Greening the Chinese Leviathan: China's renewable energy governance as a source of soft power

Abstract This article examines China's rapid and large-scale renewable energy expansion and the challenge it presents to orthodox approaches to sustainable energy diffusion that emphasise soft interventions and stakeholder participation. We show that China eschewed participatory modes of energy governance and pursued a centrally steered, hard interventionist strategy adapted to its non-democratic regime. We observe that China's approach provides an alternative blueprint for development that is potentially attractive to some audiences. Drawing on recent soft power debates, we argue that China's hard interventionist mode of governance in the renewables sector has the potential to enhance Chinese soft power both domestically and abroad.

Keywords China; Soft Power; Climate Change Politics; Renewables

Introduction

Some years ago Mark Beeson argued that 'it is not too fanciful to suggest that the transformation that has occurred in China in little more than three decades may prove to be the most important set of interconnected economic, political, social, and strategic processes in the history of the planet' (Beeson 2013: 233). China has changed our perception of global power relations.

It has been argued that China's rise has cultivated the emergence of a 'Beijing Consensus' (Ramo 2004): an alternative pole of influence and normative reference point to that of the West with 'a model of top-down control of development and poverty reduction in which political reform is sidelined for economic reform' (Kurlantzick 2007: 56). This model, the argument goes, is promoted by China through the 'cultivation of isolated autocrats' (Kurlantzick 2007: 43) and conflicts with other aspects of Chinese statecraft; most notably China's doctrine of 'peaceful development' (和平发展), whose chief architect Deng Xiaoping argued that China should 'observe calmly, secure our position ….. hide our capacities and bide our time, but also get some things done; be good at maintaining a low profile and *never claim leadership*' (our italics; unpublished instruction to Chinese Communist Party cadres following the collapse of the Soviet Union, quoted in Swaine 2011: 404).

Deng was arguing for China's 'soft power', described as the ability to attract and co-opt rather than coerce, use force or give money as a means of persuasion (Nye 1990; see also Otmazgin 2008). This article focuses on Chinese soft power within the context of energy governance and climate change politics. Chinese scholars focus on soft power as an articulation of China's ambitions in the wider world (Ding 2010; Li 2009; Wang and Lu 2008; Wang 1993) but we also find useful Callaghan's concept of 'negative' soft power, in which the Chinese state projects itself to a domestic audience as well as foreign ones (Callaghan 2015).

After Wang and Lu (2008), this article focuses on how the blueprint provided by Chinese domestic governance structures in the successful development of China's renewable energy sector has become a source of soft power. We examine how different actors – public and private economic actors, environmental organisations, government research institutes, local and central governments – responded to a range of policy settings, contributing to domestic climate actions, and enabling China to grow its non-hydro renewables sector from a standing start to global leader status. Drawing on new field research, this article provides an evidence-based insight into how and why China's autocratic but relatively effective blueprint for renewable energy governance has become a potential source of Chinese soft power in a world where the United States' retreat from multilateral cooperation in the climate change politics provides a 'window of opportunity' (Rauchfleisch and Schäfer 2018) for China to project soft power.

The rest of the article is organised as follows. First, we specify our use of the term 'soft power' in the Chinese context, drawing on the existing literature. We then describe China's economic rise and development trajectory, discussing how the trajectory has delivered economically without cultivating political liberalization. Next, we examine the application of this trajectory to environmental policy and look in more detail at the governance and rapid expansion of China's renewables sector, particularly the recent emergence of the wind and solar energy industry.[1] We show how China has successfully re-asserted the role of the state and argue that this has been successful in developmental terms and enhances Chinese soft power in three ways. First, the impressive growth of the sector has potentially increased regime legitimacy and national cohesion. Second, the centrally steered nature of the governance regime makes it attractive to - and has been adapted by - political elites elsewhere. Third, it challenges the western orthodoxy of sustainable

[1] While in general China's renewable energy sector performs well, not each renewable energy sector has been supported. For example, the scale of the development of biomass fuel remains relatively limited. Although China's biomass fuel has been ranked in the global top five countries, it lags far behind the United States and Brazil. At the same time, because of the relative inward-looking policy measures in this sector that disfavoured foreign companies, the country struggled to achieve the goals which had been set by the policy makers (Kim 2019: 11-12; REN21 2015: 44).

development as doubts grow about the latter's ability to provide the means to address what is becoming a global environmental emergency.

Soft Power in the Chinese Context

Soft power is an abstract, evaluative and, broadly speaking, qualitative idea: the kind of 'essentially contested concept' that is common in the social sciences (Gallie 1964). Its contested nature is particularly germane in the context of an authoritarian state such as China, which bears little resemblance to the liberal democracies with which the concept is normally associated (Rauchfleisch and Schäfer 2018).

As already touched upon, the concept of soft power was coined by Joseph Nye. States with soft power were able to 'structure a situation so that other countries develop preferences or define their interests in ways consistent with [their] own' through resources such as 'cultural and ideological attraction as well as rules and institutions of international regimes' (Nye 1990: 168; see also Strange 1988).

Nye's original conception of soft power emerged at the start of the 1990s and coincided with the end of the Cold War and the apparent triumph of liberal democracy over more authoritarian modes of government (Fukuyama 1989). Not surprisingly, perhaps, Nye's original ideal-typical soft power state mapped closely onto the newly triumphant United States and, in as far as he identified a potential challenger, it was Japan rather than China that Nye saw in the role. Almost thirty years later, Japan is no longer the driver of the East Asian economy (Okano-Heijmans and Asano 2018; Macintyre and Naughton 2005) and the European Union has become a significant player in the rules-based international political economy (Geddes et al. 2013; Lavenex and Schimmelfennig 2010), but the epochal change – touched upon at the start of this article – has been the rise of China.

Nye came to identify China as an emerging soft power (Nye 2005) but argued that China's authoritarian nature inevitably limited its potential (Nye 2013). Nye's evaluation seemed to be borne out when China unsuccessfully attempted to reposition itself as a leader in climate change politics in the run-up to the 2009 Copenhagen climate change summit (Conrad 2012). However, several developments since then have widened the 'window of opportunity' for Chinese soft power referred to earlier (Rauchfleisch and Schäfer 2018). These include the global financial crisis (Algan et al. 2017; Arestis and Singh 2010), the subsequent period of austerity (Blyth 2013) and associated rise of populist politics in many western democracies (Eatwell and Goodwin 2018; Stoker and Hay 2016). This 'delayed crisis of democratic capitalism' (Streeck 2014) has coincided with the withdrawal of the United States from many aspects of multilateral co-operation during the Trump Presidency (Nye 2019) and, more specific to this article, also with what Blühdorn describes as 'a notable collapse in confidence in democratic governance' in the field of climate and sustainability policy (Blühdorn 2019: 10; also Wainwright and Mann 2013).

Not surprisingly, the period since the Global Financial Crisis has seen China assert itself (Pomfret 2010; Dyer 2009) leading to renewed debate about all aspects of Chinese power. We have seen a renewed focus on Chinese *hard power*, which is projected technologically through cyberattacks on Google and other foreign firms, diplomatically by restating territorial claims over parts of the East and South China seas, and militarily through a more aggressive posture (Drifte 2012; Pan 2009). But China also projects more soft power, which is leveraged through cultural traditions (including a network of Confucius Centres around the world: see Hartig 2015; also Paradise 2009), aspects of foreign policy (including its 'no strings attached' (Suzuki 2009: 782) approach to foreign aid and investment), and the blueprint for other developing states provided by its domestic governance structures (Wang and Lu 2008).

It is the latter dimension of soft power that is the focus of this article. After Huang and Ding we argue that soft power operates through a feedback loop in which states that can demonstrate

policy 'success' to 'political elites, interest groups, and … policy actors' in other states provide the templates for those states (Huang and Ding 2006: 25). After Kurlantzick (2007) we argue that the success story of the Chinese renewables sector provides both 'high' (aimed at a given country's elites) and 'low' (aimed at the general population of that country) soft power resources but in general it has been more influential amongst political elites and policy communities than amongst the general public, especially amongst elites in late industrialising states (particularly autocratic states) where addressing the challenges of environmental sustainability is increasingly important. In addition, we argue that these reputational processes also enhance China's negative or domestic soft power in that it increases the credibility of the state with its own citizens (see Edney 2015; also Barr et al. 2015; Callaghan 2015)

China's economic rise and development trajectory

Any assessment of the policy success of Chinese renewables must be made within the context of China's spectacular developmental trajectory. China's success has led commentators to talk about a 'the China Model' or Chinese Developmental State (Zhang 2018; Bell 2016; Breslin 2011; Zhao 2010; Lin et al. 2008; Kurlantzick 2007), built on a stable and close political-business relationship in which the adjustment of industrial policy allows the political-economic structure to adapt to the global economic system. By accident or design this model re-strengthened the capacity of China's government, allowing the Chinese Communist Party to have resources and power to enhance its position at home while exerting growing influence over neighbouring countries and the global community.

China's rapid development took place later than the other East Asian economies. As elsewhere in the region, China achieved high levels of growth over a sustained period on the back of an economy that in the early years was primarily export oriented. However, China differs from

Japan, South Korea, or Taiwan, both in terms of its political economic culture and the external impact of its rise. First, in terms of political economic culture, the other East Asia tiger economies enjoyed U.S. strategic market entry and possessed a culture of what has been described as 'bourgeois Confucianism', particularly amongst ethnic Chinese diasporas (Berger 1990: 7). These features do not apply in mainland China. Second, none of the other East Asian economies can compare with the global impact of the human and material resources that China has at its disposal.

China's development trajectory encourages foreign direct investment but retains the steering capacity to identify and grow strategically important sectors and direct the domestic banking sector to invest in national champions (Morrison 2019; Kurlantzick 2013). The resulting cultivation of state-owned enterprises (SOEs) and state-guided entrepreneurial networks led many observers to label China as 'state capitalist' (e.g. Zheng and Huang 2018; McNally 2012; Du and Xu 2008). China enjoyed growth rates of over 10 per cent per annum for over 30 years to become the world's second biggest economy by nominal GDP and the biggest in terms of purchasing power parity. China is now also the fastest growing consumer market and the biggest importer of goods in the world (IMF 2014; 2013).

China's development trajectory and the growth of the renewables sector

But China's economic rise has been environmentally disastrous, not just for the 20 per cent of the world's population that live there but also for the rest of the planet (Zhu et al. 2019; Liu and Diamond 2005). Over a decade ago the US Environmental Protection Agency estimated up to a quarter of particulate pollution in California originated from China (Yardley 2005). Chinese growth has since dropped to around seven per cent per annum, but coal still accounts for sixty-two per cent of energy consumption (Qi et al. 2020; Green and Stern 2015). Local air pollution is a major concern for China's urban middle class and there have also been limited environmental protests in rural areas, including local challenges to hydroelectric power developments (Tilt 2015: 145). The

Chinese Communist Party's pursuit of growth in gross domestic product in exchange for the legitimacy by performance has resulted in large-scale environmental degradation. As a global centre of foreign direct investment, China suffers soil pollution, water pollution, desertification, and rising carbon emissions have caused the cost of environmental damage to erode the country's output of economic development since the reform and opening up policy, thus making the ruling party aware of the possibility of the withering foundation of the regime legitimacy (Economy 2018: 155-159, 166). This path of relying on 'development first, clean up later' seems to have reached its critical. The situation of China's environmental degradation clearly needs structural changes. The focus of environmental protection became one of the central government's core political issues during the 12th Five-Year Guidelines (2010-2015). And even after Xi Jinping came to power, the environment issues have been regarded environmental issues as high-profile policy challenges that necessitates immediate action for the state.

In this context, China's commitment to move away from a carbon-intensive economy (State Council 2014) was welcome everywhere.[2] China has gradually restricted the use of coal-fired power plants and in 2015 the country experienced its first reduction in carbon emissions since 1978 (Carrington 2016; Green and Stern 2016). China's growing renewables sector makes this transformation possible (Toke 2017) but it should be noted that China coordinates the deployment of non-hydro renewables in a manner antithetical to the established western practices of neoliberalist public engagement and dialogue (McCarthy 2019; Toke and Lauber 2007). Unencumbered by these constraints, China has grown its renewables sector at unprecedented rates (Mathews and Tan 2014). Chinese manufacturers have assumed a leading role in the wind power

[2] The Chinese public seems to blame local government for long-standing environmental problems, while satisfaction with central government remains high. For instance, in 2014 a survey conducted by the John F. Kennedy School of Government at Harvard University showed that nearly 92.8% of respondents expressed their satisfaction with the central government (Forsythe 2015). Saich noted that the public seems to be looking for a strong government in general (Saich 2015; cited in Forsythe 2015). Public expectations seem to be different from the Western countries in terms of attitudes toward the government: Chinese citizens wish for a more powerful central state to handle environmental health issues and curb corruption (Forsythe 2015).

and solar energy industries (Lewis 2019; GWEC 2016; Mathews and Tan 2015). By 2018, China's cumulative wind power capacity exceeded the combined capacity of USA, Germany, India and Spain.

Turning to solar energy, as of 2018, China had exceeded the 2020 target set by the central government in 2015 (Smith 2018). China's solar PV capacity grew incrementally between 2016 and 2018 and the country still contributes the largest share of solar power additions compared to other countries and regions. The innovation capabilities of Chinese enterprises in the field of wind power and solar equipment manufacturing are no longer as they were just the recipients of technology patents and know-how in the past; they have become important players of renewable energy technology in the world's market, and the equipment domestic firms manufacture have been exported to the international market and some of the leading firms such as Xinjiang Goldwind has become an important leader in the field of gearbox technologies (Yip and McKern 2016: 98).

The development of solar and wind energy sectors are the indirect results of China's stimulus packages and industrial policies promoting new climate governance technology after the global turmoil of financial crisis in 2008. Indeed, to adapt to the crisis, governments around the world have launched state-sponsored investments to mitigate the effect of the turmoil. But as Meckling pointed out, only about 15 per cent of these funds were used to mitigate climate change; of these, China itself accounted for the '51% of global climate-related stimulus investments', globally (2018: 71). Since the Paris Climate Summit, China seems to have reversed its reluctant leadership postures of the past and has promised to the commitment of combatting climate change. The emphasis on renewable energy deployment is deemed one of the many new important commitments China has undertaken (Hilton and Kerr 2017; Schreurs 2017: 166).

Understanding renewable energy governance in China

In this section we detail the Chinese governance mechanisms that have been deployed to such effect.[3] Chinese ambitions were articulated in the 2005 Renewable Energy Law and associated open policy experiments (Liu 2019: 212-214). One Chinese policy maker we interviewed confirmed that the Renewable Energy Law allowed the state to steer a previously disconnected and uncontrollable renewables sector [4] through its development organ the National Development and Reform Commission (NDRC)[5].

The Renewable Energy Law adapted Germany's feed-in tariff mechanism and the NDRC's 2006 'Trial Measures for Pricing and Cost Sharing Management for Renewable Energy' directive (*kezaisheng nengyuan fadianjiage he feiyongfentan guanli shixingbanfa*), and revised 2010 Renewable Energy Law built on this. Directives became increasingly demanding of the two centralised, state-owned grid companies. For instance, the State Grid Corporation of China spent 9.4 billion yuan (1.4 billion US dollars) diffusing intermittent sources of solar and wind power across smart grids and storage facilities (Mathews and Tan 2014: 167). To encourage endogenous technological development, the Ministry of Finance subsidised domestic solar power component manufacturers through, for instance, the Golden Sun Project (*jintaiyang*) scheme, established in

[3] The methods of data collection include face-to-face semi-structured interviews and archival data conducted in 2013 and in 2019. 37 interviewees have joined these interviews. Snowballing technique was used to identify relevant participants who hold local knowledge of renewable energy. Among them, 10 interviewees are government officials serving for the relevant policy making of the sectors, and the rest were professionals working in corporations, think tanks and research institutes. For the interview questions, the themes that the interviewer asked about include the background, participation, developments over time, policy decision-making actors, potential cooperation conflict between decision-makers, and more importantly, the role of the central government and other international organisations and domestic actors in the renewable policy area. The majority of interviews were completed in 2013, of which five people were interviewed in 2019. The questions asked were basically the same to understand some of the major changes during this period. The analysis of this article does not only rely on interview materials as sole evidence to form our arguments. These analyses compare interview materials with relevant regulations, policy documents, and news materials from 2010 to 2019 for triangulation.

[4] Interview with Zhu Jinwei, Legal Director of ET Solar Corporation, Nanjing, 13 March 2013.

[5] Interview with Jin Jingcheng: Director of Power and New Energy Department, Hangzhou, 9 May 2013.

2009. As a cutting-edge pilot program, the Golden Sun scheme encouraged private enterprises in the manufacturing sector to invest in photovoltaic panel production and cultivate export-driven growth. The government's industrial policy and the follow-up support are the driving force for the development of most private PV firms in this sector.[6]

The 2010 Renewable Energy Law raised targets for renewable energy generation by 2020 to 15 per cent of energy generated. In the '13th Five-Year' Guidelines for Renewable Energy Development issued by the National Energy Administration (NEA) under the jurisdiction of NDRC, the target of 2020 total installed capacity of renewable energy power generation is 680 million kilowatts. The installed capacity of energy reached 750 million kilowatts by 2019 and the planning goal was completed in advance (NEA 2017). Photovoltaic and wind power are the main sources of new installed renewable energy between 2015 and 2020. In addition to the growth of installed capacity, other previous important challenges such as wind and solar power curtailment levels have continued to decrease and have dropped to less than 7 and 3 per cent in 2018, respectively (IEA 2019a).

However, this does not mean that the overall industry has no difficulty and has emerged smoothly from scratch. In fact, there is a desperate need in reforming the marketisation instruments. In the second half of 2019, the National People's Congress (NPC) conducted a series of inspections on the implementation of the Renewable Energy Law. Despite the positive effect of the state intervention, there are, according to the inspection report, still some regulations that have not been fully implemented, the key issues of which include the pressure of consuming generated renewable energy; challenges of the implementation of the full-guaranteed acquisition system; the problems of financial support for electricity production, fiscal, taxation; and uncoordinated land and environmental protection policies relevant to the renewables

[6] Interview with Jie Li, a senior manager of a local private firm, Zhenjiang Tongwei Huantai HuiJin New Energy Co. Ltd, Zhenjiang, 3 April 2019.

development. There were also shortcomings in renewable energy technology R & D, and the central state concluded that the supervision mechanisms of overseeing the growth of renewable energy sector, as discussed by NPC, has not been strong enough to mitigate the malfeasance of local actors in implementing these policies (Ding 2019). The investigation report of the Renewable Energy Law conducted by the inspection team in 2019 for evaluating the policy outcomes of 13th Five-Year Guidelines period (2015-2020) did not conceal the shortcomings or slippages made by the government, which articulates a powerful message about the ambition and credibility of the Chinese state to both foreign and domestic audiences.

China also sought to control information flows within the sector. In 2006 Chinese provinces and autonomous regions audited their endowments of wind power, selected potential sites for construction projects, and established planning objectives. This informed the Chinese Meteorological Administration's estimation that China's wind energy resources amounted to 600-1000 gigawatts (GW) onshore, and 300 GW offshore. The audit also fed into the distribution of 'government contract projects' (Han et al. 2009: 2944), managed through the NDRC (Gruss and Brink 2016: 459) or its provincial equivalents, the Provincial Development and Reform Commissions (PDRCs). Approved suppliers were responsible for the construction of wind power infrastructure and bound by purchase agreements with one of the two state-owned enterprises.

Control of information flows was also used to combat rent-seeking amongst local interests. In order to shift production to the renewables sector, central government required a lower tariff cost of wind power. By contrast, it was rational for local actors to hope the Pricing Department would set high tariffs and then order the state power companies to pay the differential. Thus, to prevent local officials either under-estimating their wind endowments or limiting competitive bids to local concessions, central government introduced a unified concession bidding process open to developers across the whole country, not just cosy provincial networks. Throughout the process, the outcomes that the Chinese state wanted to achieve were clear: for example, the targets for the

first two years of concession stipulated the highest local content equipment rate and the lowest tariff.

The measures worked and state-owned electricity producers from all over China entered the bidding process. Unlike in Europe, most of these were conventional utilities (Toke 2017; Gosens and Lu 2014). The initial focus of expansion was in North and West China, in Gansu and the Inner Mongolia Autonomous Region, windy areas that were suitable for large-scale installations. These included five wind power bases with GW capacity and more than 30 large wind power bases with 100 MW capacity. China's centrally organised and steered concession-bidding programs were key to the rapid expansion of wind power (Lewis 2011; Lema and Ruby 2007; Lewis and Wiser 2007). Such central steering capacity does not represent a repressive implementation of national measures for local governments to react. On the contrary, the policy framework encourages local governments to participate and introduce new and diverse incentives when their own conditions allow these active experimental interventions (Kirkegaard 2019: 288-289; Binz et al. 2017). In keeping with the Chinese developmental path, both central and local government designed and deployed policy instruments with the goal of upgrading domestic manufacturers' technological capacity in order to compete internationally (Nahm 2017; Li 2010). This encompassed both state-owned and private enterprises.[7] From the 1990s onwards, selective duties and tariffs allowed local manufacturers to produce or assemble wind power equipment, using imported foreign components, whilst paying smaller customs duties (Liu et al. 2002: 757). In another boost for local producers, the 2005 Circular Regarding Requirements of the Administration of Wind Power Construction (*guojiafagaiwei guanyu fengdian jiansheguanli youguan yaoqiu de tongzhi*), stipulated that, for project approval, wind power projects had to utilize at least 70 per cent of domestically produced plant. Within three years, output of domestic and joint ventures of wind

[7] Interview with Zhu Jinwei, Legal Director of a local private firm, ET Solar Corporation, Nanjing, 13 March 2013.

power turbines exceeded 60 per cent of domestic market share (Lewis 2013; 2011). By 2012, four Chinese companies, Gold Wind, Sinovel, United Power and Ming Yang, were among the top ten wind turbine manufacturers in the world (REN21 2012: 58), accounting for 9.4, 7.3, 7.1 and 2.9 per cent of global market share, respectively[8]. Local content requirement, as an industrial policy, has been strategy that most countries adopted when pursuing the expansion of domestic renewable energy. It can not only stimulate the development of domestic manufacturing within a limited period of time, but can also help business partners within supply chains to together promote the reduction of the cost of global renewable energy equipment, which in turn contributes to the global growth of the renewable sector, especially in Europe and China, forming a interlinked market that international companies must work together to complement each other (Meckling 2018; Lachapelle et al. 2016).

Local officials understood the direction of travel set by central government and even provided low-cost or cost-free land to incentivise medium or small-scale wind power projects in their juridictions (Bradsher 2011). As Yin Jianqing, senior policy maker in the Jiangsu Province Development and Reform Commission (PDRC)[9], observed:

> The province will follow the instructions of the central state, combined with the province's local condition. … Sometimes these decisions and documents will be issued in the name of the provincial government, such as the guidelines of the ten new pilot industries (十大新兴产业规划), or those guidelines regarding the strategic energy industry. Primarily our

[8] The other six are Vestas (Denmark, 12.9 per cent), GE Wind (the United States, 8.8 per cent), Gamesa (Spain, 8.2 per cent), Enercon (Germany, 7.9 per cent), Suzlon (India, 7.7 per cent) and Siemens Wind Power (Denmark, 6.3 per cent) (REN21 2012: 58).

[9] Jiangsu Province has in this decade become an important renewable energy equipment manufacturing province, in which a complete industrial chain has formed that supplies nearly a third of the world's solar related equipment; a number of large-scale domestic solar manufacturers are headquartered in this province, such as Trina Solar (Zhou and Zhang 2010).

> responsibility is to grasp the concept …. focusing on the process of scaling up, adapting to local conditions, and providing the timely policies.

China's interventionist strategy continued to protect Chinese enterprises against foreign competition and task them with ambitious targets for expansion. The renewable portfolio standard, published in the Medium- and Long-Term Development Guidelines for Renewable Energy, stipulated that non-hydro renewable power generation's share of total generation reached 1 per cent by 2010 and should surpass 3 per cent by 2020. The NDRC required that large power generators increase their non-hydro renewable energy installed capacity to a total of 3 per cent of total capacity by 2010 and over 8 per cent of total capacity by 2020 (NDRC 2007: Article 5.1). In the words of a senior (anonymous) PDRC policy maker:

> The country will, in the future, implement further the quota system …… At the same time, the state has and will, through assessment and proposed measures, support the leading enterprises. We work with associations and foundations, learning from the actors around us. However, central policy guidelines are the most important for the sector.[10]

These sentiments about state activism were common amongst our interviewees. As Jia Yangang, the Director of China Electric Equipment Group (CEEG)[11], pointed out:

> We work most closely with the NDRC at the Central Government. The order is like this, the first is the NDRC, the second is the grid company, which is mainly about power integration. The two most important government organisations are these two. It is difficult to know which one should be the third or the fourth most important organisations. Both the Provincial Department of Housing and Urban and Rural Construction and the Provincial Department of Finance can be ranked as the third in terms of the degree of the significance of the sector. The power of the

[10] Interview with anonymous senior official at the Provincial Energy Bureau, Nanjing, 29 March 2013.

[11] CEEG is a private-owned corporation listed on Nasdaq Stock Exchange, which contains 15 subsidiary companies that focus on businesses of PV solar energy, power transformer, power electronics, and honeycomb materials.

> NDRC relies on the provision of policies, which provides the directions of the national policies. …. NDRC is where the country stipulates and introduce specific policy guidance. Therefore, we think the NDRC is the most important government apparatus for the renewables sector. [12]

Until 2018, fixed feed-in tariffs have played the core policy scheme for incentivising new market entrants to contribute to the rapid growth of wind and solar power installation. NDRC has maintained control of prices for on-grid electricity and divided the country into four types of wind energy resource areas with differentiated price levels, based on available wind resources, from the lowest reserves (0.61 Yuan) to the highest reserves (0.51 Yuan). The purpose was to provide incentives to build capacity in more challenging areas (Lewis 2011: 284). Similarly, the first offshore concession process, which took place in 2010, set a tariff of 0.74 Yuan per kWh (Chen 2011: 5019), reflecting the technical challenges associated with offshore projects.[13] However, the feature of offshore wind power in China, compared to onshore wind power, is a rather more open policy paradigm that encourages foreign companies to participate in concession bidding activities, and then established a Sino-foreign cooperative joint venture (Lewis 2016). This change implies that the central government no longer abides by the local protection strategy that had been emphasised to promote onshore wind power development. After all, offshore wind power technology is more complicated to the extent that the central government relies on the best technology providers to participate in market competition, focusing on providing an institutionalised platform facilitating Sino-foreign interactions, hoping to cultivate an interactive platform for both domestic enterprises and foreign companies to cooperate, while, in turn, began to reduce subsidies in areas with

[12] Interview with Jia Yangang, Nanjing, 1 April 2013.

[13] The development of offshore wind power has resistance, mostly from various local government departments due to uncertainty over the local governments' jurisdiction over the geographical resources of the sea. The lack of clear understanding of the division of labour has delayed development of this policy area.

overcapacity,[14] compelling local companies to improve their innovation capabilities and corporate governance.

The creation, maintenance, and coordination of the local industry technology chain clusters allocated an increasing number of functions to local industry associations. However, through the energy bureau at the NDRC, the centre retained its final decision-making authority with the power and resources to discipline provincial governments and provincial energy bureaus. 'In the end, the responsibility of provincial-level actors is to operate, but the policies are set by the national energy bureau'.[15] Zhang Qian, the Deputy Director General of Jiangsu Provincial Bureau of Quality and Technical Supervision put it more bluntly:

> Renewable energy is the country's big policy, it is not possible for the Provincial Quality and Technical Supervision Bureau to have its own policy. The Bureau works around the country's overall policy to carry out their own work ... our responsibility, as a department of quality supervision, is to check the quality and standard of [green technology goods]. We allow approved renewable energy goods to enter the market so that the companies can enjoy the state subsidies. We will participate, but we have no own goal; we work alongside the central government and the provincial government. So, it is they who set goals, we help them to manage and support enterprises ... as to which institution is critical in this sector? It is certainly the NDRC, because the NDRC is responsible for the development of renewable energy policies. The NDRC works on behalf of the government in the formulation of policies.[16]

[14] There are indeed new challenges in the field of renewable energy governance, such as the overcapacity problem of solar equipment manufacturing, the competition between Sino-US trade protection, and the emerging conflicts between conventional utilities and renewable energy producers which led to the fundamental question of energy transition (See, for instance, Toke 2018: 131-139; 2017 ; Lewis 2014)

[15] Interview with Qi Haifeng, Vice President of the New Energy Design Institute, Huadong Engineering Corporation, Hangzhou, 22 May 2013. Huadong Engineering Corporation provides consulting services for governments and state-owned enterprises and provides technical and market research services.

[16] Interview with Zhang Qian, the Deputy Director General of Jiangsu Provincial Bureau of Quality and Technical Supervision, Nanjing, 27 March 2013.

Lou Guobiao echoed that view from the perspective of a local state-owned enterprise in charge of investment in biomass energy development:

> The country's overall support for renewable energy development is consistent, we'll have to bite the bullet and follow the quota system. …Generally speaking, the pressure comes from the central state and the international community down to the level down to the provincial government, to the provincial energy bureau and then to our company. Such pressure coming from outside and from the top to bottom *is not consistent with a bottom up mode of economic governance*. [our italics]

To a certain extent, the central government brought about a dynamic change by deploying both market- and non-market policy measures, while selectively shaped the market. After May 2018, when the central government realised that the national installed capacity of solar power had reached the minimum requirement in the five-year guideline, it slowed down the policy subsidies for PV equipment manufacturers. This phenomenon has, to some extent, produced some concerns for the future development of the Chinese PV industry (REN 21 2019: 95). The industrial policies aimed at reducing the issues of overcapacity (Economy 2018: 181) of the clean energy market in response to the abolition of subsidies have to some extent made some manufacturers who used to rely on policy preferences uncompetitive in the market. However, such actions created a unceasing sentiments which are found in our interview material with interviewees based in private firms, such as Xiaojing Fan, a senior manager of Jiangsu Huantai Group Co., Ltd., who indicated that the new policy setting is unpredictable, and many PV private firms have closed down due to the sudden introduction of the cut of incentives for solar PV manufacturing. Some local manufacturers even 'made a collective petition to the central government',[17] asking the central government to continue to provide subsidies for solar power industry. However, some pointed out that the slowdown of policy subsidies is due to the government's active regulatory intervention which is intended to

[17] Interview with Xiaojing Fan, Yangzhong City, 3 April 2019.

boost the 'cost-competitiveness' of China's photovoltaic manufacturing industry to promote its long-term development by focusing on tackling the challenges of grid integration (IEA 2019b). These sentiments support the observation that China has undergone a transition from a fragmented decision-making processes towards the ever more active engagement and central coordination of large, state-owned utilities in the process of industrial development (see, for instance, Xu 2017; Lema et al. 2016; Mathews 2015a: 90; Mathews and Tan 2015; Lema and Ruby 2007).

We have discussed the incentives, subsidies, and command-and-control measures that have helped grow the Chinese renewables sector, particularly those targeting established power companies. We have also discussed how the template is based on selective policy-learning from advanced Western countries and adaptation to local conditions in order to maximise local advantage (Lema and Lema 2016). But having caught up with the climate leaders, China's influence in the sector has increased rapidly as its manufacturers have expanded into international markets, including the United States.[18] China's industrial success in the renewables sector has positioned it as a major player in contemporary climate policy debates.

Discussion: why the Chinese governance regime is a source of soft power

China's successful 'catch up' has enhanced regime legitimacy and can be expected to enhance national cohesion as the benefits of improved governance performance of renewable energy sector as well as new sources of economic growth become apparent. China has demonstrated that it is possible for states to retain a central steering role and to avoid soft interventionist governance strategies such as voluntary agreements and nongovernmental actors' involvement. The Chinese

[18] For example, in 2009, Goldwind installed its first wind turbines in the United States, completing a wind farm in Shady Oaks in Illinois and setting up production bases in the United States (Wu 2012; U.S. Department of Energy, 2011). In addition, Goldwind has started constructing a 165-MW wind farm, with 2.5-MW turbines, to be installed in Australia. The project was, before 2009, the biggest international project that Chinese domestic manufacturers had ever conducted (Wu 2009).

Communist Party's continued political control may be regarded as its political elites' own understanding of the legitimacy crisis and vulnerability of regime (Walder 2018). In this context, the pursuit of renewable energy development enables the party's renewed pursuit to bridge environmental and economic dichotomies. Since 1978, the continued adherence to the so-called 'legitimacy through performance' includes the continuous supply of output of economic development and political stability after the Cultural Revolution (Breslin 2013: 43-44). This may not be democratically defensible and may lack an immediate audience for disgruntle citizens in China's peripheries such as Hong Kong, but it has been surprisingly effective.

Unlike in the west, the Chinese state has doubled down on its steering role.[19] It has deployed existing centralized structures to engage with the many challenges of the climate crisis and leverage state capacity to enhance China's global competitiveness. This is a hard interventionist mode of governance, in which the state's agent the NDRC steers the sector, providing policy guidance, project approval, and overseeing the auction mechanism and tariff controls. China also differs from the west in the degree to which it has continued to sponsor basic research and development funding through central government, affecting pilot turbine testing, demonstration projects, and even commercial processes (Wang et al. 2012).

State activism drives Chinese industry forward, improving local technological capacity through distinctly non-neoliberal mechanisms (Dai and Xue 2015: 50-51; Mazzucato 2015). In the process of this new industrial development, local renewable energy equipment manufacturers, state-owned power producers, power grid companies, and industrial associations form a tight network, maintaining information flows between bureaucrats and business actors and adjusting

[19] The main difference is the active involvement of the role of the central NDRC and the engagement of state-owned enterprises protects the state from the constant struggle or competition in the fossil fuel industry found under neoliberal modes of governance. By contrast, Western countries such as Germany have kick-started their renewable sectors by creating policy innovations like feed-in tariffs and other tax incentives (see, for instance, Moe 2015).

policy settings.[20] The active alliance of political and economic actors led by the state has challenged the orthodoxy that the effective development of renewable energy relies on the de-centering and effective retreat of the state (Sovacool 2013; 2009; Newig and Fritsch 2009; OECD 2007).

What makes the Chinese governance regime a potentially powerful aspect of Chinese soft power is that it provides an alternative way forward to existing western trajectories. Three decades of the sustainable development orthodoxy has exposed its limitations in dealing with the challenges of climate change and the 'collapse in confidence in democratic governance' noted earlier (Blühdorn 2019: 10). Neo-liberalism in particular is regarded as having had negative effects on innovation in the sustainable energy sector (Mitchell 2008).

Most countries remain reluctant to invest in large-scale climate protection technologies (Kuzemko 2016: 120; Victor 2011: 133) and, although policy makers and environmentalists have promoted 'good' energy governance for over thirty years, they have been only partially successful. What they *have* done, however, is consolidate a polycentric policy template that distributes political responsibility and accountability to a difficult-to-trace network of participants (Dauvergne 2018; Blühdorn 2013: 31-32). The orthodox trajectory of energy governance, emphasizing multi-axis, non-hierarchical, stakeholder engagement, rules out direct state intervention in the hope that the market will correct itself. To date it has not done so.

Twenty years ago, Midlarsky used multivariate regression on three environmental indicators (deforestation, carbon dioxide emissions, and soil erosion by water) to explore the relationship between the environment and democracy. The unanticipated results indicated that 'instead of positive relationships between the extent of democracy and environmental protection... the

[20] However, China's is not a Soviet-like state-control governance model. Instead, the governance system demonstrates the state's ability to allocate resources through industrial policies, while at the same time inspiring new economic actors – corporate entities and new entrepreneurs – to join the investment and expansion of the emerging renewable energy industry through its mobilisation capacity. The close relationship between the government and enterprises shapes the new renewable energy development market.

associations found here are principally negative or non-existent' (Midlarsky 1998: 358). More recently, Buitenzorgy and Mol found that, by measuring and comparing rates of deforestation among autocracies, mature democratic countries, and democratic countries in transition, the rate of deforestation in countries in democratic transition is, unexpectedly, worse than nondemocratic countries, due to 'the specific situation of a weakening state with a still immature civil society comes together in states in democratic transition' (Buitenzorgy and Mol 2011: 68). Yet the problem of climate change is critically urgent. The increase in greenhouse gases doubled over the last decade (IPCC Working Group III 2014) but scholars continue to dispute the trade-offs between democracy and ecology. Advocates of participatory governance have not systematically demonstrated the link between participation and effectiveness. Some have cherry-picked evidence from the industrialized countries of North America and Western Europe (see Newig and Fritsch 2009) but most have ignored the vast majority of the world's developing countries, assuming validity and applicability on a global scale.

By contrast, China has taken on the role of an *active interventionist state* (Giddens 2011), engaging with the energy crisis and climate change, setting long term goals, intervening in the market, and acting 'to counter business interests which seek to block climate change initiatives' (Giddens 2011: 96). Evidence shows that China's interventionist mode of governance has become a template for those less advanced developing countries in both industrial and environmental protection (Green and Stern 2015: 44). China demonstrates that even a laggard state can transcend the conventional trade-off between environment protection and economic development.

There is clear evidence that the template of policy innovation that has emerged from China's selective learning process is attractive for policy elites from resource scarce countries with concerns for energy security. For example, Brazil and South Africa have learned from and adapted China's large-scale auction tendering mechanisms to accelerate the scaling up of domestic renewable energy in their renewables sectors (Mathews and Tan 2015). India has adapted the Chinese policy

of stringent local content requirements with the aim of protecting emerging local renewable energy manufacturing (Mathews 2015: 39; Lewis 2014: 16). This has allowed India to move down an alternative path to the established trajectory of the extractivist 'petro dollar' economy (Mathews and Tang 2015: 145-149; see also Wenar 2016: 90-95) and has already brought it into conflict with the USA, in a dispute that is currently being mediated by the WTO. Nevertheless, learning certain policy practices alone does not directly contribute to Chinese soft power. It is also the knowledge-sharing and the network building involved with in the learning process of the renewables sectors that provide space of gaining new soft power. Benabdallah (2019) points out how the diffusion of Chinese know-how across international networks facilitates Chinese renewable energy governance as a source of soft power. In the literature about science and technology development, recent research indicates that strong steering capacity and active policy design along Chinese lines is an important component in achieving technological 'leapfrogging' (Dai and Xue 2015: 35). Strong state direction appears to be important to upgrading technological capacity, thereby allowing enterprises to cooperate with frontrunner states, undertake large-scaled technology licensing, joint research and development, and stimulate foreign acquisitions.

Formal and informal cooperation and the participation of economic actors in international projects have also strengthened China's international soft power. In the past China, together with India, Brazil and Russia, has been regarded as an impediment to climate change mitigation negotiations (Saran and Jones 2017: 8-10; Conrad 2012). However, since it's disastrous role in the 2009 Copenhagen Summit, described earlier, China has adopted a more positive role on the global stage (Denyer 2015). In the 2015 Cop-21 Paris conference , to the surprise of many, China not only responded to international demands for the first time to reduce emissions with timetables, but it also joined global networks to promote diffusion of climate policies, including the establishment of the South-South Co-operation on Climate Change Fund (Hilton and Kerr 2017; Falker 2016: 1122-1113) and was central to the drafting of the final agreement (Parker and Karlsson 2018: 531). In

conjunction with the Group of 77 (and the Like-Minded Developing Countries, China secured the establishment of a climate fund to fund technology transfer to developing countries (Dimitrov 2015: 5 and 9). as touched on earlier in this article, these renewed efforts in climate leadership coincided with the USA's withdrawal from the Paris Agreement (Sanger and Perlez 2017).

Beyond these high-profile diplomatic opportunities, long-term voluntary technology collaboration exists between private sector actors in China and other industrial states (Yip and McKern 2016). Chinese firms have grown through their participation in global learning networks (Gallagher 2017; Lewis 2013), such as Yingli's technology collaboration with downstream suppliers and scientific research institutions in the United States and the Netherlands (Zhang and Gallagher 2016). Gallagher (2017: 165-166) correctly indicated that today's clean energy technological innovation has been highly integrated into the global industrial chain. China's catch-up strategy relies to a large extent on the import and adaptation of technology through corporate investment. The purchase of license agreements or forming joint-venture companies are some widely used strategies in entering China's market. These investments have enabled Chinese companies to learn and localize their technological knowledge in the local market.

China continues to explore joint ventures (Dai and Xue 2015) but now developing countries are actively seeking cooperation with companies in China in order to scale up their own renewable energy capacity. For instance, in 2011 China Longyuan Power Group began a joint venture in South Africa with the construction of five large wind power plants. Even in developed countries, firms have begun to actively seek co-operation with Chinese enterprises, such as the British Garrad Hassan's collaboration with China's Zhejiang Windey, or Germany's co-design projects with Aerodyn Sahnghai Electric (Schmitz and Lema 2015; Buijs 2012). More and more international companies, such as DuPont Apollo Solar and Canadian Solar, have established research and development facilities in China (Lema and Lema 2016: 230) and European firms increasingly send their innovation teams directly to China as part of innovative partnerships (Gallagher 2017).

Meanwhile, Chinese enterprises, such as wind turbine manufacturer Envision, have brought their market-leading ideas to Europe, seeking European engineering talents (recruited from Vestas and Siemens) to help upgrade to cutting-edge technology in wind turbine design, like the innovative two-bladed partial pitch turbine (Lema et al. 2016). Chinese actors in the sector have gradually shifted from purchasing technology licenses to building partnerships (Dai and Xue 2015; Lema and Lema 2012) and this cooperation, through the building of technology alliances, has helped China overcome persistent misgivings about the quality and reliability of Chinese products (Gallagher 2017). All of this has enhanced China's brand value. For example, the last ten years have seen many Chinese photovoltaic manufacturers become world-renowned brands and, by 2012, half of the world's top ten renewables brands came from China, including solar manufacturers Yingli Green (with the largest market share in the world), JA Solar and Trina Solar (IEA 2015: 40; also Zhang and Gallagher 2016: 197).

China's participation in international networks has also helped laggard states in the renewables sector to build technology transfer channels, organised through the global framework of international organisations. For instance, Yingli Group has, through the Kyoto Protocol Clean Development Mechanism, set up a 20MWde1 photovoltaic project in South Africa (WWF-Norway 2012). Similarly, since 2014 China's Ministry of Science and Technology has used the United Nations Development Programme to facilitate co-operation between Ghana and Zambia to learn from the Chinese experience in the rapid development of renewable energy (UNDP 2015a, 2015b, 2014).

We also see the so-called 'China effect' (Mathews and Tan 2015: 159) where renewable energy equipment costs - particularly for photovoltaic products – have dramatically reduced in recent years due to the improving innovation capacity and integrations of global manufacturing networks (Zhang and Gallagher 2016: 199). As Mathews and Tan (2015) assert, China's contribution to global renewable energy diffusion to date has been given too little credit. In developed countries, the media places more emphasis on the threat from China, despite China's large-scale state

intervention in supporting global supply chains and innovative technological *co-design* activities (Lema and Lema 2016; 2012). China's expansion of solar energy on a global scale and the learning curve of domestic companies mean that the cost of renewable-generated electricity has been significantly driven down (Mathews 2015a: 106) and that a trend of global policy learning across international networks has emerged (Lewis 2019: 1-2; Gallagher 2017: 157-162). The reciprocal cooperation between these transnational companies and the international integration efforts have helped China integrate its image into the international market, creating a new and non-state-related credibility, including greater recognition of Chinese brands, that has to some degree made up for the Chinese government's lack of experience in public diplomacy (Wang 2008: 260-265).

To conclude this section, the Chinese manufacturers that own these brands have climbed to the upstream segment of the value chain (Lema and Lema 2016: 229; Schmitz and Lema 2015) and their presence along the entire industry chain has consolidated China's position as the world's largest exporter of solar energy technology (IEA 2012; cited in Lema and Lema 2016: 229), despite increasing financial uncertainty (Nahm and Steinfeld 2014: 298) and other systemic risks (Liu 2019: 217; Shen and Xie 2018: 412).[21] Thus, in a clear example of where active state planning and steering has worked, China's shaping of the regulatory environment in order to facilitate firm-level research and development paid off. The technological improvements that resulted drove newly established brands of wind turbine and solar technology rapidly up the global manufacturing chains (Lema et al. 2016; Yip and Mckern 2016; Dai and Xue 2015), leading to the rapid global expansion of the Chinese renewables industry and the enhanced soft power of China as an international actor. Since 2004, for example, when China was first included in the so-called Renewable Energy Country

[21] It is must be noted that the successful experience of China's renewable energy governance in this article does not mean that we believe that such experience can adequately explain all other policy areas. China has severe challenges in water resources, soil pollution, air pollution, and, more importantly, carbon emissions. These environmental challenges are mostly due to the malfeasance of both central and local governments in preventing and controlling environmental pollution at sources (Shapiro 2012) as well as incorrect policy settings and incentives (Zhang 2017; Ran 2014). Corruption and the monopoly of the party-state in cultural affairs remain obstacles to Chinese soft power (Creemer 2015).

Attractiveness Index, it has risen from an initial ranking of 19 to being ranked first (EY 2016). Another industrial index, Climatescope, also ranks the country first globally in recognition of its performance in clean technology development (Climatescope 2017: 6; 2016: 12). Although the central government has changed its developmental strategy on subsidies after 2018 which has lowered China to 7th in 103 countries around the world in Climatescope's 2018 evaluation (Climatescope 2018: 24), these to some extent reflects the active revision of the central government's intervention based on the possible consequences of excessive expansion. For the future planning, the central government is still discussing, soliciting, and drafting the 14th Five-Year Guidelines at the time of this writing. However, according to the report co-issued by China National Renewable Energy Centre and Energy Research Institute under NDRC, we may estimate that the central state's renewable electricity deployment strategy between 2020 and 2035 will continue to focus on using industrial policies to incentivise the integration as well as the growth of renewables (CNREC 2019). However, the preferential treatment may be about to pay more attention to the mature operation of the market prices. The government will promote energy transition on the demand side through, for example, promoting stronger renewable purchasing requirements by the grid companies, rather than relying solely on subsidies for electricity producers (CNREC 2019: 11, 31). It is estimated that there are three periods with different priorities and targets for the future development of renewable energy in China. In the first period, that is, during the period of 14th Five-Year Guidelines (2021-2025), the industry will still be committed to scaling-up: wind and solar power installations are expected to reach approximately 53 GW and 58 GW each year, respectively. The annual target of newly installed wind power between 2026 and 2030 should be average 127 GW, and solar will reach 116 GW per year. Then, from 2026 to 2030: wind and solar should peak at around 150 GW per year (CNREC 2019: 215). Connecting state-activism and green energy together can still be said to be an important strategic development strategy for China in the future.

Conclusion

Writing in a policy paper for the Grantham Research Institute on Climate Change and the Environment, Fergus Green and Nicholas Stern argue that for reasons of China's size, its influential position amongst developing countries, its growing influence over politics in rich countries, and its technical achievements in the renewables sector, 'China's actions on climate change have, more than any other country, the potential to steer global expectations, markets, and policies toward the low carbon economy' (Green and Stern 2015: 17).

Although not working through the conceptual lens of soft power, Green and Stern's words support the observations in this article about Chinese soft power arising from its achievements in the renewables sector. This soft power impacts in three ways. First, the impressive growth of the sector has increased regime legitimacy and national cohesion. Second, the centrally steered nature of the governance regime makes it attractive to - and has been adapted by - political elites elsewhere. Third, it challenges the western orthodoxy of sustainable development as doubts grow about the latter's ability to provide the means to address what is becoming a global environmental emergency.

This article has engaged with the arguments of Barr et al. (2015) and posits an understanding of the concept of soft power that considers Chinese characteristics whilst retaining the analytical value of Ney's original conception. As Creemers points out, China's own conception of soft power 'contains elements that are self-defeating or …. counterproductive' (Creemers 2015: 307). But we argue that, along the dimension of 'policy success', China's successful roll-out of renewables and the means by which it has been achieved constitutes an attractive alternative template to more pluralistic western modes of energy governance.

After Wang (2008) and particularly Callaghan (2015) and Edney (2015), we argue that this policy success allows China to project soft power to a domestic audience as well as externally. The leading role of the Chinese Communist Party is secure amongst elites and the wider population as

well. The Chinese public is now increasingly aware of urgent environment issues (Li et al. 2012; Shapiro 2012) but remains content to allow the Chinese state to respond. System legitimacy will become even more embedded as the benefits of a move away from carbon intensive growth become apparent.

In terms of positive soft power, we have discussed why China's distinctive trajectory of energy governance might be attractive to elites in laggard states. More intriguing is the potential for attraction in western democratic states as well. China's objective achievements in the field of renewable energy diffusion go beyond the default trajectory of western environmentalism, in which emancipatory ethics, participatory action, and inclusive practice are deemed non-negotiable and essential elements. Whereas partnership interaction is central to OECD countries' approach to energy and environmental policies (Bishop and Davis 2002: 20), China's interventionist state privileges solving its own climate crises in the shortest possible time and positioning itself to take a leading role in global debates. This will impress the many environmental policy makers and activists frustrated by the failure of democratic states to act decisively.

What remains missing is evidence of a wider popular appeal, at least amongst the general public in democratic states. In this respect Nye (2013) is correct in his assertion that autocratic states cannot enjoy the same kind of soft power as those states that draw upon the voices and cultural resources of all their people. China is currently respected but not loved by western publics. However, if China can demonstrate real leadership in addressing our global environmental crisis, in due course this might change.

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References

Algan, Y., Guriev, S., Papaioannou, E. and Passari, E. (2017) 'The European Trust Crisis and the Rise of Populism'. *Brookings Papers on Economic Activity*: 309-383.

Arestis, P. and Singh, A. (2010) 'Financial globalisation and crisis, institutional transformation and equity', *Cambridge Journal of Economics*, 34(2): 225-238.

Barr, M., Fekluyunina, V. and Theys, S. (2015) 'Introduction: The Soft Power of Hard States', in M. Barr and V. Fekluyunina (eds.) *Politics* special double issue 'The Soft Power of Hard States', 35 (3–4), 213–215.

Beeson, M. (2013) 'Can China lead?', *Third World Quarterly*, 34(2), 233–250.

Bell, D.A. (2016) *The China Model: Political Meritocracy and The Limits of Democracy*. Princeton: Princeton University Press.

Benabdullah, L. (2019) 'Explaining attractiveness: knowledge production and power projection in China's policy for Africa', *Journal of International Relations and Development*, 22, 495–514.

Berger, P. (1990) 'An East Asian development trajectory', in P. Berger and H-H.M. Hsiao (ed.), *In Search of an East Asian Development Trajectory*, Oxford: Transaction Books, 3–11.

Binz, C., Gosens, J., Hansen, T., and Hansen, U. E. (2017) 'Toward Technology-Sensitive Catching-Up Policies: Insights from Renewable Energy in China'. *World Development* 96 (August): 418–437.

Bishop, P. and Davis, G. (2002) 'Mapping public participation in policy choices', *Australian Journal of Public Administration*, 61(1), 14–29.

Blühdorn, I. (2013) 'The governance of unsustainability: ecology and democracy after the post-democratic turn', *Environmental Politics*, 22(1), 16–36.

Blühdorn, I. (2019) 'The dialectic of democracy: modernization, emancipation and the great regression', *Democratization* DOI: 10.1080/13510347.2019.1648436

Blyth, M. (2013) *Austerity: the History of a Dangerous Idea*. Oxford: Oxford University Press.

Bradsher, K. (2011) 'U.S. solar company bankruptcies a boon for China', *New York Times*, 1 September, available at http://www.nytimes.com/2011/09/02/business/global/us-solar-company-bankruptcies-a-boon-for-china.html (Accessed 18 April 2015).

Breslin, S. (2011) 'The 'China Model' and the global crisis: from Friedrich List to a Chinese mode of governance?', *International Affairs*, 87(6), 1323–1343.

Breslin, S. (2013) *China and the Global Political Economy*. Basingstoke: Palgrave Macmillan.

Buijs, B. (2012) 'China and the future of new energy technologies: trends in global competition and innovation', Netherlands Institute of International Relations, Cligendael Energy Paper, available at http://www.clingendaelenergy.com/inc/upload/files/China_technology.pdf (Accessed 9 March 2016).

Buitenzorgy, M. and Mol, A.P.J. (2011) 'Does democracy lead to a better environment? deforestation and the democratic transition peak', *Environmental and Resource Economics*, 48(1), 59–70.

Callaghan, W.A. (2015) 'Identity and security in China: The negative soft power of the China Dream', in M. Barr and V. Fekluyunina (eds.) *Politics* special double issue 'The Soft Power of Hard States' 35(3–4), 216–229.

Carrington, D. (2016) 'China's coal-burning in significant decline, figures show', *Guardian*, 19 January, available at https://www.theguardian.com/environment/2016/jan/19/chinas-coal-burning-in-significant-decline-figures-show (Accessed 27 August 2017).

Chen, J. (2011) 'Development of offshore wind power in China', *Renewable and Sustainable Energy Reviews*, 15(9), 5013–5020.

Conrad, B. (2012) 'China in Copenhagen: Reconciling the "Beijing Climate Revolution" and the "Copenhagen Climate Obstinacy"', *The China Quarterly*, 210, 435–455.

Climatescope (2016) China - Climatescope, available at http://global-climatescope.org/en/country/china/#/details (Accessed 26 August 2017).

Climatescope (2017) China - Climatescope, available at http://global-climatescope.org/assets/data/reports/climatescope-2017-report-en.pdf (Accessed 28 December 2018).

Climatescope (2018) China - Climatescope, available at http://global-climatescope.org/assets/data/reports/climatescope-2018-report-en.pdf (Accessed 28 June 2019).

CNREC (2019) 'China Renewable Energy Outlook 2019', China National Renewable Energy Centre, available at http://boostre.cnrec.org.cn/wp-content/uploads/2020/03/CREO-2019-EN-Final-20200418.pdf (Accessed 19 April 2020).

Conrad, B. (2012) 'China in Copenhagen: Reconciling the 'Beijing Climate Revolution' and the 'Copenhagen Climate Obstinacy'. *The China Quarterly* 210: 435-455.

Creemers, R. (2015) 'Never the twain shall meet? Rethinking China's public diplomacy policy', *Chinese Journal of Communication*, 8(3),306–322.

Cyranoski, D. (2009) 'Renewable energy: Beijing's windy bet', *Nature,* 457(7228), 372–374.

Dai, Y. and Xue, L. (2015) 'China's policy initiatives for the development of wind energy technology', *Climate Policy*, 15(1), 30–57.

Dauvergne, P. (2018) 'The coming crisis of planetary instability', in C. Hay and T. Hunt (eds.) *The Coming Crisis: Building a Sustainable Political Economy*, pp. 53–60. Cham: Palgrave Macmillan.

Denyer, S. (2015) 'China tries to recast itself as a global leader in climate-change fight', *The Washington Post*, 2 November, available at https://www.washingtonpost.com/news/worldviews/wp/2015/11/02/china-tries-to-recast-

itself-as-a-global-leader-in-climate-change-fight/ (Accessed 29 June 2019).

Dimitrov, R.S. (2016) 'The Paris Agreement on climate change: behind closed doors', *Global Environmental Politics*, 16(3), 1–11.

Ding, S. (2010) 'Analysing rising power from the perspective of soft power: A new look at China's rise to the status quo power', *Journal of Contemporary China*, 19(64), 255–272.

Ding, Z. (2019) '全国人民代表大会常务委员会执法检查组关于检查《中华人民共和国可再生能源法》实施情况的报告', available at http://www.npc.gov.cn/npc/c30834/201912/2b7568de01944c33b9326c325dcd498f.shtml (accessed 18 April 2020).

Drifte, R. (2012) *Japan's Security Relations with China since 1989: From Balancing to Bandwagoning?* Abingdon: Routledge.

Du, J. and Xu, C. (2008) 'Market socialism or capitalism? Evidence from Chinese financial market development', in J. Kornai and Y. Qian (eds.), *Market and Socialism: In the Light of the Experiences of China and Vietnam*, pp. 88–109. Basingstoke: Palgrave Macmillan.

Dyer, G. (2009) 'The dragon stirs', *Financial Times*, 24 September, available at https://www.ft.com/content/671a76ec-a950-11de-9b7f-00144feabdc0 (Accessed 26 July 2016).

Eatwell, R. and Goodwin, M. (2018) *National Populism: The Revolt Against Liberal Democracy*. London: Penguin.

Economy, E.C. (2018) *The Third Revolution: Xi Jinping and the New Chinese State*. Oxford: Oxford University Press.

Edney, K. (2015) 'Building national cohesion and domestic legitimacy: A regime security approach to soft power in China', in M. Barr and V. Fekluyunina (eds.) *Politics* special double issue 'The Soft Power of Hard States' 35(3v4), 259–272.

EY (2016) 'Renewable energy country attractiveness index', February, 46, Ernst and Young, Available at http://www.ey.com/Publication/vwLUAssets/EY-RECAI-46-Feb-2016/$FILE/EY-RECAI-46-Feb-2016.pdf (Accessed 27 February 2016).

Falkner, R. (2016) 'The Paris Agreement and the new logic of international climate politics', *International Affairs*, 92(5), 1107–1125.

Forsythe, M. (2015) 'Q. and A.: Tony Saich on what Chinese want from their leaders', *New York Times*, 11 September, available at http://sinosphere.blogs.nytimes.com/2015/09/11/anthony-saich-china-communist-party/?_r=0 (Accessed 15 February 2016).

Fukuyama, F. (1989) 'The end of History?', *The National Interest,* 16: 3-18.

Gallagher, K.S. (2017) *The Globalization of Clean Energy Technology: Lessons from China*, Cambridge, MA: The MIT Press.

Gallie, W.B. (1964) 'Essentially Contested Concepts', pp. 157–191 in Gallie, W.B. (ed.) *Philosophy and Historical Understanding*, London: Chatto and Windus.

Gardner, D.K. (2015) 'China's 'Silent Spring' Moment? Why 'Under the Dome' found a ready audience in China', *New York Times*, 18 March, available at https://www.nytimes.com/2015/03/19/opinion/why-under-the-dome-found-a-ready-audience-in-china.html?mcubz=0 (Accessed 27 August 2017).

Geddes, A., Taylor, A. and Lees, C. (2013) *The European Union and South East Europe: The Dynamics of Europeanization and Multi-level Governance*. Abingdon: Routledge.

Giddens, A. (2011) *The Politics of Climate Change*, 2nd ed., Cambridge, UK: Polity Press.

Gosens, J. and Lu, Y (2014) 'Prospects for Global Market Expansion of China's Wind Turbine Manufacturing Industry', *Energy Policy* 67 (April): 301–318.

Green, F. and Stern, N. (2015) 'China's new normal: Better growth, better climate'. ESRC Centre for Climate Change Economics and Policy/Grantham Research Institution Climate Change and the Environment Policy Paper, London: London School of Economics.

Green, F. and Stern, N. (2016) 'China's changing economy: Implications for its carbon dioxide emissions'. ESRC Centre for Climate Change Economics and Policy/Grantham Research Institution Climate Change and the Environment Policy Paper, London: London School of Economics.

Gruss, L. and Brink, T.T. (2016) 'The development of the Chinese photovoltaic industry: an advancing role for the central state?', *Journal of Contemporary China*, 25(99), 453–466.

GWEC (2016) *Global Wind Report 2015*, available at http://www.gwec.net/wp-content/uploads/vip/GWEC-Global-Wind-2015-Report_April-2016_22_04.pdf (Accessed 23 April 2016).

Han, J., Mol, A.P.J., Lu, Y. and Zhang, L. (2009) 'Onshore wind power development in China: challenges behind a successful story', *Energy Policy*, 37(8), 2941–2951.

Hartig, F. (2015) 'Communicating China to the world: Confucius Institutes and China's strategic narratives', in M. Barr and V. Fekluyunina (eds.) *Politics* special double issue 'The Soft Power of Hard States' 35(3–4), 354–358.

Hilton, I and Kerr, O. (2017) 'The Paris Agreement: China's 'New Normal' role in international climate negotiations', *Climate Policy*, 17(1), 48–58.

Huang, Y. and Ding, S. (2006) 'Dragon's underbelly: An analysis of China's soft power', *East Asia,* 23(4), 22–44.

IEA (2015) 'Trends 2015 in photovoltaic applications: Survey report of selected IEA countries between 1992 and 2014', Report IEA-PVPS T1-27: 2015, Available at http://www.iea-

pvps.org/fileadmin/dam/public/report/national/IEA-PVPS_-_Trends_2015_-_MedRes.pdf (Accessed 12 March 2016).

IEA (2019a) 'China power system transformation', available at https://www.iea.org/reports/china-power-system-transformation (Accessed 23 April 2020).

IEA (2019b) 'Tracking power', available at https://www.iea.org/reports/tracking-power-2019 (Accessed 4 July 2019).

IMF (2013) 'International Monetary Fund country data', 2013, available at http://www.imf.org/external/country/CHN/index.htm (Accessed 12 October 2015).

IMF (2014) 'International Monetary Fund country data, 2014, available at http://www.imf.org/external/country/CHN/index.htm (Accessed 12 October 2015).

IPCC Working Group III (2014). 'Climate change 2014: mitigation of climate change', available from: http://mitigation2014.org/ (Accessed 28 April 2015).

Kim, G. (2019) 'China: Biofuels Annual', 9 August, available at https://www.fas.usda.gov/data/china-biofuels-annual-5 (Accessed 16 April 2020).

Kirkegaard, J. K. (2019) *Wind Power in China: Ambiguous Winds of Change in China's Energy Market*, Abingdon: Routledge.

Kurlantzick, J. (2007) *Charm Offensive: How China's Soft Power is Transforming the World*, New Haven, CT: Yale University Press.

Kurlantzick, J. (2013) 'China's trajectory of development and the Beijing consensus', *China-US Focus*, 29 April 2013, available at http://www.chinausfocus.com/finance-economy/chinas-trajectory-of-development-and-the-beijing-consensus/#sthash.urI8lxdE.dpuf (Accessed 8 October 2015).

Kuzemko, C. (2016) 'Energy depoliticisation in the UK: Destroying political capacity', *The British Journal of Politics and International Relations*, 18(1), 107–124.

Lavenex, S. and Schimmelfennig, F. (eds.) (2013) *EU External Governance: Projecting Rules beyond*

Membership. Abingdon: Routledge.

Lema, A. and Lema, R. (2012) 'Technology transfer? The rise of China and India in green technology sectors', *Innovation and Development*, 2(1), 23–44.

Lema, A. and Lema, R. (2016) 'Low-carbon innovation and technology transfer in latecomer countries: Insights from solar PV in the clean development mechanism', *Technological Forecasting and Social Change*, 104, 223–236.

Lema, A. and Ruby, K. (2007) 'Between fragmented authoritarianism and policy coordination: Creating a Chinese market for wind energy', *Energy Policy*, 35(7), 3879–3890.

Lema, R., Sagar, A. and Zhou, Y. (2016) 'Convergence or divergence? wind power innovation paths in Europe and Asia', *Science and Public Policy*, 43(3), 400–413.

Lewis, J.I. (2011) 'Building a national wind turbine industry: Experiences from China, India and South Korea', *International Journal of Technology and Globalisation*, 5(3), 281–305.

Lewis, J.I. (2013) *Green Innovation in China: China's Wind Power Industry and the Global Transition to a Low-Carbon Economy*, New York: Columbia University Press.

Lewis, J.I. (2014) 'The rise of renewable energy protectionism: emerging trade conflicts and implications for low carbon development', *Global Environmental Politics*, 14(4), 10–35.

Lewis, J.I. (2016) 'The development of China's wind power technology sector: characterizing national policy support, technology acquisition, and technological learning', In: Zhou, Y, Lazonick, W., and Sun, Y. (eds.) *China as an Innovation Nation*, Oxford: Oxford University Press, pp. 283–305.

Lewis, J.I. (2019) 'Testimony before the U.S.-China Economic and Security Review Commission Hearing on "Technology, Trade, and Military-Civil Fusion: China's Pursuit of Artificial Intelligence, New Materials, and New Energy"', 7 June, U.S.-CHINA Economic and Security Review Commission.

Lewis, J.I. and Wiser, R.H. (2007) 'Fostering a renewable energy technology industry: An international comparison of wind industry policy support mechanisms', *Energy Policy*, 35(3), 1844–1857.

Li, J. (2010) 'Decarbonising power generation in China – Is the answer blowing in the wind?', *Renewable and Sustainable Energy Reviews*. 14(4), 1154–1171.

Li, M. (2009) 'China debates soft power', *Chinese Journal of International Politics*, 2(2), 287–308.

Li, Q. and Reuveny, R. (2006) 'Democracy and environmental degradation', *International Studies Quarterly*, 50(4), 935–956.

Lin, J.Y., Li, Z. and Cai, F. (2008) *The China Miracle: Development Strategy and Economic Reform*, 3rd ed., Hong Kong: Chinese University Press.

Liu, J. and Diamond, J. (2005) 'China's environment in a globalizing world: how China and the rest of the world affect each other', *Nature*, 30 June, 1179–1186.

Liu, W.Q., Gan, L. and Zhang, X.L. (2002) 'Cost-competitive incentives for wind energy development in China: Institutional dynamics and policy changes', *Energy Policy*, 30(9), 753–765.

Macintyre, A. and Naughton, B (2005) 'The decline of a Japan-led model of the East Asian Economy' in Pempel, T.J. (ed.) *Remapping East Asia. The Construction of a Region*. Ithaca, N.Y: Cornell University Press.

Lachapelle, E., Macneil, R., and Paterson, M. (2016). 'The Political Economy of Decarbonisation: From Green Energy "Race" to Green "Division of Labour"', *New Political Economy*, 22(3), 311–327.

Mathews, J.A. (2015a) *Greening of Capitalism: How Asia Is Driving the Next Great Transformation*, Stanford: Stanford University Press.

Mathews, J.A. (2015b) ‘Energizing industrial development: the role of the state in 21st century greening strategies’, *Revista do Serviço Público*, 66 (Especial), 29–54.

Mathews, J.A. and Tan, H. (2014) ‘Economics: manufacture renewables to build energy security’, *Nature* 513:7517, 166–168.

Mathews, J.A. and Tan, H. (2015) *China’s Renewable Energy Revolution*, Basingstoke: Palgrave Macmillan.

Mazzucato, M. (2015) ‘The green entrepreneurial state’, in I. Scoones, M. Leach and P. Newell (eds.) *The Politics of Green Transformations*, Abingdon: Routledge, pp. 284–313.

McCarthy, J. (2019) ‘Authoritarianism, Populism, and the Environment: Comparative Experiences, Insights, and Perspectives’, *Annals of the American Association of Geographers* 109 (2) 301–313.

McNally, C.A. (2012) ‘Sino-capitalism: China's re-emergence and the international political economy’, *World Politics*, 64(4), 741–776.

Midlarsky, M.I. (1998) ‘Democracy and the environment: An empirical assessment’, *Journal of Peace Research*, 35(3), 341–361.

Mitchell, C. (2008) *The Political Economy of Sustainable Energy*, Basingstoke: Palgrave Macmillan.

Meckling, J. (2018). ‘The Developmental State in Global Regulation: Economic Change and Climate Policy’, *European Journal of International Relations* 24(1), 58–81.

Moe, E. (2015) *Renewable Energy Transformation or Fossil Fuel Backlash: Vested Interests in the Political Economy*, Basingstoke: Palgrave Macmillan.

Morrison, W. M. (2019) ‘China’s Economic Rise: History, Trends, Challenges, and Implications for the United States’, Congressional Research Service, June 25, available at https://fas.org/sgp/crs/row/RL33534.pdf (Accessed 17 April 2020).

Nahm, J. (2017) 'Exploiting the Implementation Gap: Policy Divergence and Industrial Upgrading in China's Wind and Solar Sectors', *The China Quarterly*, 231, pp. 705–727.

Nahm, J. and Steinfeld, E. S. (2014) 'Scale-up Nation: China's Specialization in Innovative Manufacturing', *World Development*, 54, pp. 288–300.

NDRC (2007) *Medium and Long-Term Development Guidelines for Renewable Energy in China*, Beijing: NDRC.

NEA (2017) 'The National Energy Administration's Guidance on the Implementation of the 13th Five-Year Guidelines for Renewable Energy Development', 19 July, No. 31, available at http://zfxxgk.nea.gov.cn/auto87/201707/t20170728_2835.htm (accessed 23 April 2020).

Newig, J. and Fritsch, O. (2009) 'Environmental governance: Participatory, multi-level – and effective?', *Environmental Policy and Governance*, 19(3), 197–214.

Nye, J. (1990) *Bound to Lead: The Changing Nature of American Power*, New York: Basic Books.

Nye, J. (2005) 'The rise of China's soft power', *Wall Street Journal Asia*, 29 December.

Nye, J. (2013) 'What China and Russia Don't Get About Soft Power', *Foreign Policy*, 29 April, available at http://foreignpolicy.com/2013/04/29/what-china-and-russia-dont-get-about-soft-power/ (Accessed 4 November 2015).

Nye, J.S. (2015) *Is the American century over?* Cambridge, UK: Polity Press.

Nye, J.S. (2019) 'The rise and fall of American hegemony from Wilson to Trump', *International Affairs*, 95 (1): 63–80

OECD (2007) *Institutionalising Sustainable Development*. Available at http://www.oecd-ilibrary.org/content/book/9789264019096-en (Accessed 10 July 2015).

Okano-Heijmans, M. and Asano, T. (2018) 'Economic Diplomacy': pp. 251-66. in McCarthy, M. (ed.) *Routledge Handbook of Japanese Foreign Policy*. Abingdon: Routledge.

Otmazgin, N.K. (2008) 'Contesting soft power: Japanese popular culture in East and Southeast Asia', *International Relations of the Asia-Pacific*, 8: 73–101.

Pan, J. (2009) *Towards a New Framework for Peaceful Settlement of China's Territorial and Boundary Disputes*, Alphen aan den Rijn: Martinus Nijhof.

Parker, C.F. and Karlsson, C. (2018) 'The UN climate change negotiations and the role of the United States: assessing American leadership from Copenhagen to Paris', *Environmental Politics*, 27(3), 519–540.

Pomfret, J. (2010) 'China's strident tone raises concerns among Western governments, analysts', *Washington Post*, 31 January 2010.

Qi, X., Guo, P., Guo, Y., Liu, X., and Zhou, X. (2020) 'Understanding Energy Efficiency and Its Drivers: An Empirical Analysis of China's 14 Coal Intensive Industries'. *Energy*, 190 (January): 116354. doi:10.1016/j.energy.2019.116354.

Ramo, J.C. (2004) *The Beijing Consensus*, London: Foreign Policy Centre.

Rauchfleisch, A. and Schäfer, M.S. (2018) 'Climate change politics and the role of China: a widow of opportunity to gain soft power?' *International Communication of Chinese Culture*, Vol. 5 (1-2): 39-59.

Ran, R. (2014) 'Perverse incentive structure and policy implementation gap in China's local environmental politics', in G. Kostka and A.P.J. Mol (eds.) *Local Environmental Politics in China: Challenges and Innovations*, pp. 15–38. Abingdon: Routledge.

REN21 (2012) *Renewables Global Status Report 2012*, Paris: REN21 Secretariat.

REN21 (2015) *Renewables Global Status Report 2015*, Paris: REN21 Secretariat.

REN21 (2019) *Renewables Global Status Report 2019*, Paris: REN21 Secretariat.

Sanger, D. E. and Perlez, J. (2017) 'Trump hands the Chinese a gift: the chance for global

leadership', *The New York Times*, 1 June, available at https://www.nytimes.com/2017/06/01/us/politics/climate-accord-trump-china-global-leadership.html (Accessed 30 June 2019).

Saran, S. and Jones, A. (2017) *India's Climate Change Identity: Between Reality and Perception*, Cham: Palgrave Macmillan.

Schmitz, H. and Lema, R. (2015) 'The global green economy: competition or cooperation between Europe and China?', in J. Fagerberg, S. Laestadius and B. Martin (eds.) *The Triple Challenge for Europe: Economic Development, Climate Change, and Governance*, Oxford: Oxford University Press, pp. 119–141.

Shambaugh, D.L. (2013) *China Goes Global: The Partial Power*, Oxford: Oxford University Press.

Shapiro, J. (2012) *China's Environmental Challenges*, Cambridge, UK: Polity Press.

Shen, W. and Xie, L. (2018) The Political Economy for Low-carbon Energy Transition in China: Towards a New Policy Paradigm? *New Political Economy*, 23(4), 407-421.

Schreurs, M. (2017) 'Multi-Level Climate Governance in China'. *Environmental Policy and Governance*, 27(2), 163–174.

Smith, R. (2018) 'Three countries are leading the renewable energy revolution', World Economic Forum, 26 February, Available at https://www.weforum.org/agenda/2018/02/countries-behind-global-renewable-energy-growth/ (accessed 17 April 2020).

Sovacool, B.K. (2009) 'The Importance of comprehensiveness in renewable electricity and energy-efficiency policy', *Energy Policy*, 37(4), 1529–1541.

Sovacool, B.K. (2013) 'A qualitative factor analysis of renewable energy and sustainable energy for all (SE4ALL) in the Asia-Pacific', *Energy Policy*, 59, 393–403.

State Council of the People's Republic of China (2014) 'Energy Development Strategic Action Plan (2014–20)', available at http://www.gov.cn/zhengce/content/2014-11/19/content_9222.htm (Accessed: 12 October 2015).

Stoker, G. and Hay, C.S., (2016) Understanding and Challenging Populist Negativity towards Politics: The Perspectives of British Citizens. *Political Studies*. 65(1): 4-23.

Strange, S. (1988) *States and Markets. An Introduction to International Political Economy*. London: Pinter.

Streeck, W. (2014) *Buying time: The Delayed Crisis of Democratic Capitalism*. London and New York: Verso.

Suzuki, S. (2009) 'Chinese soft power, insecurity studies, myopia, and fantasy', *Third World Quarterly*, 30(4), 779–793.

Swaine, M.D. (2011) *America's Challenge: Engaging a Rising China in the Twenty-first Century*, Washington DC: Carnegie Endowment for International Peace.

Teets, J. (2013) 'Let many civil societies bloom: regional ideational variation in China'. *The China Quarterly*, 213, 19–38.

Tilt, B. (2015) *Dams and Development in China: The Moral Economy of Water and Power*, New York: Columbia University Press.

Toke, D., and Lauber, V. (2007) 'Anglo-Saxon and German Approaches to Neoliberalism and Environmental Policy: The Case of Financing Renewable Energy', *Geoforum* 38 (4) 677–687.

Toke, D. (2017) *China's Role in Reducing Carbon Emissions: The Stabilisation of Energy Consumption and the Deployment of Renewable Energy*, Abingdon: Routledge.

Toke, D. (2018) *Low Carbon Politics: A Cultural Approach Focusing on Low Carbon Electricity*, Abingdon: Routledge.

United Nations Development Programme (2014) 'China-Ghana South-South cooperation on renewable energy technology transfer', available at https://info.undp.org/docs/pdc/Documents/CHN/ProDoc%20-%2091276.pdf (Accessed 19 February 2016).

United Nations Development Programme (2015a) 'Chinese delegation visits Zambia on South-South Cooperation's renewable energy technology transfer programme', available at http://www.zm.undp.org/content/zambia/en/home/presscenter/articles/2015/10/16/chinese-delegation-visits-zambia-on-south-south-cooperation-s-renewable-energy-technology-transfer-programme-.html (Accessed 12 March 2016).

United Nations Development Programme (2015b) 'China-Zambia South-South Cooperation on Renewable Energy Technology Transfer', available at https://info.undp.org/docs/pdc/Documents/ZMB/China%20Zambia%20South%20South%20Renewable%20Energy%20Technology%20Transfer%20Project%20Document.pdf (Accessed 19 February 2016).

Victor, D.G. (2011) *Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet* (Cambridge: Cambridge University Press).

Wainwright, J. and Mann, G. (2013) 'Climate Leviathan', *Antipode* 45 (1): 1-22.

Wang, H. (1993) 'Zuowei goujia shili de wenhua: Ruan quanli' [Culture as national power: Soft power], *Fudan Xuebao (Shehui kexue bao)* [Fudan Journal (Social Sciences edition)], 3, 91–96.

Wang, H. and Lu, Y-C (2008) 'The conception of soft power and its policy implications: a comparative study of China and Taiwan', *Journal of Contemporary China,*17(56), 428–430.

Wang, Yi (2008) 'Public diplomacy and the rise of Chinese soft power', *American Academy of Political and Social Science*, 616, 257–273.

Wang, Z., Qin, H. and Lewis, J.I. (2012) 'China's wind power industry: policy support, technological achievements, and emerging challenges', *Energy Policy*, 51, 80–88.

Walder, A.G. (2018) 'Back to the future? Xi Jinping as an anti-bureaucratic crusader', *China: An International Journal* 16 (3), 18–34.

Wenar, L. (2017) *Blood Oil: Tyrants, Violence, and the Rules that Run the World*. Oxford: Oxford University Press.

World Wildlife Fund-Norway (2012) 'China and renewable energy in Africa: Opportunity for Norway?', available at http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/43/103/43103515.pdf (Accessed 26 April 2017).

World Wind Energy Association (2018) 'Global wind installations', available at https://library.wwindea.org/global-statistics-2018-preliminary/ (Accessed 2 July 2019).

Xu, Y. (2017) *Sinews of Power: Politics of the State Grid Corporation of China*. Oxford: Oxford University Press.

Yardley, J. (2005) 'China's next big boom could be the foul air', *New York Times*, 30 October, available at http://www.nytimes.com/2005/10/30/weekinreview/chinas-next-big-boom-could-be-the-foul-air.html?mcubz=0 (Accessed 18 January 2016).

Yip G.S. and McKern, B. (2016) *China's Next Strategic Advantage: from Imitation to Innovation*. Cambridge: The MIT Press.

Zhang, F. (2018) 'The Chinese developmental state: standard accounts and new characteristics', *Journal of International Relations and Development*, 1(3), pp 739–768.

Zhang, F. and Gallagher, K.S. (2016) 'Innovation and technology transfer through global value chains: Evidence from China's PV industry', *Energy Policy*, 94, 191–203.

Zhang, X. (2017). 'Implementation of pollution control targets in China: has a centralized enforcement approach worked?' *The China Quarterly*, 231, 749–774.

Zhao, S. (2010) 'The China trajectory: Can it replace the Western trajectory of modernization?', *Journal of Contemporary China*, 19(65), 419–436.

Zheng, Y. and Huang, Y. (2018) *Market in State: The Political Economy of Domination in China*. Cambridge: Cambridge University Press.

Zhou, X. and Zhang, Y. (2010) *Quanqiu shiyexia jiangsu xinnengyuan chanye fazhan yanjiu baogao* [Report of the development of new energy industry in Jiangsu: A global perspective], Nanjing: Southeast University Press.

Zhu, C., Kanaya, Y., Yoshikawa-Inoue, H., Irino, T., Seki, O., and Tohjima, Y. (2019) 'Sources of Atmospheric Black Carbon and Related Carbonaceous Components at Rishiri Island, Japan: The Roles of Siberian Wildfires and of Crop Residue Burning in China'. *Environmental Pollution* 247, 55–63.

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