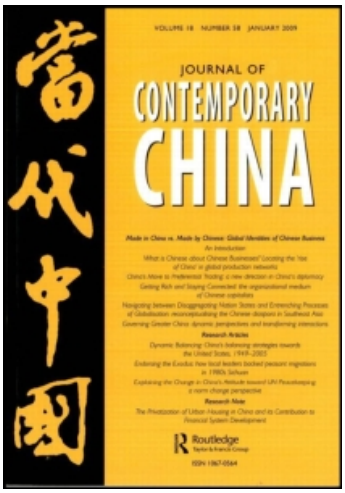

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Shaping China's Energy Policy: actors and processes

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This article develops an analytical framework for examining China's energy policy-making processes, and uses it to explain the recent shifts in the country's energy priorities. The authors analyze the decisive factors in China's energy sector reforms by looking at the different stages from agenda setting, through policy choices, to decision making and implementation. The article attempts to identify the actors behind, the drivers for, and the constraints to, the progress of energy sector reforms in China since 1993 and to follow the evolution of these drivers and constraints. This will allow a better understanding of the possible future trends of energy sector reform, the institutional limits to policy change and the constraints to implementation.

I. Introduction

China's energy policy has undergone important changes since Hu Jintao and Wen Jiabao came to power in 2002–2003. The changes can be seen in the shift in priorities as stated in the 11th Five-Year Plan (FYP) but also in a change in methods and mechanisms. The new leadership is trying to reassert control over a complex and diversified energy sector using more administrative means and tighter state control over the industry. At the same time, the rhetoric continues for increased marketization of the energy sector. Thus, in order to assess the future direction of energy policy and of energy sector reforms in China, it is necessary to develop a better understanding of the processes in a more comprehensive way: from agenda setting, through policy choices, to decision making and implementation.

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This paper examines energy policy processes in China by identifying the actors behind, the drivers for, the constraints to and the progress of energy sector reforms in China since 1993, with a special focus on the policy shift since 2003. This will allow a better understanding of the possible future trends of sector reform and of the constraints to implementation.

By looking at the factors that induce a shift in priorities and those that constrain change in China's energy policy, this paper shall address the following questions: can China effectively change its energy consumption pattern in favor of a more efficient path? Which factors have been conducive to such a change—as seems to have occurred under the 11th Five-Year Plan? What are the constraints to the full implementation of this new policy? What does this imply for future reforms of China's energy sector?

Section II will begin by presenting the actors and factors shaping agenda setting and policy making in China. Drawing on this, an examination of energy policy developments in China follows, in three sections: a period of adequate energy supplies and progressive liberalization of the energy sector from 1993 to 2001; a period of changing priorities from 2001 to 2003; and a phase characterized by a new energy policy focusing on energy conservation and efficiency after 2003 as well as a new institutional framework (Sections III, IV and V, respectively). Section VI will then address the different policy choices that arise and the key questions that will allow the observer to assess down which path China seems likely to go. This last section will also examine the implementation challenges.

II. The framework for energy policy making in China

When assessing the possibilities of a policy change in China's energy sector, the difficulty to induce change due to the limitations imposed by the institutional framework must be taken into account. China's heavy bureaucratic tradition and the consensual form of decision making render policy making a lengthy process that, in order to gain the support of all the related ministries, is translated into watered down regulations that are often outdated by the time of their final approval. Furthermore, there are a growing number of actors involved in the Chinese energy sector, each introducing new ideas and initiatives into the existing system that then shape the decision making process and policy implementation.

Three different levels must therefore be identified: firstly, the phase of problem representation and agenda setting. While problem representation is determined by the cognitive approaches of the decision makers, the multiplication of voices and influences in the agenda setting phase has arguably brought about a slight shift in the Chinese institutional framework and may have the power to induce even greater change in the future. While under Mao Zedong and Deng Xiaoping, very few and selected actors or institutions could provide input into the agenda setting process, ever since the Third Generation of leaders came to power, the scope and importance of information providers and interest groups affecting problem representation has grown considerably. For the Fourth Generation, the creation of study groups and seeking informed advice has become something of a trade mark.[1]

1. See Ma Changbo, 'A survey of China's official research centres', *Nanfang Zhoumo*, (11 October 2007).

The second phase is that of translating the perceived problems into priorities according to the proposed solutions, resulting in policy measures or regulations. Here, the importance of interest groups such as ministries, corporate actors (domestic and foreign) and external pressures, comes into play. Their importance is heightened in the Chinese system where the leadership is increasingly reliant on external, highly specialized experts and on the solutions they propose. Finally, policies encounter the objective and institutional constraints of the system[2] during the implementation process, hindering the translation of the initiative into reality.

The aim of this section is to identify the context within which energy policy in China is formulated, the different factors that shape the agenda setting procedures and the determinants the come into play when policy choices are made. To do this we examine in turn the key national policies and drivers, the objective constraints on energy policy, the actors and the policy process and some of the influences exerted on them, before looking at the energy policy choices.

National policies and key drivers

In order to identify the different components that make up China's energy policy, it is important to look to the roots of policy making and agenda setting, not only to the processes but also to the underlying priorities and visions.

The most fundamental factor is therefore political and ideological vision. Whereas the Third Generation can be seen as more liberal in economic terms, Hu Jintao and Wen Jiabao are distinctly more 'social' in their vision for the country's economic and social development and were initially slated as political reformists. They have put greater emphasis on social equity and a more balanced growth pattern, as manifested by slogans such as 'the Moderately Well-off Society', the 'Harmonious Society' and 'Scientific Development'.[3]

In China's gradual and cautious transition from a planned to a market-based economy, reforms have undergone waves of liberalization followed by subsequent pauses due to both internal political, economic and social events and international changes. These stop and go cycles have also led to administrative reorganization, streamlining of administrative bodies and ministries and the creation of new ones. The whole economic management system has therefore been in constant transition.

In order to achieve its goals, the Hu–Wen administration has for the time being decided to hold back on giving freer rein to market mechanisms and is using tighter administrative controls to monitor the economy in general[4] and the energy sector in particular, due, arguably, not only to a rational decision to do so but also to the assessment that the constraints inherent in the political system and the interactions

2. See, for example: Douglass North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990); Avner Grief, *Institutions and the Path to the Modern Economy. Lessons from Medieval Trade* (New York: Cambridge University Press, 2006); Masahiko Aoki, *Towards a Comparative Institutional Analysis* (Cambridge, MA: MIT Press, 2001).

3. For more on these slogans see Joseph Fewsmith, 'Promoting the scientific development concept', *China Leadership Monitor* no. 11, (Summer 2004).

4. Barry Naughton, 'Hunkering down: the Wen Jiabao administration and macroeconomic recontrol', *China Leadership Monitor* no. 11, (Summer 2004); and Tony Saich, 'China in 2005: Hu's in charge', *Asian Survey* 46(1), (January/February 2006), p. 45.

within it require an administrative form of management, rather than one that relies solely on market mechanisms.

This overall political vision invariably impacts energy policy, but due to its complexity, the energy policy relies and affects not only economic policy but also social, foreign, industrial and environmental policies. It is, of course, impossible to determine cause and consequence or to say which policy choice preceded the other but all these factors come into play in agenda setting and the initial formulation of priorities.[5]

Thus, the 'Fourth Generation's' ideological view, development policy and priorities have led them to adopt slogans such as the abovementioned 'Scientific Development', the new 'Cyclical Economy' and a 'Conservation-minded Society' which have direct bearing on their energy policy approaches and choices.

Under the framework of these general development choices and policy priorities, decision makers then have to balance the four main objectives of energy policy:[6]

- supply security: ensuring adequate amounts of primary energy to meet demand, entailing both import security and fuel mix choices;
- economic efficiency: productive efficiency (producing a given output at the lowest possible cost) and allocative efficiency (meaning that goods are allocated according to market signals);
- social equity: equitable allocation to both the rich and poor (this objective usually stands in conflict with allocative efficiency); and
- environmental protection: continued production and consumption of energy so as to constrain damage to the national, regional and global environment.

The translation of these priorities to actual policy measures is then shaped, other than by the overall political vision espoused by the government, by a number of inputs, factors and constraints, both domestic and external.

Objective constraints

First, some objective factors have direct bearing on energy policy choices. The country's natural resource endowment is one such factor, and indeed, China's huge coal reserves dictate the predominance of coal in its energy mix. But beyond these objective factors there are policy choices to be made: the conditions of energy production, transportation between production bases and consumption areas and the infrastructure required for effective distribution of energy sources. In a market regulated environment, these should determine the costs of energy resources as well as specific choices for the energy mix, when market mechanisms are disregarded—a policy choice in itself—the energy mix must also be determined, according to an effective balance of priorities.

On the demand side, energy choices are also determined by demand structures, consumer habits and social behavior. The latter can be changed through taxation or effective propaganda campaigns—yet another policy choice.

5. See Philip Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China* (London: Kluwer Law, 2004), p. 47.

6. For further details on the main policy objectives and a slightly different classification, see *Ibid.*, p. 45.

Information and human resources are, however, two factors that impede the ability to coherently make and implement policies. The lack of reliable information and statistical data in China, the choice of information passed on to higher levels and the highly personalized modes of information transmission influence greatly agenda setting and timely intervention in policy implementation. Furthermore, the paucity of suitably qualified and experienced personnel such as engineers, economists, lawyers and managers at both the local and central levels is an important obstacle to the transition of the Chinese energy sector.

The actors and the policy process

Choices regarding how to best exploit the country's natural resource endowment are therefore largely determined by the interactions between the different actors in the policy making process and the policy input they provide. Policy change is commonly driven by actors seeking to maximize their own political or economic interests.[7] One of the Chinese energy sector's main characteristics is the multiplicity of actors and institutions involved in the policy making (and implementation) process and the obscurity that revolves around the modes of interaction amongst them.[8]

China's top leadership determines the general framework of the country's energy policy, according to its overall macroeconomic goals. In the energy sector, leadership structures have been notoriously weak and between 1993 and 2003, policy initiatives were fragmented and dispersed between a number of ministries and bureaucratic entities.[9] Developments in the sector were therefore piecemeal and subject to ministerial interests and bureaucratic rivalry. It was only in March 2003, with the creation of the Energy Bureau under the NDRC, that China's top leaders attempted to centralize control over the sector and create an institutional framework that will enable formulating and implementing a more overarching energy policy.

The Energy Bureau was initially composed of approximately 30 people, a number later upgraded to 57,[10] and was meant to coordinate and regulate the energy industry. In view of the Energy Bureau's lack of authority, Prime Minister Wen Jiabao created a Leading Group on Energy in June 2005. Composed of 13 members, from the NDRC and other key ministries, the Leading Group is to act as the steering committee for the country's energy sector and make recommendations to the State Council. The subordinate ministerial State Energy Office (SEO) provides the administrative support to the Leading Group and makes most of the policy making while the NDRC Energy Bureau still retains its functions on policy implementation. But these leadership groups have been unable, so far, to assert their primacy in the policy making process over the national oil companies (NOCs) and ministries

7. See, for example, North, *Institutions, Institutional Change and Economic Performance*.

8. For an overview of actors and their input, see Erica Downs, 'The Chinese energy security debate', *The China Quarterly* no. 177, (March 2004), pp. 21–41.

9. See, Erica Downs, *The Energy Security Series: China* (Washington, DC: The Brookings Foreign Policy Studies, December 2006); Zha Daojiong, 'China's energy security: domestic and international issues', *Survival* 48(1), (2006), pp. 179–190; Bo Kong, *An Anatomy of China's Energy Insecurity and its Strategies*, Pacfic Northwest Laboratory, Report PNNL-15529, (December 2005); Daniel H. Rosen and Trevor Houser, *China Energy: A Guide for the Perplexed* (Washington, DC: Peterson Institute for International Economics, 2007).

10. Downs, *The Energy Security Series: China*.

(and especially the NDRC). The failure to set up an Energy Ministry in the March 2008 session of the Chinese parliament, the National People's Congress (NPC), as discussed below, is a case in point.

While the institutional changes were initiated by Wen Jiabao and the country's political apex, leaders and decision-makers rely on a number of *think tanks* that provide information, analyses and recommendations. Most notable are the following think tanks: the Development Research Center of the State Council (*guowuyuan fazhan yanjiu zhongxin*) and the NDRC Energy Research Institute (*fagaiwei nengyuan yanjiusuo*). It was these two think tanks that issued the two most authoritative reports on the main priorities for China's energy policy in 2004, at the request of Wen Jiabao.[11]

On more specific topics, research institutes exist within the national oil companies (NOCs), the State Power Economic Research Centre and other State-owned energy companies. Other more academic think tanks and institutes (Qinghua University, China University of Petroleum, the Chinese Academy of Social Sciences, the Chinese Academy of Science, etc.) are also information providers for policy makers. While these groups are not policy makers *per se,* those who are consulted and listened to do shape the visions and priorities of the decision makers. It should also be noted, however, that these think tanks and research institutes are guided and funded by the Chinese authorities, conferring the latter an important role in deciding the priority of research questions.[12] The output of their research does, nevertheless, have considerable impact on the Chinese leadership. Even though the main thrust of research is decided by the leadership, the output produced has become increasingly diverse in recent years.[13] Moreover, research projects funded by foreign think tanks and institutes contribute, albeit to different degrees, to placing issues on the policy agenda.[14]

After the main priorities are sketched out, *government ministries and departments* have their say in the energy policy. Their input, according to the political clout of the ministry and leading ministers, can impact both policy making and implementation.[15] Amongst the ministries involved in energy policy are the following: Ministry of Land and Resources; the State Electricity Regulatory Commission; the Ministry of Commerce (MOFCOM); the Ministry of Water Resources (MWR), responsible for hydro reserve management and other areas relevant to hydroelectric power; the Ministry of Science and Technology (MOST), mainly involved in research and development; the Ministry of Foreign Affairs, increasingly involved in international economic affairs; the Ministry of Railways, responsible for the transport of energy commodities in China; the Ministry of Construction, relevant to urban planning

11. *National Energy Strategy and Policy Report* (Beijing: Development Research Center, 2004); and *Medium and Long Term Energy Conservation Plan* (Beijing: NDRC, 2004).

12. Joseph Y. S. Cheng, 'A Chinese view of China's energy security', *Journal of Contemporary China* 17(55), (May 2008), pp. 297–317.

13. *Ibid*.; and Jonathan Pollack, 'Energy insecurity with Chinese and American characteristics: implications for Sino–American relations', *Journal of Contemporary China* 17(55), (May 2008), pp. 229–245.

14. Author interviews in Chinese and Western research centers, January 2007.

15. The highly personal nature of Chinese politics and the history of economic reforms are such that ministers and key ministry personnel have maintained important interests in their specific industries, depending on the industry and the person in question. They may act on behalf of the industrial interest group.

issues such as energy efficiency; the State Commission of Science, Technology, and Industry for National Defense (COSTIND), which reports directly to the State Council and supervises the development of nuclear power; the State Environmental Protection Administration (SEPA), which was upgraded into a ministry in March 2008, involved in environmental regulation; and the State Asset Supervision and Administration Commission (SASAC) with regards to the restructuring of the large state-owned enterprises (SOEs) in China.

These ministries can alter policy decisions at the drafting stage due to the consensus-building nature of decision making. Policy initiatives are circulated amongst the different stakeholders for approval, allowing them to amend the drafts according to their interests.[16] This procedure means that approval times are often lengthy and that the final policy proposal is a watered down version of the initial drafts. Furthermore, ministries intervene at the implementation stage and have the power to stall or promote projects according to their interests.[17]

Stakeholders and interest groups have, furthermore, become increasingly diversified in recent years. The industrial actors, SOEs as well as private domestic and international actors, are now all part of the system. The influence and impact of foreign actors is not comparable to that of the SOEs on the decision makers. However, all these actors, to a different extent, feed into the policy implementation process, the Chinese SOEs being potentially more closely implicated in the agenda setting process that precedes actual policy making.[18] They have been important promoters of the 'going out' policy and contributed to entrenching a strategic vision of energy security in the mid- and late-1990s,[19] acting as agenda setters. In other instances, as in the debate over China's strategic oil reserves, the NOCs acted as obstacles to implementation.[20]

Social actors and communities[21] also contribute to redefining the limits of implementation: NGOs, Chinese or foreign, play an important role in raising awareness of environmental issues.[22] While it cannot be claimed that the environmental policy stems from these groups' pressure, they, alongside the media and international organizations, have raised awareness of these issues and have

16. For a more detailed account of 'documentary politics' under Deng Xiaoping, see Wu Guoguang, 'Documentary politics: hypotheses, process, and case studies', in Carol Lee Hamrin and Suisheng Zhao, eds, *Decision-making in Deng's China* (London: ME Sharpe, 1995), pp. 24–39. For the most detailed account of the formal decision-making process, see, Kenneth Liberthal and Michel Oksenberg, *Policy Making in China: Leaders, Structures and Process* (New Jersey: Princeton University Press, 1988), pp. 128–134. While decision making has evolved since Deng's times, policy documents still go through an approval process marked by internal bargaining (authors interviews, Beijing, September 2006).

17. Liberthal and Oksenberg, *Policy Making in China*.

18. Ma Xin and Philip Andrews-Speed, 'The overseas activities of China's national oil companies: rationale and outlook', *Minerals and Energy* 21(1), (2006); Gaye Christoffersen, 'The dilemmas of China's energy governance', *The China Eurasia Forum Quarterly*, (October 2005).

19. Downs, *The Energy Security Series: China*.

20. Christian Constantin, 'Understanding China's energy security', *World Political Science Review* 3(3), (2007).

21. The term 'social actors and communities' stands here for the burgeoning civil society and refers to social actors outside of the public or state realm as they may be in China.

22. Gerald Chan, 'China's compliance in global environmental affairs', *Asia Pacific Viewpoint* 45(1), (April 2004); Guobin Yang, 'Environmental NGOs and institutional dynamics in China', *The China Quarterly* no. 181, (2005), pp. 46–66.

managed to exert greater influence in certain policy fields, for example environment, health and social justice[23] as well as to block certain policy initiatives.

Finally, *local governments* play an important role in ensuring the successful translation of policy measures into reality, or in impeding them.

External influences and events

Alongside the domestic constraints, and due to China's constantly deepening ties with the world, external factors can also influence energy policy making or implementation. External influences can be real or perceived, and include variations in the global economy, which has a direct impact on the state of the Chinese economy, on export rates and exported goods; fluctuations in global energy markets which determine, albeit indirectly,[24] the state of Chinese energy markets and ensuing policy measures; international norms and treaties may also exert pressure on China's socio-economic systems. Whilst China can chose not to comply, its desire to be considered a 'responsible stakeholder' provides strong incentive to do so, albeit partially. Finally, instability in producer countries and the balance of powers in East Asia, coupled by the perceived strategies of other actors[25] also contribute to defining China's energy policies.[26]

Lastly, events, domestic and international, can also deeply affect the translation of priorities into specific policies. Domestic incidents related to energy and the environment, whether they are economic, social or political in nature, may influence either the course of implementation of the policy choices or even the political vision for the country's strategy, depending on the scale of the event.

The impact of domestic and international events, as will be shown below in Section IV, is sometimes crucial for legitimizing a change in political vision and in the ensuing priorities.[27] However, in order for the priorities to be effectively translated into measures and then be implemented, a change in vision may not suffice and a real change in methods may be required.[28] Moreover, a new form of institutional interaction may be required in order to implement the change more effectively.

23. Philip Andrews-Speed and Ma Xin, 'Energy production and social marginalisation in China', *Journal of Contemporary China* 17(55), (May 2008), pp. 247–272.

24. Oil prices in China for example are indirectly linked to global oil prices. The consumers in China only feel slightly the sharp rises in oil prices but it is the State or the NOCs that have to bear the burden, leading at times to frictions between the two. See for example the compensation awarded to Sinopec in January 2006 for losses incurred due to this policy.

25. Zhou Dadi, ed., *Research on the Energy Strategy for Building a Moderately Well Off Society* (Beijing: Zhongguo jihua chubanshe, April 2006). Published by the NDRC, the report dedicates a chapter to 'Foreign energy strategy development and lessons learnt' (pp. 18–61).

26. Christoffersen claims that the failure of the Angarsk–Daqing pipeline triggered readjustments in energy governance in China. While this seems to be too limited an explanation, it is one possible trigger for policy change; see Christoffersen, 'The dilemmas of China's energy governance'.

27. Addressed as 'specific events of policy development' by Pollack, 'Energy insecurity with Chinese and American characteristics', or as part of the 'window of opportunity' described by Constantin, 'Understanding China's energy security'.

28. This question is beyond the scope of this paper but merits contemplation in this context: a change in the way the political system works may be required for effective governance of the energy sector. If this is so, two important questions are: what kind of change and what will bring about this change? Can external events partially induce such changes?

Based on the abovementioned factors, actors and constraints, the government proceeds to making its energy policy choices.

Energy policy choices

The government of an energy-importing developing country faces, in simple terms, three choices of energy policy: one which focuses on energy supply, a second which places significant emphasis on energy efficiency and conservation, and a third which emphasizes both energy efficiency and environmental protection. In reality, the government is likely to move from one to the other in succession, and the question is how fast economic, political and social circumstances will allow them to move.

Each of the three policy choices requires the government to make decisions concerning:

- how energy supply is to be secured and how the fuel mix will be determined;
- what measures, if any, will be developed and implemented to promote energy efficiency;
- how the energy sector will be structured and managed, including the nature of the energy companies, the role of the government and the nature of the economic incentives for producing, selling and buying energy; and
- how to reconcile these decisions with policies relating to the macro-economy, to industry, to the environment and to social equity.

In turn, these policy choices will require governments to explicitly or implicitly rank in order of priority the four main objectives of energy policy identified above: security of supply, economic efficiency, social equity and environmental protection.

The emphasis of Policy Choice No. 1 (Energy Supply) is on ensuring that the economy has sufficient energy to sustain growth, and the measures are directed at raising energy supply rather than constraining energy demand. The second priority is likely to be social equity, which would keep prices for energy users at a low level. Despite political rhetoric, little sustained and widespread progress is made in promoting energy efficiency and environmental protection. That is not to say that measures to promote energy efficiency and environmental protection are not formulated; rather their implementation is spasmodic and sporadic, easily suppressed by other policy priorities, and therefore not sustained.

In Policy Choice No. 2 (Energy Supply and Energy Efficiency) the importance of economic efficiency and energy efficiency is raised, though securing energy supply remains the top priority. Administrative and economic instruments are developed to promote energy efficiency and energy conservation, as an integral part of the energy security strategy. Social equity concerns necessarily diminish in relative importance, at least within the energy policy. Energy prices may be raised and financial subsidies to selected energy users may be delivered through means other than energy pricing. Protecting the environment remains low on the priority list, except that improved efficiency will necessarily have a beneficial impact on the environment. This policy choice offers potential for significant improvements in national energy intensity, without jeopardizing security of energy supply.

Policy Choice No. 3 (Energy Efficiency and Environmental Protection) requires the government to make a radical change to the way it views energy. Energy efficiency and environmental protection are the highest priorities for energy policy. New approaches will be needed to all aspects of economic development, including industry, construction and transport. The use of new, clean fuels will be actively promoted. Such policies necessarily incur a high cost in the short and medium term, as well as substantial changes in ways of living and working within the population.

Whilst these three policy choices are clearly simplified ideals, they are useful in demonstrating the composite and diverse nature of the policy frameworks required to make substantial progress, and the magnitude of the challenge facing the Chinese government. They also provide a framework for listing the main policy priorities. In the following sections, after reviewing the developments in China's energy sector and policies since 1993, the paper assesses which factors support the shift from one policy choice to another in order to explain the gradual move from Policy Choice 1 to Policy Choice 2 that we are currently witnessing in China. Finally, the paper will look at the constraints that will ultimately shape the outcome.

III. 1993–2001: energy supply and sector reform

The period 1993–2001 was one of substantial change within China's energy sector, and indeed across much of the government institutions, state industries and the economy. Ministries were abolished, new state companies were created, existing companies were re-structured, government policies were adjusted, the tax system was revamped, pricing systems for some products were changed, and new corporate strategies were developed by the reformed state companies. These changes were driven by the top leadership, and were guided by national economic policy rather than by priorities within the energy sector itself. The year 1993 saw the national leadership re-affirm its commitment to opening up the economy through the declaration in 1992 by the Communist Party that the country should establish a 'socialist market economy'.[29]

The aim of this section is to briefly review the key policies and events in order to set the scene for the examination of more recent policies in the next section and to demonstrate the application of the framework developed in the previous section.

The section starts with a review of the wider policy context, both international and national, before continuing with a summary of the main policy priorities in the energy sector and their implementation. The subsequent evaluation draws on specific policy actions.

Economic policy context

The period under consideration (1993–2001) was marked in China by a phase of rapid economic growth followed by the Asian financial crisis which affected

29. The Fourth Session of the Fourteenth Communist Party Conference approved the notice. For the concept of the 'socialist market economy' see Becky Chiu and Mervyn Lewis, *Reforming China's State-Owned Enterprises and Banks* (Cheltenham: Edward Elgar, 2006), p. 41.

economies and financial markets around the world. Although China succeeded in protecting itself against the worst affects of the crisis, the rate of economic growth in China did decline, averaging 7.9% between 1997 and 2001, compared to 11.6% over the previous six years.[30]

The recognition of the need to re-invigorate the national economy after the slowdown of the late-1980s was marked by Deng Xiaoping's Southern Tour in 1992 and his political triumph over the conservatives. This led the leadership to introduce a radical package of reforms to develop a 'socialist market economy'. As well as being perceived as being of value in themselves, these reforms were part of China's preparation for admission into the WTO.[31]

The reforms had three main targets: government structure and function, state enterprises, and the national financial and fiscal systems. Within the period under consideration (1993–2001) these nationwide reforms were launched in two phases, which broadly followed the installation of new governments in 1993 and 1998, respectively. The earlier phase of reform was directed at government functions and structures and at financial, fiscal and market factors, whilst the second phase involved a radical restructuring and commercialization of SOEs, as well as continuing elements of the earlier phase.

The progressive move away from the planned approach to economic management and towards the introduction of market forces required the creation of new organizational structures within the government. It was also necessary for these agencies to change their roles, responsibilities and behavior in line with the reform of the state-owned enterprises (SOEs). A number of ministries were abolished in 1993 and the State Economic and Trade Commission (SETC) was re-established to oversee the running of the economy. In the energy sector, 1993 was also the year when the Ministry of Energy was abolished and the SETC and SDPC regained coordination and regulatory functions[32] to become the most influential bureaucratic bodies in the energy sector.

Further reforms to government structure were implemented in 1998, giving the SETC yet more responsibilities for the operation of the economy. Its newly appointed President, Sheng Huaren, was formerly the President of Sinopec, increasing the energy sector's grasp on the institutional bureaucracy and increasing its influence. The Ministry of Land and Natural Resources was created, with Zhou Yongkang, the former President of CNPC, as Minister.

The second priority was the radical reform of the SOEs in order to remove them from direct government control, to reduce the financial burden on the government and to render them more commercially orientated.[33] Though the mid-1990s saw measures

30. *China Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005).

31. Nicholas R. Lardy, *China's Unfinished Economic Revolution* (Washington, DC: Brookings Institute Press, 1998); Nicholas R. Lardy, *Integrating China into the World Economy* (Washington, DC: The Brookings Institution Press, 2002).

32. Xu Yichong, *Powering China. Reforming the Electric Power Industry in China* (Aldershot: Ashgate, 2002), pp. 91–93.

33. See, for example: Edward S. Steinfeld, *Forging Reform in China. The Fate of State-Owned Industry* (Cambridge: Cambridge University Press, 1998); Gary H. Jefferson and Inderjit Singh, eds, *Enterprise Reform in China. Ownership, Transition and Performance* (Washington, DC: The World Bank, 1999); Stephen Green and Guy S. Liu, 'China's industrial reform strategy: retreat and retain', in Stephen Green and Guy S. Liu, eds, *Exit the Dragon? Privatization and State Ownership in China* (London: Royal Institute for International Affairs, 2005), pp. 15–41.

to commercialize the SOEs through the introduction of a Corporation Law and the 'Modern Enterprise System' of governance, it was only in 1998 that more radical measures were taken to corporatize and commercialize industrial enterprise organizations. Many SOEs were liberated from the arms of the state through privatization over the next decade; government policy identified a number of pillar industries, such as energy, that were to remain under tight state control and ownership. But even these pillar industries were restructured and forced to take a more commercial approach to their operations. Hundreds of thousands of workers were laid off as a result. Despite these reforms, the newly created energy companies retained significant ties to the administration through their former ministerial functions and became the main information providers.

The commercialization of SOEs and the introduction of market forces required the government to undertake a thorough overhaul of the tax and financial systems, particularly those relating to enterprises. The pre-existing system placed financial obligations on companies which were unpredictable, subject to bargaining and generally perceived to be inequitable. Further, they did not provide transparent incentives for SOE managers to improve enterprise performance. The year 1994 saw a complete overhaul of the national accounting standards and the introduction of a new set of commercial taxes which addressed most of these deficiencies and completely changed the financial context of all enterprises in China.[34] Over this period further reforms were carried out to the pricing of commodities, with the gradual introduction of market mechanisms.

Energy policy: priorities and actions

Between 1992 and 1996 the annual growth of GDP was running at levels between 10% and 14% according to official statistics. Energy demand picked up at the same time, with annual rises averaging about 6%. Although the rate of increase of demand for energy was about half that of GDP, it was still significantly higher than the rate of growth of primary energy production in China which over this period had an average of about 4% per year.[35] The year 1993 saw the change of China's status from being a net oil exporter to being a net oil importer. The government recognized the vital role of energy in underpinning the desired economic growth and thus securing this supply of energy became a key priority for the energy sector, through imports if necessary.[36]

As a result of slower economic growth during the Asian crisis in 1997, the total consumption of commercial energy in China barely rose between 1996 and 2000, and in 2001 was only 3.5% higher than in 1996.[37] Despite this temporary slackening of demand for energy, it had become evident to China's government that the country's requirement for imported oil was set to rise indefinitely.[38] Likewise the policy to

34. C. P. W. Wong, C. Heady and W. T. Woo, *Fiscal Management and Economic Reform in the People's Republic of China* (Hong Kong: Oxford University Press, 1995); Donald J. S. Brean, ed., *Taxation in Modern China* (New York: Routledge, 1998).

35. *China Statistical Yearbook 2005*.

36. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 59–77.

37. *BP Statistical Review of World Energy 2006* (London: British Petroleum, 2006).

38. Jia Wenrui, Xu Qing, Wang Yanling and Yang Xueyan, *The Development Strategy for China's Oil Industry, 1996–2010* (Beijing: Petroleum Industry Press, 1999).

steadily enhance the proportion of natural gas in the domestic energy balance would require substantial imports of gas in the future.[39]

Policy documents from this period[40] and policy actions show quite clearly that, of the order of importance of the four energy policy priorities identified above, security of supply was the most important, followed closely by social equity. Measures to commercialize the energy sector and to improve its economic efficiency were tempered by the desire of the government to maintain control over the energy companies and over energy prices.

With respect to *security of supply* the key priority appears to have been to maintain adequate energy supply to support economic growth, with an emphasis on self-sufficiency and state control—an approach which has been referred to as 'strategic' or 'mercantilist'.[41] The state energy companies were encouraged to expand investment in new domestic oil, coal, electricity and gas production capacity, but little investment was made by foreign companies. This expansion of capacity led to an unavoidable surplus as the economy slowed at the time of the Asian financial crisis. As a result, investment in large-scale power stations was banned between 1999 and 2002, and a nationwide campaign to close the township and village coal mines was implemented between 1998 and 2002 in order to reduce coal production and to protect the interests of the state-owned coal mines.[42]

A particular concern which developed at this time related to security of international oil supplies. This inevitably led to a surge in analyses focused on supply security and policy measures to deal with foreign dependence, especially on the Middle East and Central Asia.[43] This was partially due to the representation of the problem endorsed by the NOCs which helped them gain support and backing in their overseas quest for oil and gas assets.[44] Key elements of the policy response included dialogue with Russia and Kazakhstan to build oil import pipelines, a steady increase in the number of investments in overseas oilfields made by China's NOCs, the increasing role of energy in China's diplomatic strategies and plans to construct emergency oil storage.[45]

The government realized in the 1980s that security of energy supply required a sustained enhancement of end-user energy efficiency. It established a set of

39. D. Girdis, S. Tavoulareas and R. Tomkins, *Liquefied Natural Gas in China. Options for Markets, Institutions, and Finance*, Discussion Paper No. 414 (Washington, DC: World Bank, 2000).

40. For example: State Planning Commission, *'97 Energy Report of China* (Beijing: China Prices Publishing House, 1997); State Development Planning Commission, *Energy Development Plan of the Tenth Five-Year Scheme of National Social and Economic Development* (Beijing: State Development Planning Commission, 2001).

41. Philip Andrews-Speed, Xuanli Liao and Roland Dannreuther, *The Strategic Implications of China's Energy Needs*, Adelphi Paper No. 346 (London: International Institute for Strategic Studies, 2002), 115 pp. Kenneth Lieberthal and Mikkal Herberg, 'China's search for energy security: implications for US policy', *NBR Analysis* 17(1), (2006), pp. 5–42.

42. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 79–101; Yichong Xu, *Powering China. Reforming the Electric Power Industry in China* (Aldershot, UK: Ashgate, 2002).

43. Wang Weimin, 'Brief analysis of energy wars at the turn of the century', *Contemporary International Relations* no. 3, (1998), pp. 19–23; Wu Lei, 'Middle Eastern oil and the future balance of China's oil supply and demand', *World Economics and Politics* 3, (1997), pp. 30–33; Wu Qiang and Xian Xuemei, 'China's energy cooperation with the Middle East', *Strategy and Management* 33(2), (September 1999), pp. 49–52.

44. Downs, *The Energy Security Series: China*, pp. 44–47.

45. Erica Downs, *China's Quest for Energy Security*, RAND Report MR-1244-AF (Santa Monica, CA: RAND, 2000).

institutions and incentives for industrial and commercial users to improve their efficiency of energy consumption. These measures combined with the rapid change of structure of the economy led to a sustained reduction of energy intensity during the 1980s and 1990s.[46] However the oversupply of energy in the late-1990s led to a relaxation of these efforts.[47] Despite the Energy Conservation Law promulgated in 1997 and continued policy statements emphasizing the importance of demand-side measures,[48] the level of investment and the capacity of the institutions required to enhance energy efficiency were rapidly diminishing.[49]

As in most developing and transition countries, energy prices for end-users were controlled by government and kept at relatively low levels, in order to address national objectives relating to *social equity*. The period 1993–2001 saw few major initiatives to change this approach. End-user prices for oil products and electricity remained low, and electricity prices for households and SOEs were cross-subsidized by other sectors. Rural electrification continued apace, and illegal levies on rural electricity consumers were banned. Only in the coal sector were prices set by market mechanisms.[50]

The government took a number of steps to enhance the *economic efficiency* of the energy sector, but these were always carefully framed in order to maintain government control. The nationwide restructuring of government and SOEs affected the energy sector profoundly, especially in the late-1990s. Within the government the Ministries of Power and of Coal were abolished, and the revamped State Economic and Trade Commission (SETC) was given responsibility for the operational oversight of the energy industries and for formulating and implementing reforms in these industries' management. The State Development and Planning Commission (later becoming the NDRC) retained authority for planning, for investment approval and for pricing.[51]

All the energy industries were restructured. The assets of the Ministry for Electrical Power were transferred to the new State Power Corporation; assets of the Ministry of Coal Industries were passed to the provinces; new coal and power companies were created, mainly with local roots; the major national oil companies (NOCs) were restructured; and a growing number of energy companies were listed on domestic and foreign stock markets, notably the three NOCs. Over the same period the respective roles and responsibilities of government and state energy companies were adjusted, and incentive and control mechanisms were developed and imposed on the state-owned energy companies in order to support progressive commercialization.[52]

46. Jonathan E. Sinton, Mark D. Levine and Wang Qingyi, 'Energy efficiency in China: accomplishments and challenges', *Energy Policy* 26(11), (1998), pp. 813–829.
47. Zhou Dadi, *Research on the Energy Strategy for Building a Moderately Well Off Society*, pp. 4–5.
48. State Planning Commission, *'95 Energy Report of China* (Beijing: State Planning Commission, 1995); State Planning Commission, *'97 Energy Report of China*.
49. Lin Jiang, 'Energy conservation investments: a comparison between China and the US', *Energy Policy* 35(2), (February 2007), pp. 916–924.
50. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 68–72, 259–280; E. Thomson, *The Chinese Coal Industry: An Economic History* (London: RoutledgeCurzon, 2003); Yichong Xu, *Powering China*; Haijiang Henry Wang, *China's Oil Industry and Market* (New York: Elsevier, 1999).
51. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 169–183.
52. Philip Andrews-Speed and Cao Zhenning, 'Prospects for privatisation in China's energy sector', in Green and Liu, eds, *Exit the Dragon?*, pp. 196–213.

To complement this restructuring, the government also continued the process of gradually introducing market mechanisms into the energy sector, though principally for producers of energy rather than for consumers. This was most complete in the coal sector, where prices for producers and consumers became progressively set through the domestic market. The dual pricing system established in the 1980s for oil was gradually modified so that the average price realized by the energy producers more closely reflected the market. In 1998 the government introduced a single pricing framework and prices of all crude oil and of all oil products were explicitly tied to international prices, though still dependent on systems controlled by the SDPC. Producer prices for natural gas and for electricity were allowed to rise, though end-user prices for electricity were tightly constrained on account of the social equity concerns discussed above.[53] Serious discussions were launched on introducing competition in electrical power generation and draft measures were drawn up, though implementation was delayed by concerns raised by a number of system failures in North America and Europe in the years 2000 and 2001.[54] Finally, a large proportion of those township and village coal mines that remained in operation were privatized, along with many other township and village enterprises.[55]

Environmental protection would appear to have been last on the list of government priorities within the energy sector. Coal continued to form the basis of domestic energy production and measures designed to clean up the processes of coal production and use were not implemented systematically. In consequence atmospheric pollution from the combustion of coal continued to rise dramatically.[56] Policies to enhance the proportion of natural gas and of renewable energies within China's energy supply did indeed reflect a realization of the need to take measures to constrain the environmental damage caused by coal use, but implementation was necessarily slow on account of the relatively high cost of these forms of energy.[57] Though the proportion of coal in China's primary energy consumption did decline during the 1990s this was mainly in response to the rise in the use of oil.[58]

53. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 68–72, 259–280; Thomson, *The Chinese Coal Industry*; Yichong Xu, *Powering China*; Haijiang Henry Wang, *China's Oil Industry and Market*.

54. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 203–227; Shao Shiwei, Lu Zhenyong, N. Berrah, B. Tenenbaum and Zhao Jianping, eds, *China. Power Sector Regulation in a Socialist Market Economy*, Discussion Paper No. 361 (Washington, DC: World Bank, 1997); N. Berrah, R. Lamech and Zhao Jianping, *Fostering Competition in China's Power Markets*, World Bank Discussion Paper No. 416 (Washington, DC: World Bank, 2001).

55. P. Andrews-Speed, Guo Ma, Bingjia Shao and Chenglin Liao, 'Economic responses to the closure of small-scale coal mines in Chongqing, China', *Resources Policy* 30(1), (2005), pp. 39–54; Laixiang Sun, 'Ownership reform in China's township and village enterprises', in Green and Liu, eds, *Exit the Dragon?*, pp. 90–110.

56. World Bank, *China. Air, Land, and Water. Environmental Priorities for a New Millennium* (Washington, DC: World Bank, 2001); Michael B. McElroy, 'Industrial growth, air-pollution and environmental damage: complex challenge for China', in Michael B. McElroy, Chris P. Nielson and Peter Lydon, eds, *Energizing China. Reconciling Environmental Protection and Economic Growth* (Cambridge, MA: Harvard University Press, 1998), pp. 241–265.

57. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 119–137; John Byrne, Shen Bo and William Wallace, 'The economics of sustainable energy for rural development: a study of renewable energy in rural China', *Energy Policy* 26(1), (1998).

58. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, p. 11.

Evaluation

The analysis above shows that policies and reforms within China's energy sector were driven largely by wider economic concerns, priorities and policies. Against the backdrop of Zhu Rongji's push for reforms and greater opening up, policies were drafted aimed at introducing more market mechanisms, reforming prices and streamlining the industry ahead of WTO accession, but these encountered opposition from more conservative minded members of government[59] and the big monopoly groups. The preference for self-reliance, the importance of economic growth and the consequent rise of energy demand, new strategies for industrial, fiscal and economic reform, and long-standing social policies were all significant factors in the evolution of the energy sector. The limited extent of the country's primary energy resource endowment forced the government to recognize the need for oil and gas imports, which would lead necessarily to the progressive internationalization of the NOCs. Moreover, with analysts emphasizing the need to secure overseas supplies of oil and gas, and the NOCs undergoing restructuring and pushing for greater overseas activities, the need to actively seek supply security seemed to emerge as the top policy priority. The NOCs' remaining ties with the government and Party bureaucracy and the key posts attributed to former CEOs from the energy sector provided an effective tool for the NOCs to promote their interests.

The pattern of policy decisions made in the 1990s indicates that preferred policy choice was that of 'Energy Supply' (Policy Choice 1) with relatively little importance being attached to energy efficiency or environmental protection. Though these latter priorities were indeed mentioned in policy documents and speeches, the relative amounts of financial investment and political effort expended were small.

Even within this framework of policy priorities, China's energy policy making continued to be characterized by a lack of coherence and leadership. The Ministry of Energy had been disbanded in 1993, for its effectiveness was constrained by the continued authority within the sector of the SDPC, of the Ministries for Electrical Power and for Coal, and of the NOCs. As a result, leadership of the energy sector became partly but not fully concentrated in various departments within the SDPC. Yet key information and expertise lay in the state companies and ministries. From 1998 the leadership weakness was exacerbated by the division of responsibility for the energy sector between the SDPC and the SETC. No single institution had the authority and the resources to provide clear leadership for the sector, to formulate coherent policy and ensure nationwide implementation of policy.

The restructuring of the NOCs and of the electricity industry during this period was clearly constrained by an unwillingness or inability to reduce the dominant position of the main state energy companies, and thus these companies could wield considerable power in the emerging energy markets. In the case of the oil industry, though much was made of the opportunity for competition between PetroChina and Sinopec, no steps were taken to develop a framework for this competition, either upstream or downstream. In the case of the electricity industry, the State Power Company remained the main market player. In part, this hesitancy in introducing

59. David Zweig, 'China's stalled "fifth wave": Zhu Rongji's reform package of 1998–2000', *Asian Survey* 41(2), (March/April 2001), pp. 231–247.

market forces probably reflected the continuing political power of the state energy companies in the policy-making process,[60] as well as a deep fear within the government of the risks of market liberalization, especially with the power sector.

Where the government was clearly acquiescing to the interests of the NOCs was in their active support of their overseas investments in oil and gas assets. Whilst the existence of 'Chinese' oil in neighboring countries which could be piped to China might arguably enhance security of supply, those assets in more remote locations principally promote the interests of the NOCs themselves rather than the nation as a whole.[61]

The declining ability of the central government to manage the energy sector effectively can also be seen in the implementation of energy policy. This decline reflects both fundamental institutional weaknesses in the structure of government,[62] as well as the fact that the energy sector by now was becoming stranded between the plan and the market—a state in which neither administrative measures nor economic incentives were effective. One example of this was the diminishing effectiveness of the energy efficiency policy, as discussed above. A second example was the evident failure of the campaign launched in late-1998 to close the township and village coal mines.[63]

IV. 2001–2004: a policy shift in the making

During the period 2001–2004 a series of events occurred in China and the world, changing both objective factors and the way they were perceived by decision makers, leading ultimately to a shift in energy policy choice in China.

Incentives for reform

The September 11 attacks in the United States and the subsequent American strategic redeployment in Central Asia and the Middle East meant a revaluation of China's strategic situation in these regions, followed by new concerns starting in the run up to the second Iraq war (2002–2003). China had gone abruptly from being the US's 'strategic competitor' to an ally in the war against terrorism but had to deal with the presence of its new-found ally in Central Asia. Political turmoil in the Middle East, deteriorating ties with Japan and uncertainties in the Taiwan Straits highlighted the vulnerability of physical supplies from the Persian Gulf and through the Malacca Straits. Russian and Kazakh pipeline projects were on hold and global oil prices were rising. The need for a Strategic Petroleum Reserve was high on the agenda; work started but stopped two years later due to high oil prices and disagreements on the need for it and its maintenance[64] before entering more advanced stages beginning in 2006.

60. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 169–183; Downs, *The Energy Security Series: China*, pp. 16–24.
61. Ma Xin and Andrews-Speed, 'The overseas activities of China's national oil companies'.
62. Downs, *The Energy Security Series: China*, pp. 16–24; Bo Kong, *An Anatomy of China's Energy Insecurity and its Strategies*, pp. 20–24.
63. Andrews-Speed, *Energy Policy and Regulation in the People's Republic of China*, pp. 185–201.
64. Downs, 'The Chinese energy security debate', pp. 32–34.

Within China, the national economy was once again surging forward and by 2003 GDP was rising at an annual rate of 10% or more. This growth was driven by central government policy which favored construction and heavy industry as well as by a surge in trade and investments in the country after its admission into the WTO. The rate of increase of energy demand rose from 5% in 2002 to 16% in 2003. In the same year, the consumption of coal rose by 20% and of electricity by 15%. Whilst demand for oil increased by just 10%, net imports of oil soared by 30%.[65] Such was the rate of growth of demand for energy that supply could not keep pace. This situation was exacerbated by the ban on the construction of large power stations which ran from 1999 to 2002 as well as by the campaign to close small-scale coal mines.

The time of energy surpluses had come to an end, and fuel shortages and blackouts had became widespread by the end of 2002. Indeed, they had become a serious threat to China's economy.[66] The country faced a series of parallel energy challenges. Not only was energy supply not matching demand, but energy intensity was rising after 20 years of steady decline.[67] Reliance on energy imports, mainly of oil, was expanding beyond all expectations placing energy supply firmly on the list of external vulnerabilities. The continued importance of coal in the nation's primary energy supply posed an increasing environmental threat to the nation, the region and the whole world, especially as construction of new power stations, mainly coal-powered, was accelerating. In 2004, 50 GW of new capacity was completed, and under construction was a further 180 GW which were to be commissioned in 2005 and 2006. Finally, NGOs were attracting attention to the ecological problems related to the Three Gorges project and several other projects on the Mekong River were delayed or cancelled due to these pressures. International attention turned to China as shortages and bottlenecks within the country were increasingly influencing global markets.

This accumulation of energy supply shortages, rising oil imports and growing global concerns over environmental issues raised the need for a comprehensive solution to China's energy problems. Added urgency came from the very real concern that the central government was losing control over the energy sector, particularly with respect to the construction of power stations and to the construction and operation of energy-intensive industrial plants such as steel, cement and chemicals in the provincial level.[68] On the international front, Chinese NOCs' overseas activities and the fear of China's impact on global energy markets[69] gave rise to a new wave of the 'China Threat' debate, which worried Chinese diplomats.

China debates its future policy path

The public debate in China over energy security became increasingly diversified. Whilst some think tanks and experts kept stressing the importance of increasing

65. *BP Statistical Review of World Energy 2007* (London: British Petroleum, 2007).

66. For more information on these cyclical shortages and other factors of China's energy insecurity, see Bo Kong, *An Anatomy of China's Energy Insecurity and its Strategies*, pp. 3–6.

67. Chinese Academy of Social Sciences, *Understanding China's Energy Policy*, supporting research commissioned as part of the *Stern Review on the Economics of Climate Change*, (2007), p. 23, available at: http://www.hm-treasury.gov.uk/media/B/B/Climate_Change_CASS_final_report.pdf; Rosen and Houser, *China Energy*, p. 6.

68. Downs, *The Energy Security Series: China*, p. 24; Rosen and Houser, *China Energy*, pp. 17–19.

69. Zha Daojiong, 'China's energy security'.

supply, a growing number of analysts began stressing the importance of demand-side measures.[70] This was also echoed in the Energy Research Institute of the SDPC (renamed the National Development and Reform Commission, NDRC, in 2003) which emphasized demand-side measures and the Development Research Centre of the State Council that advocated the continued development of energy markets.[71] The importance of demand-side measures in all the important policy documents from 2004 onwards, signal the victory of this school of thought.[72]

These positions were not necessarily new but this succession of events made them gain more legitimacy and resonate with top decision makers. China's increasing interactions in multilateral forums and improved relationship with the United States led to the wider belief that energy interdependency, as advocated by some leading Chinese scholars,[73] could be an appropriate way of dealing with the country's energy woes. Finally, research projects, analyses and interactions with foreign leaders, think tanks and researchers provided new thinking on the legal framework and technical and technological possibilities.

The political impetus for policy change

Within China, a political transition was underway. From the 16th Party Congress in November 2002 to the formal appointment of the new government in March 2003, Hu Jintao and Wen Jiabao (and the members of the16th Central Committee) began taking over the reins of power.[74] The challenges they face combined with their vision for the country's development, their education and background, mean a new approach to policy making. In the energy sector, the change was rapid: in 2003 the Energy Bureau was created, followed by the Leading Group on energy with its own State Energy office,[75] and consultations with think tanks also seem to be more commonplace.

These consultations led the central government to announce in 2004 that the sustainable use of energy was now a key priority for the whole nation and started to roll out a number of short and long term measures. The need for this change of approach to energy policy, therefore, seems to have been induced by a combination of significant internal and external events, and the nature of this new approach derived from the changes to the national leadership.

V. 2004 onwards: the new energy policy choice

During 2000 government agencies and think tanks across China were engaged in a re-evaluation of China's energy policy. The most authoritative report to be published

70. Downs, 'The Chinese energy security debate'; Constantin, 'Understanding China's energy security'; Cheng, 'A Chinese view of China's energy security'.

71. Downs, 'The Chinese energy security debate', p. 27.

72. Christoffersen, 'The dilemmas of China's energy governance'.

73. See for example, Zha Daojiong, 'Energy interdependence' and Mao Yushi, 'Politics vs. market', in *China Security*, (August 2006).

74. The visions and priorities of the new leadership group have been presented briefly above. For a presentation of the new leaders, their background, political affiliation etc., see Li Cheng, 'The new political elite and the new trend in factional politics', in Francois Godement, ed., *China's New Politic* (Paris: Centre asie ifri, August 2003), pp. 55–91.

75. Downs, *The Energy Security Series: China*, pp. 18–20.

was that of the Development Research Centre of the State Council. This report identified the following main priorities for China's future energy policy:[76]

- placing greater emphasis on energy conservation and energy efficiency, especially in industry;
- integrating environmental priorities into energy policy;
- maintaining domestic primary energy resources as the main source of energy supply, but improving the management of these resources;
- enhancing the role of the market within the domestic energy sector;
- increasing the use of hydro-electricity, renewable energy, nuclear energy and natural gas, in order that reliance on coal may be reduced;
- developing alternative transport fuels; and
- constructing emergency oil storage.

At the same time the NDRC issued their 'Medium and Long Term Energy Conservation Plan', which not only demonstrated that energy efficiency and energy conservation did indeed lie at the heart of China's new energy policy but also laid out specific targets and objectives and identified the key steps to be taken.[77]

New priorities

The over-riding goal was stated to be to reduce energy intensity by 20% between 2005 and 2010. This Energy Conservation Plan and subsequent documents have set targets for individual energy intensive industries such as electrical power generation, steel, non-ferrous metals, oil refining, petrochemicals, chemicals, cement and plate glass, as well as providing proposals for technological, process or management improvements needed to achieve these targets. By the same year, standards for energy using appliances are to be raised to international levels, and the systems for policy, regulation and technical support for energy conservation are to be dramatically improved. Policies for the transport sector, for construction and for the management of space heating and cooling were also included. The Energy Conservation Plan identified a number of projects which should yield significant savings in the short and medium term, such as retrofitting industrial boilers, district co-generation, oil substitution in certain sectors, heating and lighting.

These priorities were further elaborated in the Five-Year Plan for the period 2006–2010[78] and work has been underway since 2006 to draft an Energy Law which will encapsulate the key aims and approaches to China's new energy policy.

Taken together, these documents, other policy statements and measures taken demonstrate clearly that a change in priorities has taken place. Security of supply still ranks first, but with a change of emphasis from supply-side measures to demand

76. Development Research Center, *National Energy Strategy and Policy Report*, (2004), ch. 1, Overview, available at: http://www.efchina.org/csepupfiles/report/2006102695218188.8060385177036.pdf/0_Main_Report.pdf.

77. National Development and Reform Commission, *China's Medium and Long Term Energy Conservation Plan* (Beijing, November 2004).

78. National Development and Reform Commission, *11th Five-Year Plan for Energy Development* (Beijing, April 2007).

control, followed by economic efficiency. While social equity remains a major concern for the leadership, its relative importance within the energy policy has been diminished in favor of economic efficiency.

The attitude of China's government to the global environmental impacts of energy use has also changed. Until recently, interest in adapting domestic policies to address the challenges of climate change was rather limited, but late in 2006 the International Energy Agency predicted that China would overtake the USA and become the world's largest emitter of Greenhouse Gas (GHGs) by 2009. Indeed, at the beginning of July 2007 the Netherlands Environmental Assessment Agency released the results of their preliminary analysis of the latest energy data which showed that China had already become the largest emitter of GHGs in 2006.

Partly in response to this growing awareness of China's contribution to current (not historic) GHG emissions, China's State Council approved a national plan to address the challenges posed by climate change at the end of May 2007.[79] Ambitious though some of these targets are, most of those relating to energy are consistent with the pre-existing, newly-developed energy strategies. In this respect, environmental concerns in their own right only seem to have risen modestly in importance, and security of supply is still the over-riding concern. Nevertheless, the costs of inefficient and polluting growth are beginning to take their toll on the Chinese economy and risk undermining China's sustained economic growth.[80]

The evidence indicates that the government is indeed trying to take China's energy policy in a new direction. They are seeking to move away from the 'Business-as-Usual' approach which we have called Policy Choice No. 1 and which has characterized China's energy policy for the last 20 years or more. Policy Choice No. 2 (Energy Supply and Energy Efficiency) would appear to be what the Chinese government is currently working to formulate and implement whilst Policy Choice No. 3 (Energy Efficiency and Environmental Protection) is likely to be part of the government's long-term vision.

Old obstacles: revamping the institutional framework

Despite the initial positive steps taken by the government, the formulation of a new energy policy and the development of the measures to implement this policy is a long-term undertaking. A number of critical requirements can be identified for the development of a coherent policy and accompanying measures. First, energy should rise to the top of the agenda for the leadership. This seems to have happened, but the question remains as to how long it will remain there as other priorities compete for the attention of the leadership. Second, there needs to be a well-resourced and powerful agency charged with formulating energy policy. After the establishment of a Leading Group for Energy and of a State Energy Office in addition to the Energy Bureau, such an agency was finally created, with great difficulty, in March 2008.

79. National Development and Reform Commission, *China's National Climate Change Programme*, (June 2007), available at: http://en.ndrc.gov.cn/newsrelease/P020070604561191006823.pdf.

80. Michal Meidan, 'China in a post Kyoto architecture: reconciling internal and external pressures', *China Perspectives* no. 1, (2007).

Chinese analysts have been debating the effectiveness of a new Ministry of Energy (MOE) since 2003,[81] with a strong majority vying for the recreation of a ministerial level body capable of centralizing the management of the sector. Such a body, they argued, if endowed with enough manpower, financial resources and political clout, could provide institutional support for the leaders' ambitious energy saving targets, balance out the different vested interests and help resolve the numerous coordination problems that plague the Chinese energy sector. Those who argued against its creation feared mainly its inability to reassert power over the sector and compete with other vested interests.[82] After the creation of the Energy Bureau and the Energy Leading Group, which proved only partially successful in solving the country's energy woes,[83] the Hu–Wen team were ready to move forward with the creation of a MOE, slated for the March 2008 meeting of the National People's Congress.

Before the annual session of the Chinese legislature, speculation was rife on the new super ministries that would be approved: the Ministry of Transportation (MOT), said to incorporate State Council units including the Ministries of Transport and Railways, the General Administration of Civil Aviation, and the State Post Bureau; the Ministry of Energy, set to include energy-related units within the NDRC, State Council units and oversee the SOEs in sectors including oil and gas, coal, electricity and nuclear energy. The Ministry of Environmental Protection (MOEP) is the upgraded, ministerial version, of SEPA, and was also supposed to inherit the functions of the Ministries of Construction, Water Resources, as well as Land and Natural Resources. MOEP is meant to formulate the nation's strategies on issues ranging from global warming to the pace of urbanization.[84]

But the outcome from the NPC proved yet again how difficult it was to overcome vested interests. The Ministry of Railways refused to become part of the Ministry of Transportation.[85] The newly created National Energy Commission is a far cry from the powerful MOE envisioned. First, it will develop national energy strategies but will not have control over the state-owned oil, gas and electricity companies.[86] Second, it is designed as a consultation bureau, independent from the NDRC.[87] Finally, a new energy bureau will be reconstituted under the NDRC from the merger of all energy-related departments in NDRC, the Office of the National Energy Leading Group and a department that handles civilian nuclear affairs control,[88] with the goal of administering the energy sector.[89] This new Energy Bureau consists of nine departments in charge of energy policy, project planning and approval,

81. Huang Jie, 'China's large oilfields will hasten the recreation of a Ministry of Energy', *China Management News,* (11 May 2007); Downs, *The Energy Security Series: China*.
82. See Wang Qiang, 'Prospects for recreating a Ministry of Energy: the discrepancies lie in the balance of powers', *Nanfang dushi bao*, (5 May 2008), available at: http://www.southcn.com/news/china/zgkx/200505080687.htm. On this debate see Erica Downs, *China's Energy Bureaucracy: The Challenge of Getting the Institutions Right*, Michal Meidan, ed., *Shaping China's Energy Security: The Inside Perspective* (Paris: Asia Centre, 2008).
83. Downs, *The Energy Security Series: China*.
84. Willy Lam, 'Beijing unveils plan for super ministries', *China Brief* 8(1), (4 January 2008).
85. Willy Lam, 'Stability trumps reform at China's parliamentary session', *China Brief* 8(6), (14 March 2008).
86. *Ibid*.
87. Fu Jing, 'Energy management reshuffle starts', *China Daily*, (7 July 2008).
88. 'China sets up energy commission, also keeps bureau', *Reuters*, (11 March 2008).
89. Jim Yardley, 'China retools its government in efficiency push', *New York Times*, (12 March 2008).

electricity, coal, oil, nuclear power and alternative resources and international cooperation, and its manpower should be progressively increased to 120.[90]

Thus, this latest episode demonstrates clearly that despite a shift in thinking at the political apex, supported by the country's leading think tanks and analysts, the process of institutional reform is meeting strong resistance from powerful ministries, especially from the NDRC, and from the country's industrial interest groups who have managed to come out of this reform untouched. Analysts predict that ultimately China's leaders will introduce one single overarching entity to manage the energy sector, but that this will be a lengthy process.[91] In the mean time, the declarations made at the NPC signal a policy priority, but the actual responsibilities and makeup of the new ministries are still being defined: it is still unclear, for example, whether the new MOEP will have control over water resource management.[92] Moreover, it will not have direct control over grassroots anti-pollution agencies, leaving them in the hands of local officials.[93]

Third, the government must have the courage to make the radical changes required by the new policy approach. To date China's government has preferred reform through incremental change, rather than through major and sudden change. Such an approach is completely understandable when taking into account the need for policies and instruments to be consistent with the formal and informal rules of society. But the scale of the energy challenge for China (as for other countries) is such that radical measures may be required in certain sectors if the targets are to be met. Finally, policy initiatives in the energy sector will need to be accompanied by complementary changes in other sectors, for example, in industry, banking, macroeconomic management, taxation, exchange rate and social policy.

With which policy tools?

One of the most difficult questions facing the government is to decide the mix of administrative and market measures.[94] These measures will need to strike a balance between the different objectives of the new energy policy. They will need to be consistent with wider social, political and economic priorities, and to take into account the ability of the relevant players to respond to these measures. Finally, the new policy instruments will need to be commensurate with the current state of the energy sector, stranded as it is between the plan and the market.

Measures announced by China's government in the years 2005–2007 have nearly all been administrative in nature, following the longstanding national traditions of management in the energy sector. Changes to energy prices and taxes have been modest, though regular small adjustments have been made. As a result the financial benefits for parties improving their efficiency of energy use are either marginal or

90. Fu Jing, 'Energy management reshuffle starts'.
91. Yardley, 'China retools its government in efficiency push'; and Russel Hsiao, 'Big ministries system and deputies get nod at Second Plenum', *China Brief* 8(5), (29 February 2008).
92. Michal Meidan, 'New ministries, at the expense of the NDRC?', *China Analysis* no. 18, (March–April 2008).
93. 'China's environment ministry "lacks local powers"', *Reuters*, (13 March 2008).
94. See, for example, *Policy Developments and Challenges in Delivering Energy Efficiency* (Brussels: Energy Charter Secretariat, 2007).

non-existent, and it has proved difficult to stimulate investment in energy efficiency by banks, private equity and venture capital.[95]

This preference for tried and tested measures is to be expected, as is the reluctance to take a radically new approach to the management of the energy sector. The 'bounded rationality'[96] of the policy makers and their fear of the unknown leads, most often, to policy initiatives building incrementally on the past and drawing from the past experience of the actors themselves.

On the assumption that a coherent energy policy is developed, the key challenge for central government is to ensure implementation of these new measures. Many of the actors described in Section II are still able to intervene and limit the outcomes of the new policy initiatives. The question is whether these actors can be co-opted effectively or whether implementation will still be subject to individual interests? This will depend on whether the policy instruments are well adapted to the structural and institutional reality in China, or possibly on whether the systems of governance can be adapted to the new policy. This is the subject of the next section.

VI. Future policy paths

A change from one policy path to another requires not only a change of vision, or a new policy choice, it may also require a change of institutional structures and systems in order to maximize the probability of effective implementation, as discussed above. In effect, the three policy choices identified do not lead to just three policy paths or to three policy outcomes. For each policy choice a range of paths and outcomes exists, depending on the nature of the policy measures formulated and the effectiveness of the implementation. Though the central government has clearly made a new policy choice, it is, as yet, too early to determine the path that China's energy sector is to take over the coming years.

In addition to issues relating to the coherence and appropriateness of the new policy and policy instruments, successful implementation has a number of requirements in order to maximize the likelihood that most actors will adhere to the policy and minimize the instances of deliberate obstruction. These include:

- a structure of government institutions and agencies suited to the policies to be implemented, with clearly allocated responsibilities and the requisite authority, staffing and resources;
- laws and implementing regulations which are appropriate to the demands of the new policies;
- clear incentives for all parties in the energy sector, whether these be economic (market) incentives or through administrative measures;

95. Daniel I. Blanchard, *Equity Capital Investment in China's Energy Efficiency Sector* (Washington, DC: World Bank, March 2005), available at: http://3countryee.org/public/EquityInvestmentEEChina.pdf; World Bank, *Financing Energy Efficiency. Lessons from Recent Experience with a Focus on Brazil, China and India*, Draft Report (Washington, DC: World Bank, May 2006), available at: http://3countryee.org/Reports/IntegratedReportExecSummary.pdf.

96. See, for example, Douglass C. North, *Understanding the Process of Economic Change* (Princeton, NJ: Princeton University Press, 2005); Grief, *Institutions and the Path to the Modern Economy*.

- access to information for all parties on the regulations and rules, on how they may improve their performance and on the available technologies and appliances; and access to these technologies and appliances.

These requirements alone will be insufficient to ensure successful implementation of a new energy policy. Substantial changes in the way energy is managed, produced and used may require a change in the norms and systems across Chinese society and government. A critical question is whether the policy measures which the government formulates and the behavioral responses required are consistent with current norms in Chinese society. If they are indeed consistent, can the new measures stimulate a significant change of behavior or does this very consistency undermine progress? If there is significant tension between the new rules and the pre-existing expectations of society, is there evidence that the new policies can be sustained beyond the period of a concerted campaign?

Energy efficiency and energy conservation lie at the heart of the governments' new policy and these concerns encompass the life of every organization, enterprise and individual in China. As described above, the measures introduced by the government to address these priorities range from short-term campaigns, to close inefficient plants and reduce the use of air conditioning in offices, for example, to longer term steps to raise standards of buildings and appliances. The administrative nature of these measures is consistent with previous practice, but even that has not always been successful in the energy sector. The management of township and village coal mines in the 1990s and of the environment today illustrates the deficiencies of such administrative approaches in China.

Institutional constraints to effective implementation of more or less radical policy initiatives in the energy and environmental sectors in China are numerous and include: the vague and contradictory nature of the relevant laws and regulations; the nature of economic incentives for local government officials to prioritize economic growth at the expense of energy efficiency and the environment; the weakness of formal legal mechanisms; the close relationship between business and government; and the deep-rooted belief across society of the need for and desirability of economic advancement.[97]

Possibly the single greatest obstacle is the Chinese people's expectations and beliefs concerning energy. In simple terms, individuals and organizations will need to stop seeing energy as a public good and start treating it as a valuable commodity to be used with care. The last ten years have seen a change in Chinese peoples' outlook on the environment.[98] The same is now needed with respect to energy, as it is in many other countries.

A further set of parameters relates to events within or outside the energy sector, domestic or international, which have the power to change the path of energy policy implementation. Such events are usually unforeseen, and may aid or accelerate successful implementation or may obstruct and delay implementation. It was a

97. Alastair Iain Johnston, 'China and international environmental institutions: a decision rule analysis', in McElroy *et al.*, eds, *Energizing China*; Xuedu Lu, Jiahua Pan and Ying Chen, 'Sustaining economic growth in China under energy and climate security constraints', *China & World Economy* 14(6), (2006), pp. 85–97.

98. Drew Thompson and Xiaoqing Lu, 'China's evolving civil society: from environment to health', Woodrow Wilson International Center for Scholars, *China Environment Series* 8, (2006), pp. 27–39.

combination of domestic and international events which helped to trigger the new policy choice. Effective implementation of this policy choice may be dependent on the occurrence of further such events or pressures.

Not only may a range of possible policy paths or outcomes be identifiable for China over the succeeding years, but different regions of the country may follow a different path for a number of reasons: central government policies may be justifiably adapted in different ways to meet local needs; local governments may actively or passively obstruct the implementation of central government policies; or society, industry and government may lack the resources to fully implement central government policies.

In particular, two fundamental considerations will constrain the rate at which the primary policy objectives of Policy Choices No. 2 (Energy Supply and Energy Efficiency) and No. 3 (Energy Efficiency and Environmental Protection) can be successfully implemented across the country. First, implementation of energy efficiency and environmental measures will necessarily spread out as 'ripples' from a few core, rich areas such as Beijing, Shanghai and Guangzhou. Secondly, one result of these policy measures will be the shift of energy intensive and polluting industry away from these rich areas towards the poorer areas. In this way, the industrial shift may offset the energy policy success in some regions of China, at least in the short term. As a result some areas will become more efficient and cleaner whilst others may become more energy intensive and dirtier.