
China's Giant State-Owned Enterprises as Policy Advocates: The Case of the State Grid Corporation of China

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ABSTRACT

Drawing insights from Aaron Wildavsky's studies of the craft of policy making and from the literature on pluralization in Chinese decision making, this article examines the role played by the biggest state-owned enterprise, the State Grid Corporation of China (SGCC), in shaping the country's electricity policy in the early twenty-first century. Specifically, it discusses how and why SGCC was able to sell its ultra-high-voltage projects as a solution to shortages of electricity. The article argues that (a) central state-owned enterprises (SOEs) are not mere passive receivers of policy directives from the party-state; (b) those with long-term strategic vision, human and financial resources, and institutional capacity can shape government policies to their liking as policy advocates; and yet (c) no one, including central SOEs, monopolizes this process in any given policy area; and thus policy outcomes reflect competition among players and their constant interaction with government policy makers.

On March 23, 2014, the official Chinese television channel CCTV hosted a primetime debate about China's ultra-high-voltage (UHV) transmission projects, after the Standing Committee of the State Council announced its decision to speed up the construction of cross-region high-voltage transmission grids to deal with worsening air pollution. Attending the televised debate were senior government officials, representatives to the National People's Congress, academy members, industry senior managers, and media commentators. What is striking about the debate was not only the uncompromising positions by both supporters and opponents but also their equally critical view of the government, especially of the National Development and Reform Commission (NDRC), a powerful macroeconomic planner in China. The opponents to the projects criticized NDRC for approving them in the first place and for supporting the construction of a synchronized UHV alternating current (AC) and UHV direct current (DC) system connecting three regions at the expense of system reliability. The supporters blamed NDRC for delaying the decision on the UHV projects and risking losing opportu-

nities for China to take the lead internationally in the transition to low-carbon electricity production and consumption.¹

This was an extraordinary event because (i) a highly technical issue became a policy matter subject to public debate, and (ii) the debate took place *after* the central government had made a decision. It raises questions about recent studies on the role of the large state-owned enterprises (SOEs), especially those occupying strategic sectors, in shaping public policies in an increasingly pluralized decision making process.² For more than two decades, scholars have consistently put forth arguments that policy making in China has become more pluralized as barriers were lowered to include officially sanctioned groups such as government research institutes and think tanks,³ important well-connected individuals, and public and private organizations, including NGOs.⁴ The pluralization of decision making is explained as a consequence of “fragmented authoritarianism,” as Andrew Mertha phrased it, that opens up “spaces” for other players to participate in policy debates “without being snuffed out by the coercive apparatus of the state.”⁵ SOEs, especially those under the administration of the central government (hereafter “central SOEs”), by and large are absent in this growing body of literature. Instead, it is often argued that the interests of the central SOEs are automatically represented and promoted by the government either because of their “tightest connections to the Chinese party-state in its various institutional manifestations,”⁶ or because “the Communist Party picks the leaders of the top SOEs and coordinates key decisions through encrypted red-phone lines to Party headquarters.”⁷

1. 激辩特高压 [Debate on ultra-high-voltage transmission projects], in 《对话》[Dialogue], CCTV, Channel 2, March 23, 2014, <http://www.cntv.cn>.

2. Xuefeng Zhu, “Strategy of Chinese Policy Entrepreneurs in the Third Sector,” *Policy Sciences*, 41, no. 4 (2008): 315–34; Andrew Mertha, “‘Fragmented Authoritarianism 2.0’: Political Pluralization in the Chinese Policy Process,” *China Quarterly*, no. 200 (2009): 1012; Daniel R. Hammond, “Policy Entrepreneurs in China’s Response to Urban Poverty,” *Policy Studies Journal* 41, no. 1 (2013): 119–46.

3. Carol Lee Hamrin and Suisheng Zhao, eds., *Decision-Making in Deng’s China* (Armonk, NY: Sharpe, 1995); Jonathan Unger, ed., *The Nature of Chinese Politics* (Armonk, NY: Sharpe, 2002); Barry Naughton, “China’s Economic Think Tanks,” *China Quarterly*, no. 171 (2002): 625–35; Murray Scot Tanner, “Changing Windows on a Changing China,” *China Quarterly*, no. 171 (2002): 559–74; David Shambaugh, “China’s International Relations Think Tanks,” *China Quarterly*, no. 171 (2002): 575–96; Xufeng Zhu and Lan Xue, “Think Tanks in Transitional China,” *Public Administration and Development* 27 (2007): 452–64.

4. Scott Kennedy, *The Business of Lobbying in China* (Cambridge, MA: Harvard University Press, 2005); Mertha, “Fragmented Authoritarianism 2.0”; Haitao Zheng, Martin de Jong, and Joop Koppenjan, “Applying Policy Network Theory to Policy-Making in China,” *Public Administration* 88, no. 2 (2010): 398–417; Kjeld Erik Brødsgaard, “Politics and Business Group Formation in China,” *China Quarterly*, no. 211 (2012): 624–48.

5. Mertha, “Fragmented Authoritarianism 2.0,” 997.

6. Li-Wen Lin and Curtis J. Milhaupt, “We Are the (National) Champions,” *Stanford Law Review* 65, no. 4 (2013): 607–759, 703.

7. C. Fred Bergsten, Gary Clyde Hufbauer, and Sean Miner, *Bridging the Pacific* (Washington, DC: Peterson Institute for International Economics, 2014), 304. See also James McGregor, *The Party* (New York: HarperCollins, 2010), and *No Ancient Wisdom, No Followers* (Westport, CT: Prospecta, 2012).

This article examines the role played by the State Grid Corporation of China (SGCC) in competition with other players in shaping China's electricity policy in the early twenty-first century. Specifically, it discusses how and why SGCC was able to sell its preferred UHV projects initially as a policy solution to shortages of electricity, and later as a solution to a different bundle of challenges such as worsening air pollution, upgrading the country's manufacturing industries, and structurally transforming the economy. This article argues that (a) central SOEs are not mere passive policy receivers from the party-state, taking and obeying "orders" from the top of the political hierarchy; (b) those with strategic long-term vision, human and financial resources, and institutional capacity can shape government policies in the pluralized policy making process; and (c) no one, including central SOEs, monopolizes this process in a given policy area, and thus policy outcomes often reflect continuing competition among players and their interaction with government policy makers.

In making its arguments, the article revises a long-held proposition that SOEs are under "*direct central state control*," in Barry Naughton's words,⁸ and that any failure "to manipulate, control, direct or otherwise use" these SOEs has to be laid at the feet of the central government, as William Norris claims.⁹ The article proposes instead that central SOEs can be active actors shaping these directives. They do not have an automatic right to participate in the policy-making process, nor are their interests represented automatically by government agencies, whose interests are always in conflict among themselves anyway. To get what they want, the key SOEs, as do other players, have to be proactive, proposing new ideas and initiatives, participating in policy debates, and selling their preferred policy proposals to their industry counterparts and policy makers. This is in part because the central SOEs are by and large accountable for their own performance and must operate as corporations first and foremost. To influence and shape policy making is part of the game. Consequently, economic policy making in China is no longer the result of competition among functional bureaucracies and territorial administrations, as the initial model of fragmented authoritarianism suggests. Instead, central SOEs must be treated as independent players in a pluralized decision-making process.

The following section discusses this pluralization of players. This has been a gradual process with policy making initially open to officially sanctioned groups, primarily government think tanks, and then to other players, powerful individuals, public intellectuals, media, and NGOs. This is in part the consequence of a multitude of consultative mechanisms adopted by the central policy makers to break up the bureaucratic stalemate and/or to acquire legitimacy and support

8. Barry Naughton and Kellee S. Tsai, eds., *State Capitalism, Institutional Adaptation, and the Chinese Miracle* (New York: Cambridge University Press, 2015), 18.

9. William J. Norris, *Chinese Statecraft* (Ithaca, NY: Cornell University Press, 2016), 23.

for government policies.¹⁰ This is also the result of active participation of the media and NGOs in influencing and shaping policy directions.¹¹ Central SOEs are missing in this growing body of literature as they are often treated as mere instruments of state policy. In practice, however, some of these central SOEs are the initiators of some of the policies; they behave in a similar way as active policy entrepreneurs, discussed by John Kingdon in other political systems, willing to invest their resources—time, energy, reputation, and sometimes money—to shape policies to their liking.¹² It is thus important to examine why (motives) and how (strategies) they compete in shaping policy outcomes in a crowded decision making process.

The third section answers the *why* and *how* questions by examining SGCC's pursuit of UHV projects. It specifically asks (a) why SGCC suggested high-cost, high-risk UHV technologies as solutions to power shortages at the time; (b) how UHV projects became a public policy issue; (c) how they emerged on the government's radar in a crowded competition; and (d) how SGCC convinced policy makers in government to support and approve UHV projects. This article argues that SGCC, with knowledge, resources, and tenacity, was able to exploit windows of opportunity and to influence agenda setting and policy making.

The final section of the article provides a brief discussion of how SGCC defined, adapted, reframed and repackaged the UHV projects and kept them part of the government's policy priorities in response to the broader changing political and economic environment. It emphasizes that as a government faces multiple challenges every day, there are often no ready solutions to many of them. As a book about European governments notes, "policy-making is a form of collective puzzlement."¹³ China is no exception. As will be shown, policy makers there are presented with and respond to various alternatives that are fought over among a number of concerned players, including central SOEs. Both the government and the concerned players periodically adjust their objectives and adapt their preferred policy proposals to the broader political and economic challenges the country faces. The important position of central SOEs in the economy and the resources they possess help them succeed in steering policies in their preferred directions, but in this negotiation their long-term strategic visions, specific ideas to translate visions into actions, willingness to pursue them, and capacity to draw

10. See the discussion in Yoel Kornreich, Ilan Vertinsky, and Pitman B. Potter, "Consultation and Deliberation in China," *China Journal*, no. 68 (2012): 176–203.

11. See, e.g., Susan L. Shirk, ed., *Changing Media, Changing China* (New York: Oxford University Press, 2011).

12. John W. Kingdon, *Agendas, Alternatives and Public Policies*, 2nd ed. (New York: HarperCollins, 1995), 122–23.

13. Hugh Hecló, *Modern Social Politics in Britain and Sweden* (New Haven, CT: Yale University Press, 1974), 305.

upon resources of information, analysis, and expertise matter more than the central SOEs' formal status.

This is a study of a single SOE on a single issue, designed to identify the incentives, capacities, and strategies SGCC adopted as a policy advocate. It is built on my accumulated knowledge of the electricity industry and electricity reforms in China and in other countries, developed over the past 15 years. The article relies on extensive research on electricity transmission and distribution using both Chinese and English documentation, interviews with key players in the industry (SGCC and other power generation companies) and government agencies (e.g., NDRC and the state-owned Asset Supervision and Administration Commission), and exchanges with scholars at universities (e.g., at Tsinghua University and North China Electric Power University) and the Academy of Sciences, Academy of Engineering, and Academy of Social Sciences. I believe the article can serve as a base for a more comprehensive appreciation of the relationship between key central SOEs and the party-state in decision making.

PLURALIZATION OF PLAYERS IN DECISION MAKING

Often we think of policies as solutions to problems that governments have to deal with. Yet any given issue can be defined as a policy problem; as Aaron Wildavsky put it, "policy problems are man-made in that we choose among infinite possibilities to attack one sort of difficulty rather than another." Defining problems therefore is "an art" and it involves "great political stakes."¹⁴ Issues (tobacco, lotteries, or housing) often are identified and pushed forward as policy problems when those who want to rectify or mitigate them have preferred solutions. Power shortages, for example, can be interpreted as a problem of energy inefficiency, inadequate coal supplies, lack of generation capacity, or insufficient transmission and distribution infrastructure. Politicians, government officials, societal groups, or active individuals may define the problems differently and push their preferred remedies onto the government agenda. Since these actors occupy different positions and operate in different contexts, they have different motivations in promoting their favored proposals or advocating an idea. To succeed in getting their preferred policy solution on the agenda, they must be willing to invest their resources in the hope of garnering some future gains, and their determination and tenacity are often the key to their success.

This concept of policy entrepreneurs or policy advocates was developed by scholars to explain policy making in developed countries and has been adopted by some China scholars. Andrew Mertha, for instance, uses the concept to explain the role played by some environmental NGOs in stopping the Nu River hydro

14. Aaron Wildavsky, *Speaking Truth to Power* (Boston: Little, Brown, 1979), 83, 14; Kingdon, *Agendas, Alternatives and Public Policies*, 110.

project,¹⁵ while Daniel Hammond discusses the entrepreneurial role of Duoji Cairang, Minister of Civil Affairs, in promoting and developing the urban resident Minimum Livelihood Guarantee system in the late 1990s.¹⁶ These analyses have emphasized the space afforded to state and nonstate actors to participate in and have real impact on policy making and on policy change. Some scholars attribute this to the entry of new players to the growing range of issues a modern government has to manage. Others instead see it as a consequence of increasing specialization, professionalization, and globalization of both Chinese society and governing bureaucracies.¹⁷

Even though some scholars such as Bruce Gilley still insist that “as a general statement, *all* public policy processes in China are non-participatory,”¹⁸ an increasing number of individuals and groups, in or outside government, can and do compete in presenting their concerns as policy issues and actively pursue them as policy entrepreneurs do in other political systems.¹⁹ These new players in particular can mobilize the media or take advantage of public protests in an effort to draw attention to their issues and to “generate non-institutionalized pressures on the state authority and the state’s policy priorities.”²⁰ With the command mode of policy making having been replaced in China by a bargaining model or a competitive persuasion model, these new policy advocates, whether large or small, public or private, can no longer be ignored in policy analysis. They bring with them contesting ideas, identified interests, and determination to make things happen.

THE IMAGE OF SOES AS PASSIVE PLAYERS

Among the growing literature on the various players in policy making in China, the SOEs that occupy strategic positions in the Chinese economy are largely absent. This is partly because some scholars continue to emphasize the top-down character of industrial-policy formulation and transmission in an authoritarian political regime, where the interests of central SOEs are regarded as automatically

15. Mertha, “Fragmented Authoritarianism 2.0.”

16. Hammond, “Policy Entrepreneurs in China’s Response to Urban Poverty.”

17. David Lampton, *Following the Leader* (Berkeley: University of California Press, 2014).

18. Bruce Gilley, “Authoritarian Environmentalism and China’s Response to Climate Change,” *Environmental Politics* 21, no. 2 (2012): 293.

19. Yongshun Cai, “Managing Groups in China,” *Political Science Quarterly* 129, no. 1 (2014): 112; David M. Lampton, “China’s Foreign and National Security Policy-Making Process,” in *The Making of Chinese Foreign and Security Policy in the Era of Reform, 1978–2000*, ed. David Lampton (Stanford, CA: Stanford University Press, 2001), 12; “China’s Think Tanks,” special issue of *China Quarterly*, no. 171 (2002): 559–681; Victor C. Shih, *Factions and Finance in China* (New York: Cambridge University Press, 2008); Xufeng Zhu and Lan Xue, “Think Tanks in Transitional China,” *Public Administration and Development* 27 (2007): 452–64.

20. Cai, “Managing Groups in China,” 113; Zheng, de Jong, and Koppenjan, “Applying Policy Network Theory to Policy-Making in China.”

defended and promoted by the government.²¹ Others share this view but put more emphasis on the SOEs' complex system of recruitment, selection, promotion, and rotation of their management teams and their board members.²² To a certain extent this conception of the SOEs reflects reality, as the executives of these SOEs are Party members and sometimes hold a rank equivalent to a minister or deputy minister. It is thus argued that they either have an automatic seat in policy making or are part of a *guanxi* network linked to state officials who have access to financial resources. They therefore can more easily overcome government indifference, build trust, and compensate for institutional uncertainty.²³ In this conception, there is little incentive for the heads of central SOEs to risk their political careers to push for new or different ideas and policies.

Some scholars instead see these central SOEs as incidental beneficiaries and believe that the ministries negotiate over, bargain for, and make elaborate deals among themselves on behalf of these national champions.²⁴ Others argue that central SOEs benefit from the protection of ministries through business associations that were originally created by official institutions. These business associations vary significantly—they can be national or local, large or small, and some represent large industries as a whole, while others focus on the producers of a narrower product.²⁵ Those representing central SOEs in strategic industries, however, invariably have direct connections with and access to policy makers or powerful political patrons at the top of the political hierarchy in China.

One powerful government agency representing and promoting the interests of SOEs, it is argued, is the State-owned Asset Supervision and Administration Commission (SASAC).²⁶ Its first minister, Li Rongrong 李荣融, demanded that central

21. Lin and Milhaupt, "We Are the (National) Champions."

22. Brødsgaard, "Politics and Business Group Formation in China"; Margaret M. Pearson, "Variety Within and Without," in *Beyond the Middle Kingdom*, ed. Scott Kenny (Stanford, CA: Stanford University Press, 2011), 25–43; John P. Burns, "China's Administrative Reforms for a Market Economy," *Public Administration and Development* 13, no. 4 (1993): 345–60; Hon S. Chan, "Politics over Markets," *Public Administration and Development* 29 (2009): 43–54; Kjeld Erik Brødsgaard, "Cadre and Personnel Management," *China: An International Journal* 10, no. 2 (2012): 69–83.

23. Christopher A. McNally, "Sino-Capitalism," *World Politics* 64, no. 4 (2012): 752.

24. For explanations of the national champions, see, e.g., Kenneth G. Lieberthal and David M. Lampton, eds., *Bureaucracy, Politics, and Decision Making in Post-Mao China* (Berkeley: University of California Press, 1992); Margaret M. Pearson, "The Business of Governing Business in China," *World Politics* 57, no. 2 (2005): 296–322.

25. Scott Kennedy, "Comparing Formal and Informal Lobbying Practices in China," *China Information* 23, no. 2 (2009): 199. Also see Scott Kennedy, *The Business of Lobbying in China* (Cambridge: Harvard University Press, 2005); Christopher A. McNally, ed., *China's Emergent Political Economy* (London: Routledge, 2008).

26. Dali Yang, ed., *The Global Recession and China's Political Economy* (New York: Palgrave Macmillan, 2012); Sarah Eaton, "Political Economy of the Advancing State," *China Journal*, no. 69 (2013): 64–86; Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle*.

SOEs under its supervision take control of the “commanding heights” of the economy and build internationally competitive conglomerates. SASAC advanced their interests by directing resources to these central SOEs, promoting mergers and consolidations, imposing pricing and investment strategies that benefited them, and wielding its regulatory authority to manage strict entry barriers to their industries.²⁷ With the protection of SASAC, some observers argue, central SOEs do not have to be active in promoting their own interests or ideas.

SGCC’S SELF-IDENTITY AS A POLICY ADVOCATE

Interviewees from central SOEs, however, contradict the above image of the passive SOE. According to them, central SOEs have to fight to get their voices heard by policy makers, and they have to compete with their peers as well as other players to get their preferred policies included in the government agenda. Take SGCC as an example: it is the world’s largest utility company and the second in rank on Fortune Global 500, just behind Walmart. Its services cover 88 percent of the country’s territory, including the remote and desolate Tibetan plateau and Gobi desert, and it provides electricity services to over 1.1 billion people.²⁸ It is a very important player in the Chinese economy. Yet, it was only one of an initial 196 central SOEs placed under the supervision and administration of SASAC—the nominal owner of all state assets—in 2003, and one of over 100 a decade later.²⁹ Restructuring of the electricity industry in 2003 broke up the national monopoly—the State Power Corporation of China—into 11 pieces—five national power generation companies, two grid companies, and the rest in construction and other auxiliary activities. They are all state owned and all under the administration and supervision of SASAC. SGCC is one of the 11. They are competitors rather than collusive partners, each having its distinct interest to promote and protect.³⁰ To get the attention of SASAC and other key government agencies, SGCC has to compete with other large and powerful SOEs.

Soon after SGCC went into operation in 2003, highly disruptive power shortages quickly spread across the country, affecting 25 of China’s 31 provinces and

27. Dali L. Yang and Junyan Jiang, “Guojin Mintui: The Global Recession and Changing State-Economy Relations in China,” in *The Global Recession and China’s Political Economy*, ed. Dali Yang (New York: Palgrave Macmillan, 2012), 33–69. Also see the discussion by Barry Naughton, in Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle*.

28. For details on SGCC, see Xu Yi-chong, *Sinews of Power* (New York: Oxford University Press, 2017).

29. For a discussion of SASAC, see Lin and Milhaupt, “We Are the (National) Champions”; Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle*.

30. Emily T. Yeh and Joanna I. Lewis, “State Power and the Logic of Reform in China’s Electricity Sector,” *Pacific Affairs* 77, no. 3 (2004): 437–65; IEA, *China’s Power Sector Reforms* (Paris: OECD, 2006); Ling Chen, “Playing the Market Reform Card,” *China Journal*, no. 64 (2010): 69–95; Philip Andrews-Speed, “Reform Postponed,” in *Evolution of Global Electricity Markets*, ed. F. P. Sioshansi (St. Louis: Academic Press, 2013), 531–67.

major municipalities. Blackouts and brownouts shut down factories and affected the lives of households.³¹ Newly restructured SOEs in the energy sectors competed to interpret the blackouts to their own advantage: the coal industry led by two central SOEs, Shenhua and China Coal, blamed the power shortage on restrictions on coal production and coal pricing and demanded the central government relax the production restrictions and free up coal prices. The five national power generating companies blamed the power shortage on insufficient generation capacity, demanding that the government speed up investment approvals. The country's two nuclear power companies pushed for a new round of nuclear energy expansion. State-owned large hydro companies used the power shortage to gain public investments in dam construction. All of these players were among the then 196 central SOEs under SASAC. If SGCC wanted to expand, it had to be proactive in advancing its own interests in competition with others.

In any given policy area, there are multiple players, all struggling to get their ideas and positions adopted. Some succeed, while others do not. This is just normal politics. It is therefore important to examine when and how these SOEs act as policy advocates who are able to generate ideas, translate them into policy options, and get them adopted by government agencies. It is particularly important to identify the factors that determine how and when large SOEs are able to shape policy-making processes.

MOTIVATIONS AND STRATEGIES OF SGCC AS A POLICY ADVOCATE

As power shortages in 2003–5 became a political issue, with both the economy and social life adversely affected, the government had to act. The National Development and Reform Commission (NDRC) adopted a combination of measures: raising power tariffs to cut consumption, freeing coal prices to encourage production, speeding up project approvals for power generation plants, encouraging large hydro projects, promoting new nuclear energy development, and adopting policies to encourage investment in renewable energy.³² Power shortages persisted. On a ride to a function with the minister of NDRC in early December 2004, the chief executive of SGCC presented his interpretation of the power shortage—the weak, fragmented, and inadequate cross-province, cross-region interconnected transmission and distribution networks that prevented places with power surpluses from sharing them with their neighbors. Even though SGCC's diagnosis

31. Various explanations of the severe power shortages of 2003–5 are discussed by scholars. The explanation given here is only on the contributors to the recurrence of power shortages. See IEA, *China's Power Sector Reforms*; Zhen Ming, Xue Song, Li Lingyun, Wang, Yuejin, Wei Yang, and Li Ying, "China's Large-Scale Power Shortages of 2004 and 2011," *Energy Policy* 61 (2013): 610–18.

32. IEA, *China's Power Sector Reforms*.

of the power shortages was not new, its suggested solution, to invest in cross-region ultra-high-voltage (UHV) transmission networks, with both AC and DC technologies, was bold and risky for several reasons:

- a. It was a completely new set of ideas that people at NDRC had not thought about while contemplating a wide range of other policy options, and even SGCC's management had not yet worked out a detailed plan of how UHV lines could be constructed, what costs this would incur, and whether it had the capacity to do so.
- b. Although scientists and engineers in several developed countries had done some laboratory research on UHV technologies, there was not even a single UHV AC system in full operation in the world. The USSR constructed the first UHV line of 1200kV in the late 1980s, and Japan built and field-tested an UHV line of 1100kV in 1996, yet neither was operating at their rated capacity and both had been downgraded to operate at 500kV capacity by the end of the twentieth century.
- c. China had fallen far behind in technical know-how about electricity transmission and distribution development. It had not even completed its first 750kV line by then and depended heavily on imports of design, technology, and equipment for anything beyond 350kV capacity.³³

By making the suggestion, SGCC provided an alternative interpretation of power shortages. The question is, why did SGCC propose something new, untested, and risky? The company had just been created less than two years earlier; it was still in the process of reorganizing and restructuring itself as a corporation and in absorbing some loss-making units that had been given to it when the government decided to unbundle the vertically integrated State Power Corporation of China. As there was no UHV line in commercial operation in the world, there was no matching electric equipment manufacturing capacity in China or among multinational corporations, such as Siemens and ABB. Constructing UHV lines over long distances would require innovation and technological breakthroughs. Like all innovations, it would “involve uncertainty, risk taking, probing and reprobating, experimenting, and testing,” and in the process, “‘dry holes’ and ‘blind alleys’ are the rule, not the exception.”³⁴ In addition to technical risks, there were huge financial risks because the investment would be much higher than for 350kV or 500kV transmission networks. The cost for the very first line would be much higher still, before SGCC could master the technologies and before economies of scale could

33. Liu Zhenya, *Electric Power and Energy in China* (Singapore: Wiley, 2013), and *Ultra-High Voltage AC/DC Grids* (Waltham, MA: Elsevier, 2014).

34. Thomas M. Jorde and David J. Teece, “Innovation and Cooperation,” *Journal of Economic Perspectives* 4, no. 3 (1990): 76.

kick in. The technical risks and financial implications together raised political risks for SGCC's management and especially for its chief executive.

Two particular developments in the early 2000s might have deterred SGCC, especially its chief executive, from taking the risk. One was that several substantial supply disruptions involving a failure of network services occurred in North America, Europe, and Australia in 2003 and 2004. Imbalance of supply and demand at any given point in an interconnected transmission network can have immediate and severe repercussions for the quality and deliverability of electricity in the entire system and cause a major blackout. Such a blackout not only incurs huge financial losses but also has a direct political impact.³⁵ The second risk-deterrent factor was that in the previous decade, a number of high-ranking government officials in China—ministers, governors of provinces, and heads of large central SOEs—had lost their jobs or were demoted because major industrial accidents occurred under their watch. Indeed, upon taking his post in late 2004, SGCC's chief executive was warned by many industry elders, including Li Peng, that his first priority was to ensure safety and reliability of the grids.³⁶ They suggested a conservative approach to deal with power shortages—building more reserve capacity and strengthening centrally controlled management of both power generation and transmission. Instead, SGCC proposed the UHV project. Like all technological innovations, UHV projects were characterized by technical, financial, and operational uncertainty. Why did SGCC's new CEO decide to suggest taking the risk?

At the time, since SGCC was already managing the electricity transmission and distribution system in over 80 percent of the country's territory, taking on the UHV project probably would not add much to the company's realm and would entail high risks. SGCC's new chief executive, Liu Zhenya 刘振亚, played a critical role in this decision making. Despite the long-term interest in UHV technologies of some scientists and engineers working at SGCC, the project probably would not have taken off under Liu's predecessor, who was well liked and well respected but who, when he took over SGCC in 2002,³⁷ wanted foremost to have no problems under his management until he retired two to three years later. In contrast, Liu had a vision, ambition, determination, and the ability to translate the vision into actions, all necessary for any innovation projects. Liu had risen to the top from the shop floor, and as an industry insider he knew the industry well. He was ambitious not only for himself but, more importantly, for SGCC—that is,

35. IEA, *Learning from the Blackouts* (Paris: OECD, 2005), 28.

36. Li Peng 李鹏, 电力要先行, 下卷, 背景: 中国电力出版社 [Li Peng's diary: Electricity as priority] (Beijing: China Electric Power Press, 2005), 1397.

37. In September 2002, on the eve of the unbundling, the head of SPCC, Gao Yan, suddenly vanished. His disappearance led to a series of investigations by the general auditing department of the State Council and by the CCP Central Discipline Commission in 2003–4. The deputy of SPCC, Zhao Xizheng, who also served as the vice minister of the Ministry of Electric Power, was initially appointed as the acting chief of SPCC and then as the chief executive of SGCC in 2003.

for SGCC to develop its status as one of the largest corporations in China, leading the world's grid industry and setting international standards. UHV projects, if successful, would allow SGCC to become a global competitor.

The decision to take on UHV projects seems to contradict the common argument that as chief executives of central SOEs are appointed by the Organization Department of the Chinese Communist Party, they only do the bidding of the Party.³⁸ In practice, however, central SOEs are expected to make autonomous decisions in terms of corporate strategies and to be responsible for their financial performances, while following the "instructions" of the Party-state, which can seldom be specific. Successful chief executives bring to the position personal ambitions, which include making their SOEs successful in China and in the world. When these chief executives have a vision and a plan, and are determined to make the plan a reality, they are in the position to grab and maximize the opportunities provided to them and use whatever power they are vested with to do so.³⁹ One chief executive of a central SOE summarizes this succinctly: "I listen to what the Party says, watch what my counterparts in Europe and North America do, and do what I think is best for my corporation."⁴⁰ SGCC's chief executive belonged to this group of chief executives, believing that to build SGCC into a more profitable and global competitor, it would have to innovate and expand, and thus he was willing to offer a risky alternative solution to power shortages.

Still, individual ambition relies on institutional capacity to translate a vision into reality. SGCC had both the expertise and financial capital to push this set of ideas forward. Immediately after getting the initial nod from NDRC, the chief executive of SGCC called a management meeting on December 27, 2004, to organize UHV projects. In less than two months, a plan was put in place; serious investment was dedicated to UHV research and development; a special office was established in charge of research on the project and a large group of experts was assembled, including 30 academy members and over 3,000 experts from 11 institutions, to conduct research and feasibility studies of both UHV AC and UHV DC lines. Teams of experts were subsequently dispatched to Japan, Germany, and the United States to learn from their experience and technologies. The experts worked closely with Siemens and ABB, the world's top companies in the field, in developing necessary equipment for UHV projects. By June 2005, when

38. Brødsgaard, "Politics and Business Group Formation in China"; Pearson, "Variety Within and Without," 25–43; Burns, "China's Administrative Reforms"; Hon S. Chan, "Politics over Markets," *Public Administration and Development* 29 (2009): 43–54; Kjeld Erik Brødsgaard, "Cadre and Personnel Management," *China: An International Journal* 10, no. 2 (2012): 69–83.

39. Erica Downs, *Inside China, Inc.: China Development Bank's Cross-Border Energy Deals*, John L. Thornton China Center Monograph Series, no. 3 (Washington, DC: Brookings Institution, 2011).

40. CNTV documentaries: 大国重器 六集 [The pillars of a great power], six episodes, November 6–11, 2013; 国企备忘录 六集, [Memoranda of central SOEs], six episodes, December 2012.

NDRC organised a conference to discuss the feasibility of the UHV project, SGCC was able to present a well-researched report by experts of over 3,000 pages covering all foreseeable technical issues. Its critics were invited to attend the conference and submit reports. Those in opposition were well-known experts in the transmission industry; many of them were academy members; and a few had held high ranking positions in government. It was a close contest.⁴¹

While technical work on the UHV project was under way, the SGCC's management promised the government that (a) it would itself finance the first experimental UHV project, and (b) at least 80 percent of the equipment for the project would come from domestic sources. Meanwhile, it organized a range of activities to seek support from policy makers, industry elders (e.g., former ministers and vice ministers), and experts. The management later noted that it “actively reported UHV planning to the State Council and related government authorities.”⁴² The first key official to back the UHV project was the vice premier in charge of energy policy, Zeng Peiyuan 曾培炎, who had been briefed at every step. Zeng supported the project in part because he himself believed “moving from slogan to action was exhilarating—especially after years of dreaming about it!”⁴³ A number of former ministers were included in discussions and became strong supporters. In June 2005, when the Chinese president, Hu Jintao, visited Russia and Kazakhstan, SGCC tagged along to study their UHV projects, including the first UHV AC project, which at the time was operating at 500kV rather than the 1200kV voltage for which it had been designed. SGCC meanwhile organized international conferences, inviting experts from around the world and then using the views of some of these experts to justify its UHV project. In so doing, SGCC behaved in a similar way as other groups of policy advocates, bureaucracies, media, and NGOs.⁴⁴ It left the consideration of its UHV projects not to accident, but to its proactive and persistent push in multiple ways and in many forums.

This process of “selling” ideas to relevant policy makers paid off. NDRC, SASAC, the Administration of Environmental Protection, and the Ministry of Land and Resources all endorsed the project. In December 2005, UHV technologies were included in the priority list of the national innovation strategy—the Mid- and Long-Term Plan for Science and Technology Development (2006–2020). In February 2006, the State Council included UHV projects in the national plan for revitalizing machinery and equipment manufacturing industries. With political support, SGCC was able to start construction of the first 1000kV AC in August 2006 and the first ± 800 kV DC in December 2008.

41. Xu Yi-chong, *Sinews of Power*, chap. 6.

42. SGCC, *Corporate Responsibility Report, 2005* (Beijing: SGCC, 2005), 17.

43. Robert Lawrence Kuhn, *How China's Leaders Think*, 2nd ed. (Singapore: Wiley, 2011), 154.

44. Mertha, “Fragmented Authoritarianism 2.0,” 997; Susan L. Shirk, ed., *Changing Media, Changing China* (New York: Oxford University Press, 2011).

KEEPING UHV PROJECTS ALIVE

SGCC's need for the support of the nation's top decision makers did not end with NDRC's approval of the first pilot project, not least because SGCC wanted more UHV projects across the country to mature the technologies and bring down the cost. More importantly, in any policy domain there are many players who are ready to change the course of action and put forward their own preferred policies. The public's and the elite's understanding of policy solutions may shift, sometimes quite quickly, because of either dramatic events or more subtle influences.⁴⁵ In this sense, a policy is not only a product but a process within which policy advocates constantly redefine challenges, reformulate solutions, and adjust their objectives due to changing circumstances.

SGCC continued to face strong opposition from some industry insiders and certain quarters of the general public even after its first two experimental UHV projects were completed in 2008 and 2010. Some opposed the projects on economic grounds, insisting that UHV transmission would be too costly and would lead either to power tariff hikes for end users or heavy government subsidies.⁴⁶ Some opposed them on technical grounds, arguing UHV AC projects, especially the synchronized UHV AC-DC systems connecting several regions, would threaten the stability and reliability of the entire system.⁴⁷ At the end of 2010, it was reported, 23 experts in the electricity industry, including an official from the State Electricity Regulatory Commission and a couple of eminent professors at top universities in China, wrote a letter to Premier Wen Jiabao, appealing to the State Council to halt the UHV projects and to exclude them from the 12th Five-Year Plan (2011–15). The letter reportedly reached the desk of the Premier, who then sent it to the National Energy Administration, which in turn forwarded it to SGCC. According to its opponents, SGCC refused to hear their voices and even blocked some of them from publishing their findings about the UHV projects in relevant journals. According to an Academy member who chaired one of the key meetings on UHV projects, “The opposition always complained that their voices were blocked and could not reach the very top, the State Council. In fact, from the very early days of

45. Frank R. Baumgartner and Bryan D. Jones, “Agenda Dynamics and Policy Subsystems,” *Journal of Politics* 53, no. 4 (1991): 1046. For example, nuclear power was in a rapid revival in the first decade of the twenty-first century. Even Greenpeace started endorsing nuclear power as a way to deal with climate change. The Fukushima nuclear disaster in 2011 changed the minds of politicians and the public in many countries.

46. Zhu Yue 朱玥, 交流特高压借霍闻关 电力系统老专家仍在反对 [UHV transmission grids key to dealing with air pollution: Some old experts continue their opposition], 《财经》杂志 [Caijing magazine], June 3, 2014.

47. For the merits of these technologies, see Harold N. Scherer Jr. and Gregory S. Vassell, “Transmission of Electric Power at Ultra-High Voltages,” *Proceedings of the IEEE* 73, no. 8 (1985): 1252–78; Raymond Lings, “Overview of Transmission Lines above 700kv,” *Inaugural IEEE PES 2005 Conference and Exposition in Africa* (Durban, South Africa, July 11–15, 2005), 33–43; Daochun Huang, Yinbiao Shu, Jiangjun Ruan, and Yi Hu, “Ultra High Voltage Transmission in China: Developments, Current Status and Future Prospects,” *Proceedings of the IEEE* 97, no. 3 (2009): 555–83; MIT Energy Initiative, *The Future of the Electric Grid* (Cambridge, MA: MIT, 2009).

the whole exercise, their ideas and suggestions were taken quite seriously by the top leaders, and this frustrated the management of SGCC and many of the supporters of UHV projects.⁴⁸ While technical debates embroiled the epistemic community,⁴⁹ the political debate over the SGCC's UHV projects drew public attention. Political opponents against UHV projects argued that SGCC was using these cross-region projects to strengthen its position as a monopoly and to centralize its control over the industry, and some local governments and local firms saw the projects as encroaching on their interests. Physical conflicts even erupted in several places over these projects.⁵⁰

SGCC was not the only target in this debate. SASAC was criticized in public for protecting central SOEs, including SGCC, and for discriminating against private companies, embodied in the saying “The state advances, the private sector retreats” (国进民退). The media openly questioned the “loyalty” of the first minister of SASAC, as he had supported central SOEs to become large, strong, and even monopolies in their own fields. Upon retiring, the minister said, “I do not quite understand why I was criticized when central SOEs were loss-making and I am criticized again when they are successful. These central SOEs do not belong to SASAC or the Party. They're the assets of the people in this country.”⁵¹

Despite the antagonistic forces, SGCC management succeeded in winning continuing political support. The proposed UHV projects were initially designed to deal with disruptive power shortages and energy security issues, but these objectives had been rapidly supplemented and superseded by an entirely different narrative: interconnected UHV projects would be needed to combat air pollution, which was reaching a crisis level in China. It was now argued that UHV transmission would be needed to absorb a rapid expansion of renewable generation capacities and to spur technology innovation in the electricity and electric equipment manufacturing industries so that China could take the lead in global transition to low-carbon, low-pollution electricity production and consumption.

In 2009, SGCC revealed a “three-stage strategy” to construct “a strong and smart grid” with “subordinate grids coordinated at all levels.”⁵² This was neces-

48. Interview in Beijing, July 26, 2014.

49. For the concept of epistemic communities, see Peter M. Haas, ed., “Epistemic Communities and International Policy Coordination,” special issue of *International Organization* 46, no. 1 (1992).

50. Feng Jie 冯洁, 电网决战黄土坡: 地电, 国网, 龙蛇争霸, 寸土不让, 南方周末 [Battlefield in Shaanxi between SGCC and local power company], *Nanfang Weekend*, May 17, 2012; 国家电网与陕西地方电力被曝因抢地发生武斗 [Violence erupted between SGCC and Shaanxi local power company], 中国经营报(北京) [China business (Beijing)], May 4, 2012; 刘秀丽, 武斗半月后国家电网反应平平, 陕西地电失去联系, 投资者报 [Non-response from SGCC after the violence], *Investor China*, May 13, 2012; Zhang Na 张娜, 争议国网削藩: 基层公司抵触心理强 [Debates on breaking up the state grid: Resistance from the bottom], 《能源》[Energy], April 10, 2012.

51. 国资新局: 告别李荣融 [Goodbye, Li Rongrong], 中国企业家 [China CEO], September 21, 2010; Lu Gei 鲁菲, 李荣融与央企七年 [Li Rongrong's seven years with central SOEs], 新华网 [Xinhua net], September 2, 2010.

52. SGCC, “White Paper on Green Development” (Beijing: SGCC, 2010).

sary, SGCC explained, because of the unbalanced geographical allocation of resources and load centers: over 80 percent of coal resources are in the western and northwestern regions; over 80 percent of hydro resources are in the western regions; and a rapid expansion of installed renewable generation capacities, wind in particular, is located in the northern and western regions, far away from load centers; whereas 75 percent of the energy demands are concentrated in eastern and central China. Long-distance and large-capacity power transmission networks would allow outsourcing power generation to more remote regions where population density was relatively low and resources were abundant. They would also enable the utilization of rapidly growing renewable generation capacities. Climate change and air pollution thus became the new narratives for UHV projects.

SGCC also justified UHV projects by adding an international dimension—its intention to compete with world powers, especially the United States and Germany, in innovation and industries vital to the transition to low-carbon energy.⁵³ Immediately after the global financial crisis, both Germany and the United States talked about “reindustrialization,” “reviving the real economy,” and revitalizing their manufacturing industries. In 2010, at the National Press Club, the then US Secretary of Energy, Steven Chu, told the audience that “China has installed the highest voltage and capacity, lowest loss HVDC (800kV) and HVAC (1000kV) lines, and plans an integrated HVDC/HVAC backbone,” and he urged the American government to “play a key role in accelerating energy innovation” to avoid the risk of losing American leadership in science and technology.⁵⁴ The US Department of Energy listed high voltage transmission as one of the crucial technologies where the United States must innovate in order to take the lead in the transition to low-carbon energy. In June 2011, the Obama administration released “A Policy Framework for the 21st Century Grid,” not only to achieve cost-effective secure and reliable electricity supplies, but also to leverage grid innovation for global leadership in energy transition.⁵⁵ In Europe, a super smart grid plan takes the distributed power supply and large-scale use of renewable energy as the main target, while improving energy efficiency.⁵⁶ In addition to a 2011 plan to accelerate grid expansion to meet its commitment that about 80 percent of electricity would come from renewable sources by 2050, the German government also increased funding in research and development in renewable energy “to further

53. Ibid.; Long Zhihui 龙智慧, 特高压电网建设或全面启动 [UHV project about to start], 中国能源报 [China energy news], January 18, 2010, 3.

54. Steven Chu, “Is the Energy Race Our New ‘Sputnik’ Movement?” (National Press Club, Washington, DC, November 29, 2010).

55. Executive Office of the President, “A Policy Framework for the 21st Century Grid: Enabling Our Security Energy Future” (Washington, DC, June 2011).

56. European Commission, “Smart Grid Projects in Europe: Lessons Learned and Current Development” (Luxembourg: European Union, 2013).

strengthen German companies' leading position on technology markets."⁵⁷ During these same years, the Chinese government adopted a development policy to prepare for "the structural transformation of the economy."⁵⁸ In this global competition, many of the new technologies will be game changers for twenty-first-century energy and national economies. SGCC had no intention to be a follower.

In fact, the first two UHV projects have given SGCC an edge in its globalization project. When it started, there was no UHV network in commercial operation anywhere in the world, nor was there any relevant equipment manufacturing capacity. In the process, SGCC helped China's electric equipment manufacturers gain the knowledge and expertise that had been previously controlled by only a handful of multinational corporations, such as Germany's Siemens, Swiss/Swedish ABB, and GE in America.⁵⁹ Constructing more and better UHV interconnections was no longer only a domestic issue; it enabled SGCC to realize its international ambition. SGCC decided to invest in Brazil precisely because of Brazil's size and its unbalanced geographic locations of resources and load centers. Doing so allowed SGCC to build more interconnected UHV systems and offered a platform for the Chinese electric equipment manufacturers to take their technologies and capacities to an overseas market.⁶⁰ This international narrative gained immediate support from the government, which was encouraging Chinese firms to go global and to upgrade in terms of technology and innovation as part of the national strategy of rebalancing and restructuring the economy, from high-investment, export-dependent, energy-intensive and low-skilled development to high-quality growth.

The UHV projects became more than the pet projects of SGCC. They were included in the national strategies to combat air pollution, encourage indigenous innovation, build high-end manufacturing industries, and expand external markets. The favorable environment allowed SGCC to unveil a daring ambition—"replacing coal with electricity, replacing oil with electricity, and using electricity from afar" (以电代煤, 以电代油, 电从远方来). This could be accomplished by its UHV projects drawing renewable energy from remote sites. In 2015, SGCC, backed by the Chinese government, took an audacious initiative to the United Nations—to invest in and construct "a global energy interconnection (GEI) based on a 'Smart Grid + UHV Grid + Clean Energy.'" This was proposed to meet global demand for clean and green electricity, to implement the UN's "Sustainable Energy

57. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, "The Federal Government's Energy Concept of 2010 and the Transformation of Energy System of 2011" (Berlin, 2011), 26.

58. Barry Naughton, "China's Economic Policy Today," *Eurasian Geography and Economics* 52, no. 3 (2011): 313.

59. Damien Ma, "Rebalancing China's Energy Strategy" (Paulson Paper on Energy and Environment, Paulson Institute, January 6, 2015).

60. Xu Yi-chong, *Sinews of Power*.

for All” and climate change initiatives.⁶¹ The proposed GEI fit the objective to expand global markets for Chinese industries, as part of the Chinese government’s “One Belt, One Road” strategy.⁶²

CONCLUSION

A decade of development of UHV projects from ideas to pilot projects and rolling it out nationally and internationally illustrates how a central SOE could push an initiative forward step by step as a policy advocate. In this process, SGCC also developed into the world’s largest utility, and the second largest corporation after Walmart in the Global Fortune 500 for 2016. Its transmission networks absorb the world’s largest amount of both renewable and conventional electricity. Its UHV transmission lines, based largely on its own design and on Chinese-made equipment, span longer distances, operate at higher voltage, and achieve lower power loss than any competitor has achieved. These achievements provide China with an infrastructure framework that has long-term lock-in effects on future development. In so doing, SGCC has built a brand globally and helped several Chinese electric equipment manufacturers transform from import dependence to the new status of globally competitive exporters.

All these developments contradict the common image of centrally directed state enterprises as sluggish, debt-ridden, inefficient behemoths that act as a drag on China’s economy. They also challenge the common assumption that central SOEs are passive receivers of “orders” from the Party-state. As one of China’s elite state enterprises, SGCC is administered and supervised by the central government. Yet none of the specific strategies that vaulted this company into global leadership in UHV transmission were handed down by leaders of the Chinese Communist Party or the government but by SGCC’s entrepreneurial leaders.

Two points are important: first, as in all countries, governments do not have ready answers to the challenges they are facing and therefore policy making entails knowing the nature of challenges and puzzling over the key issues that the country as a whole needs to tackle, and alternative ways of managing these problems and challenges. There is no right or wrong answer to each of these questions. In this process of collective puzzling, those who can effectively present an-

61. For the initiative, see Liu Zhenya, *Global Energy Interconnection* (London: Academic Press, 2015). GEI was the brainchild of Liu Zhenya, former chief executive of SGCC. After retiring in 2016, he continued pushing for the initiative and created a new international nonprofit, nongovernmental organization, Global Energy Interconnection Development and Cooperation Organization (GEIDCO). The organization has the support of some UN agencies, as well as the IEA and the International Renewable Energy Agency. Liu is its first president and Steven Chu, former US energy secretary, is its vice president.

62. For the details of the “One Belt, One Road” project, see The Economist, Intelligence Unit, *Prospects and Challenges on China’s “One Belt, One Road”* (2015), https://www.eiu.com/public/topical_report.aspx?campaignid=OneBeltOneRoad.

swers to vital questions are policy entrepreneurs. They have the vision (ambition) and ideas, know how to seize the opportunity, are able to craft problems and solutions, have the institutional capacity to translate visions into actions, and can convince policy makers to accept their agenda, often in the name of the public.

Second, firms, private or state-owned, are subject to government policies in all countries. Policies shape but often do not determine the actions of firms. They provide incentive structures within which firms operate. The success or failure of corporate entities, including China's elite central SOEs, depends crucially on the vision, drive, and entrepreneurial capacity (or their absence) of their own leaders.

SGCC succeeded in placing a highly risky and controversial project into the government's policy agenda at several successive stages—first in technology innovation, then in energy transition, and then in global expansion. It was not because SGCC received an order from the Party-state, nor because of personal connections to the top decision makers. SGCC's initiative, commitment, capacity, and active policy entrepreneurship made it possible. SGCC's scale and market power aroused envy and resentment on the part of local governments, local distribution companies, and some economic analysts. Calls for the break-up of SGCC never ceased. Fending off the critics was achieved by concrete successes, as well as constant adaptation and revisions of corporate strategies.

SGCC is only one example of a central SOE acting as a policy advocate in shaping the government agenda. This is an important part of the pluralization of decision making in China. More studies need to be done on when and why some central SOEs are willing and able to shape the agenda while others are not.