increased from RMB27,040 (USD 3,270) in Oct. 2002 to RMB90,687 (USD 13,435) in 2017, whereas the success rate fell from 68.65% to 4.46% (Zhang, 2021). This has made electric vehicles, that come with free licenses, popular. But it has also disproportionately affected lower-income groups.

Third, the development of a multi-level and multi-faceted carbon governmentality will be key to successful decarbonisation. The Chinese experience shows that effective carbon government is based on a mastery of the processes and social relations involved in emissions; and a strategic approach towards to the attainment of policy ends. This requires widespread knowledge development about the sources of emissions and the scope and options for mitigation, the mobilisation and transformation of a range of social subject groups through diverse and coordinated

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GTTs, and continuous policy learning from all possible sources. Effective carbon government requires painstaking efforts of governance.

Fourth and finally, a five-year policy framework is good for planning decarbonisation, but is too loose for checking action and progress. The PA requires the parties to update their NDCs and for a global stocktaking to be undertaken every five years. This makes China's experience relevant for the implementation of the PA, as China has implemented its jieneng jianpai programme through its five-year plan (FYP) framework for the past 15 years. However, my research finds that China initially struggled to achieve its planning targets in the 11th FYP (2005-2010). The situation improved only when it introduced quarterly on-line energy reporting, annual progress checks, and the ECERTRS in 2007.

The case of China also renders several other theoretical insights. These concern how climate change may affect economic development; why political leadership matters; how international politics intertwine with domestic politics; and how our understanding is always coloured by individual experience, knowledge, and values. But perhaps above all the most important insight is that the state matters; and that achieving the right balance between the market and the state is crucial for successful decarbonisation.

## Looking forward

If the nation states live up to their 'net zero' pledges, we are on the cusp of a great wave of climate action. There should be no doubt that the course of world development in the next three decades will be dominated by tensions between the need to develop and the imperative to curb GHG emissions to achieve 'net zero'. We are facing a challenge of unprecedented speed and scale. Only history can tell whether we are up to the challenge ahead.

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