

China's Road to Sustainability: Energy Policies and the Dynamics of State Capitalism

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On 12 November 2014, President Xi Jinping and President Barack Obama took most observers by surprise, announcing a historic climate deal at a joint press conference in the Great Hall of the People in Beijing. The joint declaration marked the first time China had ever publicly stated that it would agree to a total cap on carbon emissions.¹ Moreover, the joint declaration signalled the beginning of a new climate partnership between the world's two biggest carbon emitters.

This latest step on the international scene builds on China's gradual turn towards a more sustainable development track, which was instigated in the mid-1990s (Christensen 2013). Energy policies are being revised, investments in renewable energy have seen a dramatic surge and new environmental regulations are being issued (Shapiro 2012). The need for coherent policies that simultaneously take stock of environmental, social and energy priorities are, however, constantly confronted with the scourge of departmentalism, vested or conflicting interests and lack of enforcement (Zhang and Barr 2013: 112). The systemic lack of transparency in decision-making combined with public dissatisfaction with the handling of environmental concerns has fuelled new environmental activism (Shapiro 2012: 103-133). It is already evident that China will have to face its many internal contradictions as the country embarks on a more sustainable development track.

In addition, a combination of factors separates China from most other developing countries and illustrates the daunting task faced by policy-makers and regulators: the high density of people in eastern and southern China, the location of huge numbers of polluting and energy consuming global manufacturing industries, a coal based economy, water scarcity, and the need for arable land balanced with continued urbanization on an unprecedented scale. These factors not only prompt action, they will also force China to move to the frontiers of technologi-

cal development and innovative solutions. This also means that there is a continuous need for researchers to study China's energy policy with the dual aim of understanding it *and* informing it.

This special issue aims to do just that. The articles are based on papers from the 'Green Asia Conference', which was organized and hosted by the Asia Research Centre, Copenhagen Business School, in May 2014 and supported by the Danish Society for Education and Business and the Hedorf Foundation. This selection of papers from the conference provided us with a strong focus on China's energy policies and the dynamics of the system they target.

In this introduction, we aim to carve out two major research areas. The first relates to the continuous need to analyze energy policies in terms of needs, goals and actual implementation. Odgaard, Magee and Zhang's articles each examine aspects of this issue. The second relates to the basic tenets of China's state capitalist system and how these have consequences for the dynamics of industrial policy-making and subsidization of new types of energy. These issues are discussed in Chen and Christensen's articles.

Sustainable Energy Policies

In China's fast growing economy, energy policies have been at the top of the government agenda for decades. In order to sustain future growth and avoid short term bottlenecks for industrial production or urbanization projects, the build-up of both electricity and fuel capacity has been gigantic. However, since the turn of the millennium, rising environmental concerns and global awareness of climate issues have further increased the complexity of energy policy-making in China. The Chinese government knows that in the coming decades China will be the main global consumer of oil, coal and nuclear power and the main contributor to global growth in CO₂ emissions (IEA 2013). These developments and the pressing issue of energy security are already forcing China into a global quest for energy resources (Economy and Levi 2014). Again, balancing energy security with the ambition of greater sustainability only adds to the complexity of policy-making. Renewable energy, increasing energy efficiency and making energy savings are helping to achieve both a higher degree of sustainability *and* energy security. However, the shift away from China's abundant resources of heavily polluting coal towards foreign natural gas is obviously less consistent, as it will make China more dependant on forces outside its own territory and therefore more vulnerable in terms of energy security.

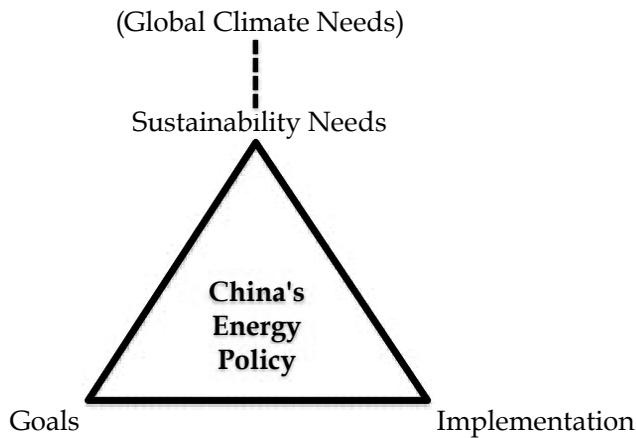
As a major locus for the country's efforts to reach a more sustainable development track, China's energy policy will continue to be a crucial area of research. We recommend studying energy policy along three interconnected and contested lines.

1. Firstly, it is important to examine China's needs in terms of a more sustainable policy direction. This includes expert assessments of energy resource consumption, environmental impact and emission of greenhouse gasses. There are conflicting interpretations of all these issues, but consensuses, however temporary, play a key role as points of reference for energy policy-making. An important feature of the assessment of China's sustainable development trajectory is its direct link to the international dimension, for instance in the way sustainability in China contributes to reducing global levels of greenhouse gas emissions.
2. Secondly, it is important to understand China's energy policy goals. The formulation of goals is obviously a crucial instrument for policy-makers and they play a key role as signals to central and local implementers in the bureaucracy as well as for investors' assessments of market potentials. However, as policy goals are presented in both sector programmes, and in the regular Five-Year Plans, some ambiguity arises from differences in timing and even changes in the ways of measuring, for instance from primary to final energy. This leaves otherwise concrete goals more difficult to interpret than might be expected.
3. Thirdly, the implementation of energy policies and the enforcement of regulations remain an important area of research. It is well-known that the road from centrally formulated policy goals to actual implementation in a provincial setting can be very long. Local authorities may simply prioritize other – at times detrimental – objectives (Zhang and Barr 2013: 112). Implementation problems can also include lack of expertise and capacity, unclear or overlapping areas of responsibility, as well as problems with coordination between bureaucratic entities or among state-owned enterprises such as grid and power companies. While the Chinese political system has been effective in implementing policies relating to the build-up of capacity, for instance installing new power plants or wind power parks, it has faced severe problems when policies are directed more towards regulation, and relating to energy efficiency and energy saving measures, in particular.

Taken together, these three points form a triangle that sums up the complexity of energy policy-making in China. Developments in one area will always have implications for the two others. Energy policy goals, for instance, will be formulated in relation to some understanding of what is needed to achieve greater sustainability. Actual implementation will inform the longer-run assessment of China's sustainable development goals. Finally, lack of implementation will also have implications for goal setting and experiences with failed implementation will in turn inform the design of future policies.

As noted, three of the articles featured in this special issue address aspects of China's energy policy in the interplay between global and Chinese sustainability needs, national goals and actual implementation.

FIGURE 1. China's Energy Policy



In '**China's Low Carbon Energy Policy: National Dilemmas and Global Perspectives**' Ole Odgaard provides a comprehensive quantitative assessment of China's energy policy. Odgaard's focus is energy production and supply-side policies. The choice of a macro perspective enables a focus on availability of energy resources and on the policies employed to develop the energy supply sector in a sustainable way. Odgaard thus addresses China's attempt to embark on a sustainable path and the key drivers behind this turn, in particular the unstable security of fossil energy supply, widespread pollution and the acute water shortages limiting exploitation of coal in northern China. But even as China has become a leading nation in the deployment of green

energies, coal-based power plants still seem to be commissioned more extensively than prescribed in the Five-Year Plans. This is in part because local governments tend to favour short term economic growth and job creation, and thus resent the often costly green policies issued at the centre. However, recent policy initiatives taken by the central government aim to bypass local opposition and strengthen economic incentives to reduce the fossil fuel demand. The outcome of these attempts to weaken federalist governance will be imperative if China is to succeed with a more sustainable development track.

In '**Development of Biofuels in China: Progress, Government Policies and Future Prospects**' Zhang Hongzhou looks at China's commitment to developing renewable energies, specifically biofuels, as a way to strengthen energy supply and prevent further environmental degradation. The article provides a comprehensive assessment of the progress of the development of biofuels (particularly rural household biogas and bioethanol), government policies pertaining to this development and future prospects. The analysis shows that remarkable achievements have been made in the development of biogas in rural areas and bioethanol at the industrial level. This can largely be credited to strong government support. However, changes in rural life, a widening domestic food supply and demand gap, and agricultural industrialization all pose significant constraints on the further expansion of rural household biogas and cereal-based bioethanol production. The article suggests that in the future centralized biogas and non-cereal based bioethanol projects should be prioritized. However, China urgently needs to find alternative feedstock for the existing rural household biogas digesters and bioethanol plants.

In '**Hydropower and End-Use Electrical Efficiency in China: State Support and Potential Contribution to Low-Carbon Development**' Darrin Magee examines the Chinese state's support for two so-called 'new energies' that are set to play a role in the decarbonisation of the Chinese economy: hydropower and end-use efficiency. More specifically, Magee analyses state policies, progress and challenges regarding the implementation of large-scale hydropower and end-use efficiency in the power sector. Large-scale hydropower has long been high on the agenda and is seen as key to meeting ambitious targets for renewable energy and carbon reduction. A set of national policies continue to push for the development of Gigawatt-scale hydropower cascades on China's major rivers, although the operating capacities of large dams are often low and negative impacts significant. For transboundary rivers, these

same policies raise serious concerns downstream. With respect to end-use efficiency, China stands to gain significantly by improvements in all sectors. For the electrical sector, in particular, an increasing end-use efficiency represents a subtle approach with great potential in terms of managing demand and curbing new supply.

Energy Policies and the Dynamics of China's State Capitalism

As in any other country, the particular dynamics of the political system in China influences how energy policies are designed and deployed. For one particular area of energy policy-making, namely the market-enabling policies targeting the energy sector, China's particularities set it apart from most developed market economies. This is because the energy sector (power generation and distribution) is considered to be of primary strategic importance by the Chinese government, a status it shares with the defence, telecom, oil and petrochemical, coal and civil aviation sectors (Mattlin 2009: 13). These industries are deemed crucial to the Chinese economy in terms of job creation, technology acquisition and competitive advantage and state involvement and control have therefore been maintained even as China has gradually liberalized its economy (Haley and Haley 2013: 26). Historically, we have seen how state-owned enterprises have dominated power production, grid construction and operation. This is still the overall picture, but for renewable energy, which is defined as a new emerging industry, private companies have been allowed market access. However, the new emerging industry status means that the state still plays a key role in market decisions through a broad array of interventionist tools. This interventionist modus operandi combined with state ownership in key sectors has come to represent China's special form of state capitalism (Aligica and Tarko 2012; Brenner 2010). Policy banks with subsidized interest rates are asked to enable industry build-up and various forms of subsidies are launched (Haley and Haley 2013). Local administration will nurture these industries with infrastructure support, cheap energy and land leases. These are exactly the kinds of measures that have enabled China to become the world's biggest investor in renewable energy.

The key point to underline is how these features of the state capitalist system forge tight links between energy policies and industrial policies. Both the following papers take this state capitalist tradition as their starting point.

Chen Gang's '**China's Solar PV Manufacturing and Subsidies from the Perspective of State Capitalism**' shows how the Chinese government, at both central and local levels, has been supporting solar PV equipment manufacturing with the aim of increasing its global market share. This has been achieved despite innate disadvantages in this manufacturing industry.

China's early expansion of various manufacturing sectors can to a large extent be attributed to the country's competitive advantages in cheap labour, high quality infrastructure and the alleged undervaluation of the Chinese currency. Looking to China's leapfrogging in the capital-intensive solar PV industry where these advantages were no longer applicable, the article provokes deeper thinking about the various stimulus factors employed by the government, such as subsidies, cheap land, technological support and easy access to credit. China's emergence as the world's largest manufacturer of solar PV has had global economic repercussions. As such, the article analyses the Chinese business model from the perspective of state capitalism and examines more closely the emergence of a quasi-market system tied to the global economy while still under the command of an authoritarian regime that employs different types of domestic leverages to subsidize strategic industries and achieve international competitiveness.

In '**Subsidization in China's Renewable Energy Sector: Negotiability as the Norm**' Nis Høyrup Christensen examines the institutional context of the interplay between companies and the Party-state and shows how subsidies in the biomass and solar industries come to be perceived as negotiable. Thus, Christensen's paper sheds light on not only an important feature of China's renewable energy sector but also the wider dynamics of state capitalism in China.

The Chinese government's decision to push for large-scale build-up of renewable energy capacity was followed by a range of industrial policies to support this change of tack. Most importantly, various forms of subsidies were launched to support both industries and markets. While important new research has added to our understanding of China's state capitalism by documenting the depth and breadth of subsidies to solar PV manufacturers, very little attention has been paid to how subsidies are decided on and how companies influence these processes. Christensen's paper takes a neo-institutional perspective with the aim of understanding the institutional context of the interplay between companies and the Party-state. Furthermore, the paper explores the norm creation arising from this interaction. The paper examines two

cases, the biomass industry and the solar industry, and shows how subsidies are perceived as being negotiable. Looking at the negotiability of subsidies as an institutionalized norm helps us to understand both an important feature shaping China's renewable energy sector and the wider dynamics of state capitalism in China.

China's energy policy in the context of a more sustainable development track will continue to be a key area for research. In this introduction we have presented two research agendas that encompass important aspects of the dynamics in play as government agencies, businesses and NGOs struggle with new sustainable ways of thinking, acting and organizing.

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NOTES

1. China agreed to a total cap on carbon emissions by 2030.

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