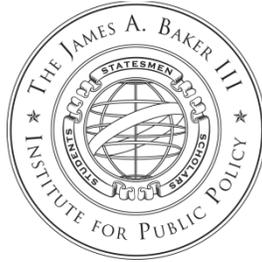


THE RISE OF CHINA ***AND ITS ENERGY IMPLICATIONS***



Carbon Management in China: The Effects of Decentralization and Privatization

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CARBON MANAGEMENT IN CHINA:
THE EFFECTS OF DECENTRALIZATION
AND PRIVATIZATION

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The Rise of China and Its Energy Implications is a major research initiative to investigate the implications of China's oil and natural gas policies and domestic energy market development on global energy markets. This study focuses on the influence of China's energy development on U.S. and Japanese energy security and global geopolitics. Utilizing geopolitical and economic modeling and scenario analysis, the study analyzes various possible outcomes for China's domestic energy production and its future import levels. The study considers how trends in China's energy use will influence U.S.-China relations and the level of involvement of the U.S. oil industry in China's domestic energy sector.

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The Institute of Energy Economics, Japan (IEEJ), was established in June 1966 and specializes in research activities in the area of energy from the viewpoint of Japan's national economy in a bid to contribute to sound development of Japanese energy supply and consumption industries and to the improvement of domestic welfare by objectively analyzing energy problems and providing basic data, information and the reports necessary for policy formulation. With the diversification of social needs during the three and a half decades of its operation, IEEJ has expanded its scope of research activities to include such topics as environmental problems and international cooperation closely related to energy. The Energy Data and Modeling Center (EDMC), which merged with the IEEJ in July 1999, was established in October 1984 as an IEEJ-affiliated organization to carry out such tasks as the development of energy data bases, the building of various energy models, and the econometric analyses of energy.

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I. Introduction¹

As the People's Republic of China nears a 2012 leadership transition, it is appropriate to ask how China's new leadership will face the country's energy and economic development challenges. China, the world's second largest economy, has become the world's second largest consumer of hydrocarbons. While it was never a Soviet-style, centrally planned economy with a comprehensive planning bureaucracy in Beijing, China's economy operated through a strong regional economic planning economy in the first three decades after liberation in 1949. For the past three decades, China has embraced profound trade liberalization, privatization, and decentralization of governance, making it increasingly dependent on global institutions supporting a world market economy. As part of this trend, China has become increasingly reliant on imported coal, oil, and natural gas and its state-run energy enterprises have become more global in their operations. But it remains unclear whether China desires to continue this trend of cooperating and integrating with other market economies. It is also possible that as it experiences its newfound economic clout, trade surpluses, and foreign accounts, China's leaders will want to establish a more centrally planned economy for which its Communist leadership was originally designed. The Chinese central government's reaction to the global economic recession of the last few years has bolstered the case for centralized control. Beijing has aided local government investment in infrastructure and industrial capacity, and made large strategic investments in sunrise industries. Since energy development has such strategic and wide-ranging economic impact, the inclination to centralize China's energy policy and investment strategy is a strong one. In this paper, we investigate whether emerging policies strengthening central planning will continue in the 12th Five Year Plan (2011-2015), and whether a trend toward a centralized strategy can be applied to energy and environmental policy in China.

China's hydrocarbon economy has received a central planning "upgrade" in recent years with the establishment of the National Energy Commission (NEC), a national energy policymaking body formally on par with the body that has managed economic planning across all sectors for decades, the National Development Reform Commission (NDRC). This paper discusses the role of the National Energy Commission and analyzes whether it can bring strong, cohesive

coordination and leadership among the three actors developing China's hydrocarbon economy: the central government, the local governments, and the state-owned energy companies.

To start to answer this question, this paper first presents a formal bureaucratic roadmap of energy policy decision-making in China, discussing the history behind the establishment of the new regulatory agency, the National Energy Administration (NEA), and the creation in 2010 of the policy body guiding planning and harmonization in the hydrocarbon sector, the comprehensive National Energy Commission (NEC). This discussion describes in detail the various institutional actors and bureaucratic processes that have effected change in government hydrocarbon and energy institutions since reforms began in 1978.

The second section of this paper outlines the history of privatization of state enterprises in China, including their effects on the growth and adaptation of energy state enterprises. It focuses on the case of the national oil companies (NOCs) and their relative autonomy from central government control over the last few decades in comparison with other enterprises in the energy sector. I argue that despite various reorganizations, there does not seem to have been significant changes in the way the Chinese Communist Party informally controls the national oil companies, thus preserving their opportunities for autonomy. In fact, an analysis of political processes and relationships within various levels of Chinese government, the national oil companies, and the Communist Party suggests that the new NEC will have difficulty asserting its authority through either formal or informal channels.

The third section explores the actions of China's provincial governments, province-level municipalities, and the autonomous regions over the last few decades in order to ensure the development of their hydrocarbon industries. Their strategies of creating their own energy policies—with locally-financed strategic investments in hydrocarbons, especially coal—and their own energy administration organizations have produced a local-level bureaucratic roadmap that is varied and complex, with a diminished potential for any kind of coordination either across localities at their own initiative or by the initiative of the newly minted NEC.

Finally, the third section examines the backgrounds of China's top party and government leaders, discussing their potential for using their knowledge, experience, and network connections to assert strong central policy control over China's hydrocarbon industries. I argue that the stated goal of creating the National Energy Commission in order to prioritize energy policy and energy security by separating it from the traditional governmental and party economic policy bodies has not created a highly effective, comprehensive central energy bureaucracy that can achieve strong control over future energy policy. Rather, it seems more likely that members of the Politburo of the Central Committee of the Chinese Communist Party, or the senior ranks of the Communist Party with energy backgrounds, will seek to maintain the current status quo system of mainly informal control over state energy companies and local government-led energy policy formation. China's energy policy formation therefore most likely remains directly in the hands of the Politburo, a body of officials with strong individual ties to energy companies and the majority of local governments. Thus, China's national oil companies are still likely to be able to tap potential patrons in the Communist Party to protect their interests in the coming years, and it will be difficult for China to develop a strong comprehensive national energy policy that would impose high costs on China's national industries or localities.

II. Chinese Energy Policy Formation: The Bureaucratic Roadmap

Despite the total enormity of China's government and legions of planning officials at central and government levels, the official bureaucratic institutions governing energy policy in China are small and not very powerful. The institutions' names and organizational structures have changed frequently since reforms began in 1978, and as of 2008 and 2010, the main institutions are the National Energy Administration (NEA, or *guojia nengyuan ju* [国家能源局]) and the National Energy Commission (NEC, or *guojia nengyuan weiyuanhui* [国家能源委员会]). In the 1980s there was one central ministry (under various names, such as the Ministry of Energy, Ministry of Petroleum Industry, and the Ministry of Petroleum). In 1993, however, the Ministry of Energy was abolished and administrative functions in the oil sector were all handed over to the national oil companies. Central leadership and ownership was retained in the comparatively small nuclear power sector, at the ministerial level. Over the last two decades, a few centrally run and owned hydropower projects (e.g., Three Gorges Dam) have come to replace the thousands of small-

scale hydropower plants operating at the provincial, county, and township level, although even this sector was also managed at the ministerial level. Coal production, almost exclusively and historically the domain of provincial and local governments—except for very recent large-scale projects, mainly in Inner Mongolia, and the critical transportation of coal on national railways, always a function of the central government—has largely remained local.

Over the last decade, administrative powers have very gradually started shifting away from the NOCs and state-owned energy enterprise. In 1998, the State Petroleum and Chemical Industry Bureau (SPCIB) was established under the State Economic and Trade Commission. The bureaucratic rank of a unit is very important in determining how much clout it will have in policy formation. Organizations may only issue orders to units ranked below. The SPCIB was only at a bureau level and also did not have enough staff to regulate effectively, and was thus in a subordinate position to CNPC and Sinopec, which at that time had higher bureaucratic ranks.² In 2001, this bureau was abolished and replaced by the China Petroleum and Chemical Industry Association, which also suffered from a lack of staff and could not manage the industry effectively. When the National Development and Reform Commission (NDRC, or *guojia fazhan he gaige weiyuanhui* [国家发展和改革委员会]) was created in 2003, the Energy Bureau was one of the 26 bureaus created within it. This reshuffling once again did not change much, as this bureau had even fewer staff than the SPCIB.

The National Energy Leading Group (*guojia nengyuan lingdao xiaozu*, or 国家能源领导小组), a form of informal task force within the party and within the State Council leadership, was established in 2005 in addition to the Energy Bureau to improve energy policy coordination and strengthen the center's control over energy policy. Senior leaders often create such “leadership small groups” on a particular critical national policy issue in order to advise and coordinate on those policy issues. These leadership small groups, however, still do not have the manpower necessary to provide adequate regulation or policy formation, and they must rely on the Central Party Secretariat or the State Council Office for manpower to move the bureaucracies and enormous state enterprises in a given direction. They primarily serve as task forces within the leadership, and their influence depends on the ranking of the individual leaders who lead them. Historically, for example, the Financial and Economic Leadership Small Groups and the Foreign

Affairs Leadership Small Groups have been chaired by Politburo members. Only when the Three Gorges Dam Leadership Small Group was formed in the 1990s, with several Politburo Standing Committee members on it, did that project accelerate forward into implementation.

In the most recent shuffle in 2008, the Energy Bureau was transformed into the NEA, and in 2010 the NEC replaced the National Energy Leading Group. The NEC comprises 23 high-ranking officials, with Premier Wen Jiabao (温家宝) as the director and Vice Premier Li Keqiang (李克强) as the deputy director. Formally, the commission appears to function similarly to the leading group that preceded it.

The NEA not only absorbed the former Energy Bureau of the NDRC, but it also absorbed other energy offices of the NDRC, the Office of the National Leading Group, and the nuclear power administration of the Commission of Science, Technology, and Industry for National Defense. The NEA carries out the NEC's day-to-day affairs. It is mandated to manage China's energy industries, draft energy plans and policies, negotiate with international energy agencies, and approve foreign energy investments. It has nine departments covering policy and legislation, development and planning, energy conservation and scientific equipment, power, coal, oil, and natural gas, new and renewable energy, international cooperation, and general administration.

The NEA is larger than all of the organizations that it replaced, but as China energy experts point out, even after the shift the NEA still “lacks the authority, autonomy, manpower, and tools to deal with the country's energy challenges.”³ The NEA holds vice-ministerial rank, and so its authority is now superior to that of the NOCs, which had their ministerial rank reduced in recent years.⁴ On the other hand, the NEA's leader, Liu Tienan (刘铁男), has considerable central government experience as the former deputy director of the NDRC, although in the last section of this paper I will discuss the considerable inexperience of NEC members in industry, including the energy sector, or in energy-exporting localities, in contrast to the experience of individual Politburo members. The NEA does not have the ability to set prices, which remains under the authority of the NDRC's pricing department.

The NDRC is the most important agency with an energy mandate, and responsibilities regarding energy are scattered through various departments of the NDRC. Other ministries that deal with energy policy issues are: Ministry of Land and Resources (supervises oil and gas reserves), State Electrical Regulatory Commission, Ministry of Commerce (supervises the oil and gas market), Ministry of Water Resources (responsible for hydroelectric power), Ministry of Science and Technology (deals with research and development), Ministry of Railways (responsible for energy commodity transport), Ministry of Construction (in charge of energy efficiency in urban planning), State Commission of Science, Technology, and Industry for National Defense (responsible for nuclear energy), State Environmental Protection Agency (environmental regulation), and State Asset Supervision and Administration Commission (involved with the structure of NOCs and other large state-owned enterprises). Think tanks that provide information on energy issues are the Development Center of the State Council, the NDRC Energy Research Institute, research institutes within NOCs, and the State Power Economic Research Centre, as well as other academic think tanks and institutes.⁵

Aside from government institutions, the Chinese state-owned energy companies have a considerable amount of autonomy and influence over energy policy. Between 1998 and 2001, the central government restructured the NOCs. These reforms gave the industry control over production and introduced competition into the oil and gas market. Previously, beginning in the 1980s, CNPC was the sole upstream oil and gas company, Sinopec was the sole downstream oil and gas company, and CNOOC was (and remains) the sole offshore oil and gas company. The central government vertically integrated the oil industry and split it along geographic lines with the China National Petroleum Corporation (CNPC) Group in the north and the China Petrochemical Corporation (Sinopec) Group in the South. Over time, these continental geographic lines have disappeared, with CNPC operating more in the North and West because it is still somewhat disproportionately upstream, and that is where the bulk of oil reserves are located; Sinopec is still disproportionately downstream, and the South and East Coasts are where much of the demand, and thus refining, is located. Throughout this period, the earliest formed state oil company, China National Offshore Oil Corporation (CNOOC), has operated exclusively offshore, even as the definition of offshore has proven to be somewhat fluid in bureaucratic interpretation, much to the dismay of foreign partners who have discovered too late that they

were in fact negotiating with the wrong Chinese NOC partner. At any rate, with the adoption of the “going abroad” (zou chuqu, or 走出去) strategy in the last decade, all three NOCs have made very large investments overseas and now draw significant amounts of production (more than 10 percent) from overseas assets and joint ventures.⁶

While state-owned energy companies have been given autonomy, they are also well connected to the government. There is a great deal of crossover between government officials and energy industry leaders. An official who has leadership experience in the energy industry will be likely to promote the interests of the energy companies while in a government position. As I will discuss in more detail in later sections, this is so because the Communist Party—and indeed historically all Chinese political systems, including the Imperial bureaucracy—has leaned toward leadership rotation norms that favor cadres that have gained experience across multiple localities. Most of the 200 or so full members of the Chinese Communist Party’s Central Committee have served in one or two localities, but almost all of the 25 or so Chinese Communist Party Central Committee Politburo members have served in three or four localities.⁷ The leadership promotion skills, connections, and resources that can lead one to the top and center of the Communist Party are the same as those that can lead one to the top of the large centrally-owned enterprises, especially the NOCs. Therefore, it is not surprising that the Central party leaders seek have chosen to poach top NOC leaders from the state enterprises, turning them into top party officials. Such enterprise leaders bring with them invaluable skills, experiences, and connections. In the 1970s, the joint control by the military and Ministry of Petroleum over the powerful oil fields at Daqing, Shengli, and Liaohe—in the context of the oil crisis and lucrative exports overseas to a thirsty Japan—and the institutionalization of this power and influence (including foreign currency) through the bequeathing of high-ranking party positions to the leaders of these key oil fields led to what China scholars have called a “petroleum faction.” Now, more than 30 years later, there is clearly no oil faction operating overtly at the top levels of the Chinese government, military, and party, and yet we must still wonder about the residual institutional power within the Communist Party, in particular the three NOCs’ command through control of their subsidiary oil fields, the leadership of which has not declined in bureaucratic and party ranking.

A common question is whether there will ever again be a powerful Ministry of Energy, as there was some 20 years ago. There are strong forces that favor the status quo, including the various organizations that would have power stripped away from them and given to a potential Ministry of Energy, especially the NDRC. The energy firms are also reluctant to have a stronger regulatory power over them because this would counter their influence over energy policy.⁸

After looking at the organizations and bureaucracies that have energy-specific mandates, it is important to know the context in which they work. Consider here the broader institutions, starting with the Chinese Communist Party (CCP). The CCP has a large amount of influence over the policymaking process. The major party organs in increasing order of importance are: the Party Congress, the Central Committee, the Politburo, and the Politburo Standing Committee. The larger the group is, of course, the less concentrated or centralized is the influence of its leaders. The larger groups are still very important, but the smaller groups are able to act more efficiently to affect policy. The party will act when its leaders decide to take a stance on a policy issue. The CCP essentially has the power to decide all major policy issues, and their power is spread out in the system through party groups and appointments.⁹

Party groups are organizations of the top few party members in each government ministry and commission. The members of the party group in the organization overlap with the leaders of that organization. The party groups ensure that policy lines, policy direction, and specific policies are implemented.¹⁰ The NEA has its own CCP group whereas the previous Energy Bureau did not. This gives the NEA more autonomy in dealing with the party and managing party affairs.

The second way in which the CCP exerts influence over policy is its system of appointment, known as *nomenklatura* (zhengdang de zhiwu mingcheng biao, or 政党的职务名称表). Many high-level positions, including elected positions, are appointed using this system in China, as they were in the Soviet Union. The position is chosen from a pre-approved list of candidates that have been nominated by other party members. Officials one rank higher can elect or dismiss people from the *nomenklatura* list. This system leads to more in-house appointments, since party groups are likely to put officials with whom they have better relations on the list. Party officials are also able to pick out whom they want to push up the career ladder and make more powerful.

The *nomenklatura* system will help those who have policy preferences that are supported by the CCP and officials in charge of the appointment lists.¹¹

The National People's Congress (NPC) is the legislature and government equivalent of the Party Congress. The NPC chooses the State Council, which serves as the cabinet and is headed by the premier. Above the State Council are the Standing Committee of the State Council and the premiers and vice premiers. There are a number of commissions and ministries under the State Council.

China leadership experts define the top leadership of the Chinese government as the highest 25 to 35 leaders.¹² To be in the top 25 to 35 somewhat depends on title and bureaucratic rank, but also depends on whether the official is regarded highly by colleagues and superiors, the official's network of personal ties, and the pertinence of the official's ideas. Generally, the top 25 to 35 consist of most of the Politburo and Secretariat of the CCP and Standing Committee, top commanders of the military, and top officials of the wealthiest and largest cities and provinces. The policymaking process is highly personal and thus these few leaders have great power over policy. Within this top cohort, smaller groups will have a particular interest in specific policy areas and there are always about five to eight top officials in energy (discussed in detail in a later section).¹³

Turning away from the center, the provinces and local governments are also critical to the policymaking process, for in contrast to the Soviet Union, China has a regional planned economy, not a highly centralized planned economy. The Soviet Union's central government employed tens of thousands of statisticians and planners, and China's planning agencies have never numbered more than the hundreds in staff. China does indeed have a vast planning bureaucracy, undoubtedly numbering in the many tens of thousands, but these are employed by provincial and municipal governments, and by the planning offices of the state enterprises. There are 31 province-level bodies, of which four are large municipalities (Beijing, Shanghai, Chongqing, and Tianjin). The same central organization is replicated at the province level. This is also true for ministries, which spread vertically from the center out to the locale. It is important that policymakers have the local officials' support and stay coordinated. If not, the provinces can

exert their influence by simply ignoring the policy and presenting roadblocks in the implementation phase.¹⁴

Finally, the power and influence of the media, businesses, and NGOs are increasing. The policy implementation phase is more accessible to the mass media, the general public, and NGOs. There is an increase in letters to the government, Internet campaigns, and newspaper editorials. But even with this increase, the nongovernmental sector's influence is limited. Officials are more often than not able to ignore these actors and pass the weak judiciary and regulators unharmed.¹⁵

There are a few different ways that an issue can make it onto the policy agenda. The most common is that someone at the top has a particular interest in promoting the issue, since the top leaders have the most authority in shaping policy.¹⁶ Lower level bureaucrats can also try to force an issue on the agenda by exerting influence and finding higher-ranked officials to represent them. A critical problem that may take precedence on the policy agenda, a foreign influence that may give cause for increased attention, and procedural requirements are all ways that issues are placed on the policy agenda.¹⁷

China energy studies experts have identified a list of factors that historically have seemed to affect the ability of the government to manage carbons and energy policy.¹⁸ The first is the number of units that must cooperate, which can be very costly, especially in projects that involve multiple central bureaucratic agencies and also multiple local governments and party leaders (e.g., national pipelines and large hydropower projects and electric grids), and second is the personal support from the top, which can help to coordinate the lower levels. The amount of money involved, the use of foreign funds, and whether leaders are pessimistic or optimistic about the economy will also determine whether the government will decide to go through with the project. If those who pay the price of the project are not the same as those who benefit from the project, the losers have an incentive to create roadblocks to the policy. If the project is difficult for leaders to understand or if the leaders do not see an apparent need for the policy, the project could be doomed.

Since we know that the interests of specific leaders are key to determining what will be on the policy agenda, we must next look at what influences a leader's perspective. For the very top leaders, what will most influence their decisions are their past experiences, the game of politics, and issues with national importance. The top leaders must think in broad terms, and each have had many experiences and developed important relationships. For officials in the State Council ministries and commissions, the most powerful factors are their current role and the boundaries of their organization. These actors must represent and defend their organization's interests, as they are judged through the success of carrying out their mandate.¹⁹ And, of course, as already noted, the fact that certain central government-owned enterprises have leaders who have moved on to become top party leaders in Beijing suggests that central leaders are capable of at least understanding how to effect change in the oil and gas sector, whether or not they actually are interested in doing so. Since Chinese Communist Party regulations—themselves secret documents—on “party discipline” require that top central leaders not speak publicly extemporaneously, and not publish memoirs or discuss their individual views with domestic or foreign media while they are still in office, we can only piece together their views through impressionistic anecdotes and side comments made to foreign observers and political experts. Unfortunately, there is no way to collect and publicly present these individual views of central Chinese leaders—the government bans the publication or dissemination of such materials—and so they largely remain a black box to students of Chinese policy formation.

Part of an official's past experiences and politics that shape their actions is the Chinese idea of relationships, known as *guanxi* (关系). *Guanxi* is a bond that insinuates mutual obligation and is derived from family connections, common geographical origin, or shared experience. Officials hold obligations to many individuals and these relationships do not necessarily have to be cohesive or form a clique. This is particularly important for the top leaders of the Communist Party, who have served in multiple localities and may thus have *guanxi* networks extending from Beijing across the regions of China's economy and political system. *Guanxi* can be important for introducing an issue to a stranger or providing entrance into a new opportunity.²⁰

The policy formation and implementation phases are drawn out and marked by intensive bargaining. This is due to the fragmented system of authority. The vertical structure of

ministries requires offices to coordinate with their superiors as well as with their horizontal equivalents. Without constant coordination, it is easy for one actor to prevent the adoption or implementation of policy. Either the lower levels of bureaucracy can ignore the policy or the higher levels can refuse to claim responsibility for enforcement, and each can instead blame another involved organization.²¹

In order to achieve coordination between various offices involved with a particular policy, decisions are often pushed up to higher and higher levels until there is one official who is powerful enough to coordinate all levels involved. In order to counter the incentive for all decisions to be made at the highest level, the central government orders the importance of each issue on the docket and will only attend to those at the very top of the docket. It stresses that a problem should be solved on the lowest level possible, but there is always an excess of items on the Center's docket. The system will discourage lower bureaus from resorting to pushing the issue upward if they know the matter will never be resolved.²²

One mechanism that is used to overcome the problems associated with the fragmentation of authority is the meeting system. The meeting system is a set of meetings that happen throughout the year on various bureaucratic levels. It brings together officials from diverse localities and hierarchical systems to cultivate consensus, communicate policies, mobilize support, and respond to criticism. The Central Committee of the CCP meets one or two times a year (usually in plenary session in October or November), and the National People's Congress meets once a year (in plenary session in March). The meeting system has evolved to become a stable and repeated way to overcome the fragmentation of authority in the Chinese political system.²³

One common problem in the Chinese reported up through the chain of command government is the lack of accurate information. During policy formation and through implementation, studies are required to examine the feasibility of projects and to work out its details. Government think tanks and research institutions within ministries carry out these studies. Data are often from the local level to the Center. At each point up the line, there is the incentive to distort data. It is then potentially unreliable by the time it reaches the central research institution.²⁴ The document system is one mechanism used to increase the flow of information between bureaus. While

documents are mostly kept very secret and compartmentalized, there are also “central documents” that are circulated around various departments to give orders, express an opinion, or provide information on an issue. Reforms and technology have made access to some of this information easier. Reforms in the last 15 years have reduced the amount of secrecy on economic data in particular and increased the access of scholars to that information.²⁵

Another readily apparent problem is the prevalence of corruption in the Chinese system. In the implementation of reforms to privatize and liberalize the economy, the incentives for corruption have increased, not decreased. It is very likely that Chinese officials often come to the conclusion that they must engage in corruption in order to benefit personally from a rapidly diminishing public resource—i.e., take some while it still exists. It is more and more socially acceptable to accumulate large amounts of money, and there is a gray area in the way some officials perceive “entrepreneurial activity.”²⁶ While not necessarily legally corrupt, officials may also tend to inflate their own sense of authority, either because they truly believe they are more powerful than they are or they are trying to gain something. This creates a “petty dictatorship” for those serving below.²⁷ This corruption and petty dictatorship can easily slow down a policy and create difficulties in coordination with other bureaus and levels.

A few steps must occur before the Center reaches a “decision.” First, the initiative is considered among the leaders. The leaders then announce the initiative and proceed to allocate funds and commit material resources to the project. Finally, they approve construction schedules, regulations, and other more concrete aspects. The decision may be publicized as a part of the State Plan, as the implementation of regulations, or the passing down of specific orders of action. But no single decision determines energy policy and, instead, policy is based around an accumulation of many decisions. Some decisions are made only to garner support and announce an intended direction of policy. These bold sounding decisions can easily be turned into nothing by inaction or a lack of consensus. The various decisions across all administrative units, both center and local, that comprise energy policy thus contribute to a lack of a coherent energy policy.²⁸

III. History and the Relationship to Government and Other Political Actors: Focus on the NOCs

China's singular institutional path of economic development has created unique obstacles for the Chinese state-owned enterprises (SOEs) to grow domestically and internationally. These constraints come from their history of the incremental, bottom-up, and decentralized growth of both China's government institutions, as well as its state-owned enterprises, including the very large NOCs and other companies directly owned by the central government. This decentralized economic development has provided some of the efficiency benefits of competition, but it has also created unique institutional barriers to organizational change—particularly in its ownership and regulatory relationship with the CCP and the Chinese central government. Or, as economic historians would describe China's economic development, it is heavily “path-dependent” with small incremental changes being the norm.

The complex organizational relationships among Chinese institutions have blocked and obscured necessary reforms in the implementation of policies on key national public goods problems. Historically, China's SOEs have been an integral part of the country's social welfare system, providing schools, health, and other social services to their workers. One challenge to the corporatization of China's energy SOEs is the policy surrounding the final dispensation of social welfare activities as well as the liability for environmental cleanup. As Chinese energy SOEs move to restructure, the contribution of assets generated by the privatization of these enterprises to fund the development of a national social welfare system and the cleanup of environmental problems created by this industry has to be addressed. A selective history of the relationship between the central and local governments in the carbon industries, including CNPC, Sinopec, and CNOOC in the oil sector, clearly reveals the long-term persistence of these institutional obstacles to their restructuring as corporations and their development in more competitive economic environments. This history begins with a brief overview of the politics and economics of the privatization of state enterprises in China's marketizing planned economy, and moves on to a history of the politics of decentralization of the CCP's control of government and enterprises. It then examines more closely how privatization and decentralization have created institutionally unique relationships between the NOCs and the CCP and government, at local and

national levels. These unique relationships reflect an interdependence of CCP and NOC organizations and personnel that impedes both reforms to create more transparent and effective government ownership and regulation of the oil and gas industry, and also constrains the corporatization and internationalization of the NOCs themselves.

The Effects of Privatization and Decentralization on the Development of Chinese SOEs: The NOCs
Given obvious constraints on the Chinese government's ability to provide all of the necessary investments to develop a comprehensive national energy infrastructure, China's energy needs for economic development are likely to require at least semi-privatized oil and gas SOEs in order to compete with the major multinational companies to accomplish a number of tasks deemed important by Chinese political elites and consumers alike. New corporate structures will be needed to promote an increase in domestic production as well as the attainment of stable, low-cost supplies of oil and gas from overseas. Chinese SOEs have already seen that they must restructure to attract the necessary financial resources, technical expertise, and business practices from energy sector partners and investors in domestic and foreign capital markets. Unlike the NOCs of oil-exporting developing economies, for example, the Chinese NOCs have been facing the same pressures to privatize posed by national economies that are attempting to comprehensively integrate all economic sectors with the global economy.²⁹

Given that the Chinese NOCs were built upon a foundation of decentralized government and economic institutions unique to China, questions remain about whether these Chinese NOCs will be able to compete with the multinational oil and gas companies. Moreover, the decentralized privatization of the oil and gas SOEs has delayed or blocked the design of comprehensive national energy and energy security policies, and the creation of effective governmental institutions to coordinate them. In recent years, China has experimented with several different organizations for regulation of the industry and for the development of national energy policy, but so far, these institutions have failed to rein in fully decentralized forces such as local governments and the SOEs themselves.

Extensive comparative economic research reveals that governments privatize SOEs for a variety of reasons:³⁰

- To raise revenue for the state
- To promote economic efficiency
- To reduce government interference in the economy
- To promote wider share ownership
- To provide the opportunity to introduce competition
- To subject SOEs to market discipline
- To develop national capital markets

This research also shows there are many factors affecting the selection of privatization methods:³¹

- History of the asset's ownership
- Financial and competitive position of the SOE
- Government's ideological view of markets and regulation
- Past, present, and future regulatory structure in the country
- Need to compensate important interest groups during privatization
- Government's ability to credibly commit itself to respect investors' property rights after divestiture
- Capital market conditions and existing institutional framework for corporate governance
- Sophistication of potential investors
- Government's willingness to allow foreign ownership

What do these comparative studies reveal about successful privatization? First, studies show that privately owned firms are more efficient and more profitable than otherwise comparable state-owned firms. Second, divested firms almost always become more efficient, more profitable, financially healthier, and therefore better able to increase their capital investment spending. Third, some evidence suggests that share issues stimulate national capital markets and modernize corporate governance. Fourth, direct sales and public shares are the most common and most successful methods. Fifth, voucher programs are less common and frequently

problematic. Finally, informal privatization (as in China) is the least commonly used method and the least studied.³²

General studies by such NGOs as the World Bank and the World Energy Council (WEC) and industry best-practices reports by the energy sector consulting sections of multinational accounting and consultancy firms try to identify successful privatization steps:³³

- Corporatization prior to privatization and deregulation
- Identification and compensation of all potential stakeholders
- Development of transparent legal institutions to resolve potential conflicts among stakeholders
- Clear separation of business and government functions

Because of fiscal and state-enterprise ownership decentralization, the lack of a national privatization program makes identification and compensation of potential stakeholders problematic in China.^{34, 35, 36} Since structural reforms began in the late 1970s, local governments have been pitted against SOEs and the central government on the question of who will pay the costs of privatization.³⁷ The result is that, unlike many of the privatizing former central planned economies of Eastern Europe, China's SOEs have not been auctioned off or sold on a domestic or international marketplace. Instead, they have been purchased through sweetheart deals by influential local elites, or sold piecemeal to former employees through experimental property forms or to foreign investors (and most recently domestic) through public share offerings.³⁸ China's semi-privatization of its NOCs has thus far been driven by the interests and actions of the millions of employees, past and present, of CNPC, Sinopec, and CNOOC.

Much of China's privatization has followed the institutional path of China's countryside, which began to decollectivize in the middle 1970s under such reformers as Zhao Ziyang (赵紫阳), then-CCP secretary of Sichuan Province, and Hu Yaobang (胡耀邦), who would later come to lead central CCP organs in the 1980s and then, in turn, mentor the current generation of central leaders, including Premier Wen Jiabao.³⁹ The privatization of urban state-owned enterprises in the services and light-manufacturing sectors followed the privatization of the rural areas. The administrative and legal reforms recognizing these new forms of property—public stock

companies, stock cooperatives, and other quasi-private forms of collective property ownership—were first formalized in localities like Shanghai, under such leaders as Zhu Rongji (朱镕基), Wu Bangguo (吴邦国), and Huang Ju (黄菊), who have taken these reforms to other localities in China as leaders of the central government since the 1990s.⁴⁰ It is in this context that China's NOCs have begun the path to privatization. China's NOC oil fields and refineries have practiced this form of bottom-up privatization, with the proliferation of new property forms occurring across them in the 1990s. The result has been the discovery of thousands of “collective” forms of property on the books of CNPC, Sinopec, and even CNOOC as they began to conduct audits in preparation of issuing their IPOs on Hong Kong and New York capital markets at the end of the 1990s.⁴¹

The restructuring of the oil and gas sector into three companies in 1998 created three integrated corporations from what had primarily been an upstream enterprise (CNPC), a downstream enterprise (Sinopec) and an offshore upstream enterprise (CNOOC), but left them with near-exclusive production and distribution rights in various parts of the country and offshore. The restructuring also formalized many privatization experiments that had occurred across the oil fields and refineries of the subsidiaries.⁴² As mentioned in the first section of the paper, the 1998 restructuring also acknowledged geographical distinctions between the three firms; CNPC and its PetroChina operate in the north, northeast, and northwest, Sinopec in the central, east, and southeast, and CNOOC offshore. Although not economically optimal—and under World Trade Organization (WTO) accession rules not economically sustainable after 2005—such an institutional arrangement was a compromise intended to maintain the domination of the various component oil fields and refinery administrations within their respective corporate hierarchies, and CCP direct administrative control over them. Decentralization has merely re-strengthened the authority of component departments and of their economic partners, the local governments, and prevented the establishment of strong, formal ownership and regulatory authority at the national level.⁴³

This path of institutional change has created enormous institutional obstacles for the successful vertical integration of China's oil and gas companies, making it difficult to restructure according to product lines, to standardize training, employment, and management practices across

subsidiaries, and even to develop the large pipeline projects that must unite the plans of far-flung oil fields, refineries, and local governments. CNPC, Sinopec, and the central government hope to develop more oil and gas pipelines to bring oil from Kazakhstan, Russia, and Xinjiang to northeast China, and gas from Xinjiang's Tarim Basin, several thousand kilometers eastward to Shanghai in east China. But as these companies have not yet even successfully unified their component oil fields and refinery administrations, much less addressed how to unite for the first time the development plans and regulatory authority of dozens of provincial and municipal governments with the investments of many multinational corporations, the successful construction, operation, and maintenance of all of these pipelines will be difficult to achieve in the near future.⁴⁴

The problems of decentralized economic planning and growth have been exacerbated by the semi-privatization of these companies through the listing of American Depository Receipts (ADRs) on foreign stock exchanges. The central government and the headquarters of these companies have attempted to "peel off" the "non-core" departments of these companies (including education, medical, transportation, research, and design services), furloughing millions of employees and putting them into the hands of social security systems maintained by local governments. They hope that "leaner" and more efficient "core" components can then be turned over to the administration of the newly formed, privatized subsidiaries. Local governments, often the original investors in these component oil fields and refineries, do not receive assets from these privatizations, but they must bear the cost of the downsizing. And unlike many decentralized fiscal and political systems, China's planned economy does not provide natural resource royalties to local governments. Not surprisingly, therefore, China's decentralization has resulted in increased competition and conflict between local government and central government, and between corporate headquarters and local departments and subsidiaries.

All levels of government and of state-owned enterprises politically are facing increasing pressure to pay for the costs of establishing a national social welfare system and the costs of cleaning up industrial pollution. With privatization, stakeholders in China, as in other countries with privatizing NOCs, gain the incentive to sue the new corporations to recoup these costs. In times of rising oil prices and windfall revenues from taxes on the NOCs and on consumers, CNPC,

Sinopec, and CNOOC may be viewed by central government social welfare agencies and local governments as cash cows for further reforms. Such profits represent several percent of gross domestic product (GDP), and 31.7 percent of total profits from centrally-owned SOEs.⁴⁵

As a result, CNPC, Sinopec, and CNOOC face considerable institutional obstacles to successful privatization and preparation for competition with the multinational integrated oil and gas majors, as there are as yet few established legal institutions to resolve conflicts between government agencies and enterprises, and between and among central and local governments. The maintenance of the *nomenklatura* system of CCP control over appointments to the judiciaries is an additional obstacle to the establishment of independent regulatory authorities and privatized state enterprises.

The Nomenklatura System of Party Control and Corporatization Problems for Chinese SOEs and the NOCs

Although much has been made recently in the popular press and in political debates of the ability of Chinese national oil companies to compete with and to acquire the assets of Western and multinational oil and gas companies, the CNOOC and Unocal case is not indicative of the general ability of Chinese national oil companies overall to compete with most multinational oil and gas companies.⁴⁶ By many measures of corporatization, CNOOC is certainly the most professional and international of the three Chinese national oil companies.⁴⁷ From 2003-2011 it had a chief executive trained and educated in Western business administration (Fu Chengyu, who was moved over to lead Sinopec when its chief became the leader of Fujian). It has a board of directors and advisers drawn from outside of China and outside the energy industry, and it has lower-level managers and executives with experience working in private companies in Hong Kong, the United States, Europe, and other international work environments. A determination of its actual degree of direct control by the central government and the CCP through the *nomenklatura* system of cadre appointments remains to be conducted, but structurally these measures of professionalization suggest that it is the most corporatized of the three oil and gas companies.

However, it is important to note that CNOOC was designed to have this structure from the very beginning in the late 1970s, as a state corporation that could develop joint ventures with foreign companies to explore offshore oil and gas assets. CNOOC thus has fewer of the long-term institutional obstacles—including the enormous social sector subsidiaries of oil fields and refineries, and the very large workforces—that have thus far constrained the privatization and corporatization of CNPC and Sinopec. Moreover, as a state corporation with the seemingly near exclusive right to engage in offshore oil and gas exploration and production in a state-controlled system lacking the provision of royalties to local governments, CNOOC has not had to deal with many of the conflicts over unemployment and environmental cleanup faced by the much larger CNPC and Sinopec in their dealings with local governments. Overall, then, the problems of CNOOC as it corporatizes and enters the global economy are not reflective of the many long-term institutional obstacles faced by the bulk of the Chinese energy industry.

The Chinese NOCs are struggling to adjust to the gradual structural marketization of the Chinese energy economy. They face many pressures, including the push to privatization, the growing sophistication of increasingly important individual Chinese investors, and the demands from capital markets for forms of organization that will cater to investors' requirements. The appearance of a private energy company in the spring and summer of 2005—with approval from the central government to raise capital overseas and to receive oil import quotas much as the major NOCs do—is a sign that the NOCs will face continued pressure to corporatize. Through its approval, the central government seems to be recognizing the inability of the national oil companies to work with local governments to resolve energy distribution needs. This particular company, China Great Wall Petroleum, is the offspring of an informal association, self-labeled the China Chamber of Commerce for the Petroleum Industry. The company marshals the organizational resources of provincial and municipal-level oil and gas companies, particularly in the downstream sector. Such corporations are the product of strong decentralization policies that have been growing in the oil and gas industry since the early 1990s.⁴⁸ These same tendencies presented serious obstacles to the construction of the west-east gas pipeline and are likely to continue to play a role in its management and development.⁴⁹

In order to assess the impact of these private companies on the ability of the Chinese national oil companies to develop China's energy infrastructure, future comparative research on NOCs from marketizing, planned economies, and one-party political systems should focus on the corporatization of these NOCs and the potential establishment of *nomenklatura* control over all private companies and “associations.”

Does the central committee of the CCP retain appointment approval authority over the management of the NOCs and their subsidiary units? The control over the latter is particularly important to explore, because some of these individual oil field and refinery administrations are themselves of high ranking in the *nomenklatura* bureaucracy. According to the history of *nomenklatura* systems, the means by which Communist Party leaders directly control the appointment of leaders of government agencies, military units, political representative bodies, state enterprises, and mass organizations, many planned economies—including the Soviet Union and the People's Republic of China (PRC)—turned these appointment authority powers over to provincial and municipal party committees during the early periods of reform in the 1980s. In China's case, however, the Central Committee reversed the decentralization trend after the Tiananmen Square protests in 1989, but only in certain sectors and parts of the Chinese government and industry. As a comparison of the *nomenklatura* lists from the 1980s and late 1990s reveals, the trend since the beginning of the 1990s has been to recentralize direct approval authority in key or strategic industries.⁵⁰ Research in this area is particularly problematic, because materials on these internal CCP appointments and personnel systems may be considered “state” secrets.

The fact that some of the largest oil field and refinery administrations still refer to themselves in their annual gazettes, on their websites, and in industry publications as “administrations”—the Sichuan Oilfield Administration (shiyou ju [石油局]) is a prominent example—suggests that the *nomenklatura* system of CCP appointments has been maintained, at least in some localities.⁵¹ Long-term research in this area should focus on the circulation of professional managers across subsidiaries and component units of the national oil companies. Privatization and corporatization cannot effectively emerge until managers from different parts of these

subsidiaries are able to circulate across them, and until these companies also accept outside managers and professionals.⁵²

In the long-term, the NOCs are facing competitive pressures of another form. As argued in the first section of this report, because governmental sources and foreign investment sources of capital necessary to develop China's national and international energy infrastructure may be scarce in the future, the Chinese NOCs will have to compete with the multinational corporations for the capital of an Asian capital market increasingly dominated by individual, including Chinese individual, investors. The question here is: Will the tens of millions of Chinese professional and middle class investors of the future prefer to invest in the Chinese NOCs or their foreign counterparts? Survey research in 2004 and 2005 suggests that Chinese urban residents have been skeptical of the ability of Chinese national energy companies to acquire and import overseas energy assets in particular. This could be part of a general lack of confidence in the ability of Chinese state enterprises to compete globally, but it could also reflect public disappointment with the domestic performance of the NOCs in the middle parts of the first decade of this century, when CNPC in particular had some highly publicized pipeline accidents.⁵³

This in itself is perhaps one of the primary motivations of CNOOC in its bid to purchase Unocal. CNOOC, by merging with a foreign firm that is seen as a successful enterprise, hoped to enhance its status in the view of investors and the Chinese public and thus surpass the other Chinese SOEs. CNOOC's major initiative in U.S. shale gas resources could also play a similar role. This type of public identification with a Chinese SOE is particularly important for CNOOC, because it does not have the many historical ties to political symbols and economic development campaigns that the large oil fields of CNPC and Sinopec hold. All Chinese know Daqing, and many may know Shengli, but the achievements of CNOOC most likely are, quite literally, offshore and out of view in the minds of the Chinese public.⁵⁴

In Brazil, the proposed sale of shares by Petrobras to foreign investors, and the proposed merger of assets with multinationals, generated popular protest and discussions of economic nationalism. In China, however, many tens of millions of people have worked for foreign-invested enterprises for more than a decade, particularly in the coastal areas. And in China's largest coastal cities,

millions of urbanites have participated in the constrained domestic capital markets for almost 20 years. In short, many Chinese investors are most likely accustomed to the idea of foreign participation in China's industrial organizations, and they are most likely concerned about the ability of these organizations to compete with foreign companies for the management of their individual capital. The recent proliferation of Chinese "energy investment" experts—who can provide analysis of the performance of China's oil and gas companies directed toward the needs of the individual Chinese investor—suggests that a market for energy economy information services is gradually emerging.⁵⁵ As this trend continues, the pressure on NOCs to corporatize will increase.

Ineffective Hydrocarbon State Regulatory and Ownership Institutions and Strong Local Government Roles in Coal and Strong NOC Roles in Oil and Gas Policy Formation

Given the decentralization of state enterprise and the CCP discussed in previous sections, will Chinese NOCs be more autonomous or less autonomous in the future? This section looks more closely and systematically at how the CCP and the NOCs are interconnected organizationally such that it will be difficult to reform one without reforming the other. CCP leaders must balance reforms of NOCs such that they neither weaken the CCP's access to the enterprise levers that control the economy, nor empower the NOCs to be an internal rival to the central government and the CCP itself (a return to a period of dominance by a "petroleum faction" as in the 1970s).

In order to understand the close relationship between the CCP and the NOCs, first consider the importance of energy SOEs in supporting China's economic growth. As stated elsewhere, China's economic growth path in the era of post-Mao reforms has largely been one of increasingly accelerating competition between localities within China, which are in turn competing with localities in other developing countries for export markets and access to international sources of capital and technology. Unlike previous periods, where the central government directed and controlled major infrastructure projects as part of the Five-Year Plans (FYPs), since the late 1970s the central government has invested in fewer and fewer large projects and instead focused on redistributing resources from the more economically developed and thriving coastal localities to the more backward interior provinces and autonomous regions.⁵⁶

This decentralization in economic development policy can be seen in the increasingly large role of local governments in developing China's energy infrastructure. In 2006, the central government invested just over 1 trillion RMB (approximately \$125 billion) in fixed assets in urban areas as local governments invested some 8.2 trillion RMB (just over \$1 trillion). In the same year, the central government invested 14.3 billion RMB in urban areas for the mining and washing of coal, while local governments invested some 131.6 billion RMB. The situation in petroleum and natural gas extraction was the opposite, however, with the central government making some 157.9 billion RMB in investments, mainly through the three centrally-owned NOCs, and local governments investing only 24.3 billion RMB. Local governments were the main investors in the production and supply of electric power and heat power, making 461.2 billion RMB in fixed investments in 2006, with the central government making only 266.1 billion RMB.⁵⁷

Most research by international scholars, including OECD and IEA analyses of the role of central and local governments, has compared the energy needs and economic growth of “coastal” and “interior” provinces. Although this presents many useful metrics for comparing the accelerated growth rates of such eastern China provinces and cities as Shandong, Jiangsu, Zhejiang, and Shanghai, and the vibrant southern China provinces of Fujian and Guangdong, and the advantages in access to global markets for the manufacturing goods that they hold as coastal provinces, these distinctions obscure significant variations in the historical energy supply and demand roles of Chinese localities. These variations explain their varying motivations for engaging the NOCs and the central government on energy policy issues.⁵⁸ To see this, consider the different influence of locality and central government—and its SOEs—over time in coal production and consumption. Coal provides more than 70 percent of China's total energy needs.

Table 1. Coal Dependence of Chinese Provinces (1998 and 2005)

Province, Municipality, Autonomous Region	Region	1988 Coal Production as Percent of Consumption	2005 Coal Production as Percent of Consumption	2005 IEA Est. Energy Balance	2006 Ensured Coal Reserves 100 million tons	2006 Ensured Coal Reserves Percent Total China	% 2006 China Total Pop.	% 2006 China Total Gross Ind. Output Value
Beijing	North	53.9	71.8	1	5.73	.17	1.2	2.5
Tianjin	North	6.6	0	1	2.97	.08	.8	2.6
Hebei	North	87.6	108	1	68.15	2	5.2	4.2
Shanxi	North	354.7	1,291.70	3	1051.66	31.55	2.5	1.8
Inner Mongolia	North	116.7	576.7	3	802.33	24.00	1.8	1.3
Liaoning	Northeast	67.7	182.8	1	49.75	1.4	3.2	4.4
Jilin	Northeast	64.4	103.1	1	17.11	.5	2.0	1.5
Heilongjiang	Northeast	130.2	497	3	77.67	2	2.9	1.7
Shanghai	East	16.8	0	1	0	0	1.3	5.8
Jiangsu	East	40.4	60.2	1	18.30	.5	5.7	13
Zhejiang	East	7.6	1.2	1	0.49	.01	3.7	9.2
Anhui	East	104.5	213	2	118.74	3.5	4.6	1.8
Fujian	East	73	80.7	1	4.79	.1	2.7	3.1
Jiangxi	East	93.4	169.9	1	8.18	.2	3.3	1.3
Shandong	East	90.1	1497.4	1	103.25	3	7.0	12.2
Henan	Central/South	133.9	258.5	1	123.30	3.6	7.1	4.3
Hubei	Central/South	39.3	16.6	3	3.26	.01	4.3	2.3
Hunan	Central/South	90.9	117.3	1	20.12	.6	4.8	1.9
Guangdong	Central/South	42.7	16.7	1	1.89	.1	7.0	14.1
Guangxi	Central/South	71.1	37.6	1	8.46	.2	3.5	1
Hainan	Central/South	0	0	1	0.90	.02	.6	.2
Chongqing	Southwest	n.a.	190.7	2	18.26	.5	2.1	1
Sichuan	Southwest	106.1	258.9	2	50.26	1.5	6.2	2.5
Guizhou	Southwest	142.5	248.2	3	148.26	4.4	2.8	.6
Yunnan	Southwest	108.3	245.8	3	73.57	2.2	3.4	1
Xizang	Southwest	100	0	n.a.	0.12	.03	.2	.01
Shaanxi	West	111.2	547.5	3	277.57	8.3	2.8	1.4
Gansu	West	84.1	244.6	2	61.70	1.8	1.9	.7
Qinghai	West	60.2	174.4	2	20.66	.6	.4	.2
Ningxia	West	184.3	234.7	2	70.06	2.1	.4	.2
Xinjiang	West	117.1	265.5	3	127.28	3.8	1.5	.8

Note: With relation to IEA overall energy estimate and proportion of coal reserves, population, and industrial output. Numbers in shading suggest relative energy independence, bold suggest greater than average by population. Also, 2005 figures calculated from National Bureau of Statistics, China Energy Statistical Yearbook 2006 (SSB 2006); pp. 126-142; 1988 figures calculated from National Bureau of Statistics, China Energy Statistical Yearbook 1989 (SSB 1990); raw coal and coke production, pp. 94-96; coal consumption, pp. 194. Also note that 1988 and 2005 figures are not completely comparable because of changes in metrics reported to the State Statistical Bureau, but this analysis assumes that “raw coke and coal” production figures of 1988 are combined very similar to “total coal production” reported in 2005, as these constitute most of the various forms of coal reported in 2005. Ensured coal reserves 2006 from National Bureau of Statistics, China Statistical Yearbook 2007 (SSB 2007), pg. 11, population 2006, pg. 107, gross industrial output value pg. 508.

Note: 2005 Estimation by IEA, using Chinese NBS statistics (1=energy demand higher than supply by 20 percent; 2=energy demand higher than supply; 3=energy supply higher than demand by 20 percent [IEA 2007 (267) NBS/IEA]).

As seen in Table 1, in 1988, 12 of China's then 30 provinces, special municipalities, and autonomous regions produced more coal than they consumed. Nearly two decades later, in 2005, after significant investments in coal mining by almost all localities, 20 localities had gained relative coal independence. The most economically dynamic Eastern and Central/Southern provinces—as seen in their share of 2006 total gross industrial output value, in proportion to their percentage of China's overall population—were still dependent on imports of coal from the North and West, and increasingly from overseas, but even among these provinces Jiangxi, Shandong, and Hunan had gained relative coal independence. The table also includes the IEA identification of relative energy autonomy, showing that it only captures some of the provinces that have become more independent in coal supply in recent years.⁵⁹

The long-term energy autonomy of these localities, however, is constrained by the unequal distribution of coal beds across China. Some 55 percent of China's ensured coal reserves are in north China's Shanxi province and the Inner Mongolia Autonomous Region, with another 17 percent in west China's Guizhou and Shanxi provinces and the Xinjiang Uyghur Autonomous Region. Overall in the coal sector, although the central government owns few enterprises for coal production, and makes relatively few investments in coal extraction and washing, its influence can be seen in the fact that some 70 percent of the freight on China's central government-owned railways is coal. The key role of the central government in the coal sector—the fuel for the vast bulk of China's energy production, and the engine driving the rapid growth in industrial production—is thus largely one of ensuring the movement of coal from a few localities in the North and West to the energy-thirsty East and South. This dependence of the coal sector, and China's local economies in general, on the central ministry of railways was made painfully clear in January and February 2008, as unusually harsh ice storms in the central China provinces of Hunan, Hubei, and Jiangxi stranded millions of New Year passengers, and stopped the flow of coal from north to south and west to east. CCP leaders scrambled to mobilize soldiers to clear railroad tracks and rebuild power lines, and traveled to Northern coal mines and ports to exhort workers to put in extra shifts in order to divert more coal east and south via coastal shipping.

Contrast the growth of the coal sector with the petroleum sector. As seen in Table 2, in 1988, nine of the then 30 localities were producing more oil than they consumed. By 2005, this number

had shrunk to only five provinces. Although in comparison to coal, China's oil reserves are more evenly distributed—with a significant and relatively untapped 13 percent located offshore—the oil sector, which provides some 20 percent of China's total energy supply, is largely dependent on oil production and extraction in just eight provinces and regions: north China's Heilongjiang (Daqig Oil Field), Jilin, Liaoning (Liaohe Oil Field), and Hebei (Dagang Oil Field), east China's Shandong (Shengli), with west China's Shanxi, Gansu, and Xinjiang (Tarim). The table also shows the varying thirst for oil, as seen in its main use, stock for gasoline and diesel fuel. The table shows consumption of these fuels in relation to the distribution of people across Chinese localities. Unlike coal, where all provinces consume significant amounts to support industrial production, in the oil sector there are more elite or advanced consuming localities, and then there are also those that are relatively undeveloped, most likely because of the prohibitively high cost of automobiles and trucks to individuals and small private enterprises. Most of the oil producing localities are themselves also significant gas and diesel consumers, as are the wealthier coastal provinces of eastern and southern China. The mountainous and relatively underdeveloped Sichuan Province in western China, for example, is home to more than 6 percent of China's 1.3 billion population, yet it consumes only 2-3 percent of China's gasoline and diesel. The coastal Guangdong Province, only slightly larger in population, uses nearly 12 percent of these fuels. Beijing and Shanghai, where a growing middle class is buying cars and flooding freeways, contain only 2.5 percent of China's population, and yet altogether they consumed almost 8 percent of the nation's gasoline in 2006.

Table 2. Oil Dependence of Chinese Provinces (1998 and 2005)

Province, Municipality, Autonomous Region	Region	1988 Oil Production as Percent Consume	2005 Oil Production as Percent Consume	2005 IEA Est. Energy Balance	2006 Ensured Oil Reserves 10,000 Tons	2006 Oil Reserves Percent China Total	% 2006 Total China Pop.	% 2005 Total China Gas Consume	% 2005 Total China Diesel Consume
Beijing	North	0	0	1	0	0	1.2	3.7	1.3
Tianjin	North	102.5	269.2	1	3074.99	1.1	.8	1.8	2.2
Hebei	North	170.6	58.3	1	16338.63	5.9	5.2	3.5	4.1
Shanxi	North	0	0	3	0	0	2.5	1.5	2.3
Inner Mongolia	North	0	0	3	5526.32	2.0	1.8	3.0	3.5
Liaoning	Northeast	107	73.3	1	17010.38	6.1	3.2	5.6	5.0
Jilin	Northeast	87.1	65.3	1	16529.56	5.9	2.0	2.6	2.2
Heilongjiang	Northeast	753.7	385.5	3	62196.71	22.5	2.9	4.9	4.4
Shanghai	East	0	15.3	1	0	0	1.3	3.8	3.0
Jiangsu	East	11.2	7.8	1	2503.77	.9	5.7	6.7	4.8
Zhejiang	East	0	0	1	0	0	3.7	5.8	7.5
Anhui	East	1	0	2	137.88	.04	4.6	1.3	1.9
Fujian	East	0	0	1	0	0	2.7	3.1	3.4
Jiangxi	East	0	0	1	0	0	3.3	1.0	2.8
Shandong	East	312.7	90.3	1	34747.87	12.5	7.0	7.9	10.5
Henan	Central/South	314.7	60.3	1	5370.67	1.9	7.1	3.7	3.0
Hubei	Central/South	20.1	6.5	3	1187.18	.4	4.3	5.8	4.2
Hunan	Central/South	0	0	1	0	0	4.8	4.3	2.6
Guangdong	Central/South	4.8	37.2	1	9.0	.03	7.0	11.2	12.2
Guangxi	Central/South	10.9	0.5	1	175.16	.06	3.5	2.3	3.0
Hainan	Central/South	0	0	1	40.80	.01	.6	.6	.4
Chongqing	Southwest	n.a.	0	2	0	0	2.1	1.2	1.6
Sichuan	Southwest	5.9	0.02	2	345.05	.1	6.2	3.5	2.6
Guizhou	Southwest	0	0	3	0	0	2.8	1.0	1.3
Yunnan	Southwest	0	0	3	12.40	.04	3.4	1.9	2.6
Xizang	Southwest	0	0	n.a.	0	0	.2	n.a.	n.a.
Shaanxi	West	35.5	360.3	3	19884.83	7.2	2.8	3.1	1.6
Gansu	West	55.7	81.4	2	8727.59	3.1	1.9	1.3	1.0
Qinghai	West	149.7	373.1	2	4377.23	1.5	.4	.2	.2
Ningxia	West	115.3	0.03	2	139.91	.05	.4	.3	.5
Xinjiang	West	211.2	257	3	41883.22	15.1	1.5	1.7	2.8
OFFSHORE		n.a.	n.a.	n.a.	35637.62	12.9	n.a.	n.a.	n.a.

Note: With relation to IEA overall energy estimate and proportion of oil reserves, population, and gas and diesel consumption. Numbers in shading suggest relative energy independence, bold suggest greater than average by population. 2005 figures calculated from National Bureau of Statistics, China Energy Statistical Yearbook 2006 (SSB 2006), pp. 126-142; 1988 figures calculated from National Bureau of Statistics, China Energy Statistical Yearbook 1989 (SSB 1990); total oil production, pp. 98; total oil consumption, pp. 195. Also note that 1988 and 2005 figures are not completely comparable because of changes in metrics reported to the State Statistical Bureau, but this analysis assumes that “crude oil production” in 1988 is the vast bulk of total “petroleum production” reported in 2005. Ensured oil reserves 2006 from China Statistical Yearbook 2007 (SSB 2007), pg. 11, population 2006, pg. 107; 2005 gas and diesel consumption from National Bureau of Statistics, China Energy Statistical Yearbook 2006, pp. 117, 119. Note: 2005 Estimation by IEA, using Chinese NBS statistics (1=energy demand higher than supply by 20 percent; 2=energy demand higher than supply; 3=energy supply higher than demand by 20 percent [IEA 2007 (267) NBS/IEA]).

The central government does not play a very large, direct role in moving crude oil and refined products from producing provinces to consuming localities. As seen in Table 1 in the appendix, China has some 25 major crude pipelines covering more than 10,000 kilometers, and yet only 11 of these connect two or more provinces, with most of these managed by CNPC in the Northeast or far West, and those of Sinopec in east China's Shandong and Yangtze River Mouth region. With large investments by these companies in new pipelines, about half of the crude moved in China will soon move by pipeline. Most of the rest is transported by rail, including a portion of imports from Russia and Kazakhstan, which only recently became connected to China by pipeline.

Although oil is not as important as coal to the economies of most provinces, here the competition among provinces for oil is felt more intensely by some provinces than others. Whereas the east China provinces and municipalities are also dependent on the central government's ministry of railways for vital coal shipments, they are relatively diversified in terms of transportation of oil supplies because they have access to international shipments through ports and through the crude and product pipelines of Sinopec, in particular. In contrast, south China's Guangdong Province—China's largest energy consumer locality—is not only dependent on the central government for stable, low-cost coal supplies via rail, it must also receive much of its domestic oil through the same means. When there have been significant disruptions in international supplies of crude oil and refined products in recent years, Guangdong Province more than other localities has suffered shortages and related protests by consumers.

Although natural gas is still a very small part of China's energy mix, the Eastern provinces have more diversity in means of supply with the completion of the two west-to-east gas pipelines, connecting 11 provinces and localities, from western China's Xinjiang Autonomous Region to Shanghai in the East. Western China's Sichuan Province, home to not only substantial gas supplies but also a long-established circular network of distribution pipelines, has reached eastward to send gas to central China's Hubei Province and Wuhan City. Shanghai Municipality's energy security strategy also includes bringing gas from offshore in the East China Sea, as well as future LNG terminals planned for nearby localities. Guangdong and Fujian, in the far South, however, have not been able to access any substantial offshore gas supplies,

have no access to domestic gas pipelines, and will likely be dependent on LNG sources for future growth in gas. As such, these provinces will be in more direct competition with the localities of other nations in the Pacific Rim, including those in Japan, Korea, Taiwan, and the American West Coast. The potential for shale gas in China, however, could potentially drastically alter the energy security policies and strategies of both central and local governments.

In sum, as the data in these tables illustrate, the growth of China's energy sector in the decades since reforms were launched in 1978 has been much like that in other economic sectors: mainly driven by local conditions and needs. Most of the investment in the power generation that supports export-driven manufacturing growth is made by localities, with only the bulk of the cost and coordination of shipping domestic coal from producing to consuming localities borne by the central government. If recent stated plans to privatize the railways are implemented, the central government will largely exit the coal side of the energy sector, except for some large open-faced coal mine enterprises being set up by the central government in Inner Mongolia and Shanxi. On the oil side, the central government largely controls the domestic production of oil only through ownership of the three NOCs and through support for oil transportation via rail. If the privatization of railways continues, and if this is not followed by the privatization of pipelines owned by CNPC and Sinopec, the central government's role in the oil sector will largely be seen only indirectly, through the increasingly influential three NOCs.

Given the different needs for energy infrastructure development of the many Chinese localities, and the competition among them to obtain stable, low-cost hydrocarbon supplies, it is not surprising that local governments have not only made major investments in power generation and coal mining in particular, but also developed local government organizational solutions to these energy supply problems. The lack of coordination and the diffuse nature of energy policy formation at the central government level are mirrored in the complex variation of local administrative responses to growth in the energy sector developed over the decades of reform.

Until the most recent FYP, the central government had a planning commission and an economic commission—the Chinese version of Gosplan and Gosarbitrazh—to plan development and to coordinate all economic policy, as did the local governments. And as the central government had

its transitional Economic Structure Reform Commission (tigaiwei, or 经济体制改革委员会) in the 1980s and the 1990s to coordinate efforts to restructure the administrative organs of the planned economy, so did the local governments have their economic structure reform offices. When the central government began downsizing and restructuring under Premier Zhu Rongji in 1998, it gradually merged these entities together, creating the new NDRC (fagaiwei, or 国家发展和改革委员会), which housed all agencies dealing with economic planning and restructuring, including those related to developing the energy sector, and plotting and collecting the data necessary for its planning. Ownership roles remain located in the energy SOEs, with their control ostensibly moving to other central government offices that control the large central SOEs, such as the offices that control privatized state assets, and those that oversee participation of SOEs in plans to develop a national social security, health care, and pension system. Control over appointments of key management positions in the enterprises has remained a function, albeit largely an opaque and mysterious one, of the CCP's Central Committee.

At the local level, energy policy formulation and management of energy enterprises is similarly diffuse and thus seemingly disorganized. A cursory search of the official government websites of Chinese provinces, municipalities, and autonomous regions reveals much variation in the organizational structure of governmental energy administration. As with the central government, all localities now have “Development and Reform Commission” offices, but beneath these are a variety of administrative departments and offices unique to each local history of the development of a planned economy, including the energy sector. Shanghai's Development and Reform Commission has a department of Energy Development (nengyuan fazhan chu, or 能源发展处), as does Beijing.⁶⁰ Tianjin municipality's Development and Reform Commission, however, does not seem to have a formal department of energy planning, but it does have lower level offices that deal with planning for petrochemicals and for coal-gas.⁶¹ Chongqing, China's fourth municipality directly under the central government, has an “energy department” (nengyuan chu, or 能源处) under its municipal planning and reform commission, but perhaps as a reflection of the preeminence of electric power generation in its energy development plans—it is just upstream from the massive Three Gorges Dam—it notes that this organ is also the office of the “electric power system reform leadership small group” (chongqing shi dianli tizhi gaige lingdao

xiaozu bangong shi, or 重庆市电力体制改革领导小组办公室).⁶² Western China's Xinjiang Autonomous Region, the site of an increasingly large amount of domestic oil and gas production, has an "energy department" under its development reform commission, but describes it as an "office for the coordinated management of energy" (zizhi qu nengyuan xietiao guanli bangong shi, or 自治区能源协调管理办公室). And perhaps because it is also an important transit location for oil from Kazakhstan, and because it pipes oil and gas far to the East in China, it also has a full department of "energy transportation pricing" (nengyuan jiaotong jiage chu, or 能源交通价格处).⁶³ Resource-poor Guangdong Province in south China has an "energy department" recently formed under the development and reform commission. It was formed from the former provincial "energy office" (nengyuan ban, or 能源办) and the provincial "department of energy planning" (nengyuan guihua chu, or 能源规划处). And, perhaps more transparently than most governments in China, the Guangdong provincial reform commission also lists the members of the commission, their CCP ranking, and the areas of policy expertise for which they are individually responsible (notably, none include energy, although one of the lowest ranking officials is responsible for conservation efforts).⁶⁴

The decentralized and locally idiosyncratic nature of governance in China thus poses a problem for energy policy studies in particular, and China studies in general: Just how do the leaders in Beijing manage to manage the energy sector? The variation in energy administration departments and offices across localities in and of itself presents a serious communication obstacle for central energy planners. Simply keeping track of how central government organs should be matched with their local government functional counterparts must be a daunting and constantly evolving task. How do China's central planners come to plan centrally? There appears to be order, but no law.

Because they are being used to explain the more long-term institutional obstacles to organizational change, existing theories of bureaucratic management examine the rules and norms of the organizations of policy decision-making and implementation, and in doing so often discount the individual backgrounds and relationships of policymakers, which are more difficult to explain systematically and empirically. This is particularly true in the case of Chinese

government and CCP studies, where both formal rules and norms of the organizations, and the backgrounds and interests of individual officials, are often not public knowledge. As such, scholars are often forced to simply make assumptions about what motivates policymakers, and how they actually come to make collective decisions within their government and CCP organizations.⁶⁵ Another area of research looks at the Chinese policymaking structure as being more fluid and more responsive to the agendas of individual leaders and the relationships among them. Empirical work here is largely anecdotal, based upon interviews or “tell all” stories by current or former officials that are published in Hong Kong or Taiwanese popular media.⁶⁶ China energy policy studies have often attempted to test theories that are somewhere in between—making assumptions about the motivations and backgrounds of CCP leaders and government officials, and yet integrating the presence of informal and ad hoc forms of organization into their analyses of energy policy formation.⁶⁷

Clearly, key decisions on energy policy are made at the highest levels of the CCP, the organization that controls both the state organs and the *nomenklatura* system of appointments of managerial positions within the SOEs and the NOCs. And although there is a growing historical literature on the norms and decision-making practices of top CCP leaders, as reflected in the records of the meetings of the some 200-member Central Committee and its some 20 leaders in the Politburo, the lack of transparency in more recent decades prevents much systematic analysis of the role of the top formal organs of CCP control in policy formation.⁶⁸ In the reform-minded late 1980s, CCP leaders Zhao Ziyang and Hu Yaobang experimented with making public some of the topics discussed at monthly Politburo meetings, and even gave observers some idea of how often they met by releasing notes and directives from these meetings with sequential publication numbers attached to them. The Jiang Zemin (江泽民) and Hu Jintao (胡锦涛) eras, however, have been more opaque, even as top leaders have attempted to portray themselves as being more transparent, open, and communicative. The state media do not always publicly report on the issues discussed at the monthly Politburo meetings, but they have reported on the topics addressed at the dozens of “study sessions” in which Politburo meetings have been followed by “consultations” with domestic policy experts. As studies of these reveal, in recent years there has been only one “study session” in which energy policy was discussed explicitly, in the summer of 2005.⁶⁹

Economic policy studies have thus turned to looking at the role of ad hoc and informal organizations of policy planning and implementation of individual CCP central leaders—the so-called leadership small groups (lingdao xiaozu, or 领导小组).⁷⁰ Because these organizations themselves do not make public their reports or records of meetings, scholars have had to make assumptions about their role and positions in formal policymaking, based upon interviews with government and industry “insiders” and studies of the public statements of their individual members. This is particularly difficult when their relationship to individual Politburo members, and other members of the large Central Committee, is not clear. On the other hand, scholars have begun to conduct more systematic studies of the nature of the Central Committee, including analyses of the assumed motivations of its members, and the “interests” that they might usefully be assumed to “represent” in Chinese policymaking.

Following the perceptions of outside elite political observers and the stated views of “insiders,” various “factional” interests can be assumed to play a role in group or coalition formation within the Central Committee. These groups are usually believed to include the military, the Communist Youth League, local groups (most recently the “Shanghai Clique”), the princelings (children of high-ranking leaders), and even entrepreneurs and industry leaders.⁷¹ Unfortunately, these studies do not attempt to tie the factional groups to specific policies, nor do they explain the interaction of these factions through the leadership small groups. Moreover, although they do attempt to identify which Central Committee members “represent” the various localities in China, they assume that local interests are reflected only in the current formal leadership roles of Central Committee members—the currently serving party secretary and governorship positions of localities. This assumption does not account for the long-standing Chinese bureaucratic norm of forbidding leaders from serving in their native place, and for the norm of requiring them to rotate among localities. Most of China’s top leaders have served in many localities, building up extensive cross-local networks of subordinates and peers that they can draw upon to form “coalitions,” as well as a store of personal knowledge of the varying political and economic conditions across the many localities.

This study attempts to integrate insights from these Central Committee and leadership small group studies and eliminate these shortcomings in Central Committee studies by examining

systematically the personal backgrounds of all full members of the Central Committees, looking for ties to both localities and the energy sector.⁷² What does it reveal about the way that the central leadership controls energy policy and the Chinese NOCs?

First, it suggests that the real influence of the Politburo members can be seen in the diversity of their personal backgrounds, and in particular their experiences in bridging localities and in serving in energy SOEs. Appendix Table 2 maps each of the localities served in by the 25 nonmilitary members of the Politburo of the 16th Central Committee (2002-2007), under CCP General Secretary Hu Jintao and Premier Wen Jiabao. Between them, they have served in almost every locality (27 of 31). Moreover, many of them have served in many localities, with an average of 2.32 per member. Appendix Table 3 shows the continuation of these characteristics, with even more local experience (2.52 localities on average) for members of the new 17th Central Committee Politburo, although slightly less coverage of localities (six localities were not served in). These tables also show that most of the previous experience has been at localities in the most populous regions of eastern and central China, but note that many have served at one time in their careers not only in Beijing and Shanghai, but also in the more remote regions, including Xinjiang in western China. The Politburo has more experience in local administration than the average nonmilitary member of the Central Committee, with the average for the 16th Central Committee only 1.5 localities per nonmilitary member.

Now consider the backgrounds of Central Committee members who have served in state enterprises, and in energy enterprises in particular. Fully 65 of the 144 nonmilitary members of the 16th Central Committee served in enterprises (44 percent), and of these, 23 were energy-related enterprises (about 30 percent). Appendix Table 4 maps the localities they have served in, and notes the part of the energy sector in which they have experience: three in coal, four in power, six in oil and gas, and 10 in petrochemical/chemical. It shows that they have more experience across localities than the average Central Committee member (an average of two localities per member). Enterprise experience is higher at the top, with 13 of the 26 nonmilitary members of the 16th Politburo having served in them. And although only six of the 198 full members of the Central Committee have worked under the component parts of CNPC, Sinopec, and CNOOC, their representation at the top of the CCP is remarkable. Six of the 23 full members

who served in energy state enterprises in the early years of the last decade were Politburo members, with three having experience in oil (Wu Yi [吴仪], Zeng Qinghong [曾庆红], and Zhou Yongkang [周永康]), one in power (Huang Ju), and two in petrochemical/chemical (He Guoqiang [贺国强]) and Wu Guanzheng [吴官正]). Many of these leaders continued forward into the 17th Central Committee and its Politburo, and yet many of them will be retiring in 2012 because of age requirements. In all, they represent a continued heavy presence of energy enterprise leaders at the top of the Chinese Communist Party leadership in the last few years. One pioneering exploratory study supports this analysis, and in addition suggests that, counter-intuitively, few of the oil enterprise leaders in the Central Committee have served at the same time in the same enterprises with each other.⁷³ Or, in other words, there is likely little personal *guanxi* tying them together, thus making it unlikely they will be able to return to the type of control over central party organs exercised by the petroleum faction of the 1970s. Sophisticated anecdotal analysis, however, suggests that the 18th Central Committee will continue to have significant national oil company representation in the form of Su Shulin (苏树林), alternate member of the 17th Central Committee and former general manager and party secretary of Sinopec who recently resigned to take up the governorship of Fujian Province, and Jiang Jiemin (蒋洁敏), alternate member of the 17th Central Committee and general manager and party secretary of CNPC.⁷⁴ Jiang also previously served as vice-governor of Qinghai Province in western China. If Su and Jiang should move up to become full members of the 18th Central Committee—Su is one of only a handful of senior officials born in the 1960s, suggesting that, as with leaders such as Wen Jiabao and Hu Jintao before him, he is on the fast track for promotion within the central leadership⁷⁵—and even Politburo members, then these organs will continue to have a strong presence by former officials from energy enterprises.

The CCP's central interest in using the *nomenklatura* system to control the state enterprises directly owned by it—the three NOCs—can be seen in the comparative over-representation of oil and gas in the backgrounds of the top leaders of the CCP, and the comparative under-representation of coal enterprises. Remarkably, coal provides some 70 percent of China's fuel, and yet only three central committee members (and no Politburo members) have any practical experience in its management. Moreover, two of these—Dai Xianglong (戴相龙) and Huang

Huahua (黄华华)—only had experience as low-level cadres working in coal enterprises for just a few years, many decades ago. Even Chai Songyue (柴松岳), former CCP secretary of the Changguang Coal Mine Company in Zhejiang Province, only served in that capacity as a young man, from 1982 to 1984. In contrast, Tian Chengping (田成平), minister of labor and social security, was a top leader of petrochemical plants and refineries in Shandong and Beijing. Wu Yi, vice-premier and the CCP leader responsible for trade negotiations in recent years, served as a leader of refineries in Gansu and in Beijing. Zhou Yongkang, minister of public security, was the leader of oil fields under CNPC in Liaoning, Shandong, and Xinjiang. Overall, a large number of full Central Committee members have had experience in China's energy enterprises, and among them, the Politburo members themselves have extensive and deep experience within the NOCs.

Now consider the potential impact this direct personal experience might have on energy policy formulation. As many observers have noted, and as journalists, scholars, and officials openly discuss in the Chinese state media, the leadership small groups play a research, analysis, and planning role in economic policy. The Energy Leading Group and its office under the State Council became the precursor to the new National Energy Commission, created in 2010. How do the backgrounds of the Energy Leading Group members compare with those of other powerful economic development leadership small groups, and with those of the members of the Politburo itself?

Appendix Table 5 and Appendix Table 6 show the localities of service and areas of expertise of the 27 members of the Develop the West Leadership Small Group (guowuyuan xibu kaifa lingdao xiaozu, or 国务院西部开发领导小组), and the 31 members of the Revitalize the Northeast and Old Industrial Areas Leadership Small Group (guowuyuan zhenxing dongbei lao gongye jidi lingdao xiaozu, or 国务院振兴东北老工业基地领导小组). These are informal leadership groups responsible for coordinating the broad economic and social development of the vast, resource-rich and yet agriculturally poor Western provinces and autonomous regions, and the revitalization of China's "Rust Belt," the industrial Northeastern provinces of Heilongjiang, Jilin, and Liaoning. These tables reveal several characteristics of these leadership small groups. First, they are comprehensive in their ties to the broad range of central government ministries

and agencies—everything from propaganda to culture to education, security, and natural resources. Second, they are largely the same group of leaders. Nineteen of the 31 members of the Revitalize the Northeast group are also members of the Develop the West leadership group. Third, they are central government-oriented in terms of experience. Remarkably, most of them have not served in localities—an average of 1.3 localities, less even than the average full member of the Central Committee, for the Develop the West group, and an average of only 1.5 for the Revitalize the Northeast group. Even more remarkably, only a few, seven of the 27 members of the Develop the West group, have any experience working in Western provinces and autonomous regions. Only eight of the 31 in the Revitalize the Northeast leadership small group have served in the three Northeastern provinces. Finally, although these groups are stocked with many full members of the Central Committee, especially the heads of various ministries, they have few Politburo members. Both of them were led by Premier Wen Jiabao, and former head of the NDRC, Zeng Peiyan (曾培炎). The Revitalize the Northeast group briefly also had Huang Ju, but he passed away during this period. Overall, this suggests that the influence of these important development policy groups as an advisory and planning body is largely felt through their direct contacts with the Politburo, and thus through the personal representations of Premier Wen Jiabao and Zeng Peiyan.

Now consider the backgrounds of the Energy Leading Group, an informal organization formed in 2005 and responsible for the planning and implementation of China's energy policy, and the future restructuring of China's central government to form an energy ministry. Remarkably, this leadership small group had many of the same characteristics of the other economic development leadership small groups, as can be seen in Appendix Table 7. It was also led by Wen Jiabao and had the assistance in leadership of fellow Politburo member Zeng Peiyan (and briefly Huang Ju). Neither Wen nor Zeng have had any experience as cadres in energy enterprises. There are other members of the group who had experience in energy enterprises—Chai Songyue in coal, Li Yizhong (李毅中) in oil, Li Rongrong (李荣融) in chemical/petrochemical, and Huang Ju (briefly) in power—but only Li Yizhong was a high-level officer of an NOC or its subsidiary (Sinopec). They also did not have significant practical experience in localities, averaging only 1.5 per member.

Now examine the same data for the new National Energy Commission, formed out of the National Energy Leading Small Group in 2010, as seen in Table 8 in the appendix. At first glance, the group seems to be a stellar lineup of high-ranking central government positions. Most of the members are cabinet ministers. And yet when we look at the party status of the members, it looks much less impressive. Fully 16 of the 23 members are Communist Party Central Committee members (the top 200 members of the party), and yet only two of them are Politburo members (the chairman, Premier Wen Jiabao, and the deputy chairman, Li Keqiang, whom China leadership scholars believe is one of the top contenders to replace Wen as premier in 2013).⁷⁶ And, reflecting the fact that the National Energy Commission is even more central-government oriented than its predecessor, the National Energy Leadership Small Group, most of the members have never served in a local government, with .9 terms of service in local areas on average. Finally, and most telling of all, none of the members of the National Energy Commission have any experience working within an energy state-owned enterprise. Only 11 of the 22 nonmilitary members of the NEC have ever managed an SOE. Among these 11, four were bankers, two were in automobiles, one was in aerospace, and the rest were in other sectors. Premier Wen Jiabao, a geologist who surveyed for natural resources and served in Gansu, an oil and gas rich province, is the only member of the NEC with experience in both industry and government in the energy field. So we can say that NEC members are primarily bureaucrats who have mainly lived and worked in the central government bureaucracy in Beijing. Only three have served in central government bureaus that relate to energy indirectly: Zhou Shengxian (周生贤) in forestry, Chen Lei (陈雷) in water, and Xu Shaoshi (徐绍史), who is minister of land and natural resources, which oversees oil, gas, and coal exploration licensing and production by state enterprises.

This research suggests that the decentralization of government and CCP *nomenklatura* control over SOEs, and the semi-privatization of NOCs, have presented substantial obstacles to the future creation of independent, transparent ownership and regulatory authority in government institutions, and also the corporatization of the NOCs. How much authority can the National Energy Commission have when none of the members have practical experience within the energy SOEs, and thus no *guanxi* connections to receive independent data on conditions within the enterprises, or the connections necessary to push through implementation of any policies

unpopular with the state energy companies? And how much influence can the NEC have when its members' only connection to the Politburo is through Politburo members who do not have experience within energy SOEs, and when the Politburo itself has members with long-term and high-level experience within the energy sector? Observers might speculate and wonder how Wen Jiabao and Li Keqiang could carry a proposal to reform the energy sector into Politburo meetings and 班门弄斧 (ban men nong fu, or “to teach one’s grandmother to suck eggs”) about energy policy in front of Politburo members who have directly managed energy SOEs: Zhou Yongkang (oil and gas), Liu Yandong (刘延东: petrochemical), He Guoqiang (贺国强: petrochemical) and Hu Jintao (power). Compared with the NEC, the members of the 17th Politburo (see Table 3 in the appendix) have much more experience working in industrial and energy SOEs. Only 11 of 22 NEC nonmilitary members have managed a state enterprise, with only a few having worked in autos or aerospace, and only Wen Jiabao having worked in an energy-related enterprise. But 12 of the 23 nonmilitary members of the Politburo have managed state enterprises that are large energy consumers, including petroleum (2), petrochemical (2), power (1), machinery (1), electrical (1), iron and steel (1), electronics (1), machinery (1), and automobiles (1). Moreover, as can be seen in Tables 3 and 8, most Politburo members have served in several localities, whereas most members of the NEC have only served in Beijing. Fully 15 of the 23 members of the Politburo have served as local leaders in 11 of the energy and hydrocarbon-exporting provinces and localities within China: Shandong (5), Chongqing (4), Xinjiang (3), Liaoning (3), Gansu (2), Heilongjiang (2), Jilin (2), Sichuan (1), Tianjin (1), Inner Mongolia (1), and Hainan (1). Of the 11 of the 23 nonmilitary members of the NEC who have served in localities, only seven have served in five of the energy-exporting localities: Liaoning (3), Xinjiang (1), Shaanxi (1), Gansu (1), and Tianjin (1). Or, in other words, the Politburo comprises many cadres who have had direct experience with energy industry issues as managers of SOEs or as leaders in provinces that export hydrocarbons and power to other provinces in China. The NEC, in contrast, is composed of mainly high-level governmental ministers who have risen up the ranks in Beijing, with few having experience in industry or energy-rich localities.

Does China have a “petroleum faction” controlling economic policy, as studies suggest it had during the international oil crisis of the 1970s, when China was earning hard currency through petroleum exports? Many outside observers, and government and industry “insiders” in China,

present no evidence of such a clearly defined “faction,” even as they note the presence of many former officers of the NOCs in central government and CCP leadership positions. Given the investment and planning strength of localities, and the fiscal strength of the oil SOEs among energy SOEs, and as well the history of management recruitment and selection within the CCP and the NOCs, it is more likely that the presence of so many former NOC officials in the corridors of power in Beijing is largely an unintended artifact of the co-evolving dependence of the CCP and the NOCs.

Here, the same set of trans-local experiences and knowledge of government and business relations that produces influential leaders of the Central Committee also produces effective leaders of the NOCs. Rising to the top of the NOCs requires experiences that are most likely also highly valued by the CCP. NOC leaders, in particular, may have an advantage over members of the Central Committee who have only served in government agencies in localities and in the central government. Politburo members who have served as CCP secretaries and governors of the large municipalities, provinces, and autonomous regions—including Hu Jintao and Wen Jiabao—understand the nature of CCP and government relations unique to several localities in China. But many former heads of the NOCs—Zhou Yongkang and Wu Yi in the 16th Politburo, in particular—have not only been heads of key enterprises in oil fields and refineries, but they have also served as heads of local governments and local CCP committees.

It is important to note here that CCP members are a large part of the NOCs, but the NOCs are a large part of the CCP, especially in the localities where the vast oil fields and large refineries dominate the local economy. CNPC notes that it has some 500,000 CCP members, representing a significant part of some 60 million members of the CCP nationwide.⁷⁷ Although PetroChina—the international, publicly listed subsidiary of CNPC—has a smaller percentage of its employees as CCP members, the NOCs are likely to increase, not decrease, their CCP rolls as they develop into new areas of production and distribution inside China. As Sinopec seeks to promote China Star as its foray into western China’s oil and gas producing regions, it will likely use both formal-legal and intra-enterprise rules to manage this new subsidiary. But because this is an important part of its strategy to develop its upstream operations, it will likely also use CCP membership and its own *nomenklatura* means to select the leaders of this valuable subsidiary.

Likewise, as CNPC attempts to build thousands of gas stations, especially along the highways in remote regions in western China, it will have to find ways to ensure effective management and control over the tens of thousands of employees who will staff them. CCP recruitment will likely be viewed as a tried and true method of providing one more means to guarantee the viability of these gas stations, each of which represents hundreds of thousands of dollars in investments, and perhaps millions of dollars in sales revenue. The NOCs are reaching out into more agrarian areas in China, and if they use their own CCP recruitment rules to control these new enterprises, then they also extend the overall influence of the CCP in China's localities. Less well known is the extension of the *nomenklatura* system overseas, as NOCs may use these means to manage the leadership of their billion-dollar investments in Africa, Latin America, and the rest of Asia.

This discussion of the history of the growth of the CCP and the growth of the NOCs reveals the presence of long-term institutional constraints on the development of effective ownership and regulation administration in China, as well as obstacles to the corporatization of the three oil companies themselves. In recruiting so many former leaders of the NOCs for top leadership positions, the government and the CCP have gained officials with uniquely valuable skill sets and knowledge—but doing so has presented unique dilemmas for the effectiveness of informal leadership groups that can transform existing government ownership and regulation agencies into a comprehensive energy agency at the central level in an energy ministry. Given the persistent strength of the CCP as a society-wide means of individual career advancement, these NOCs have an incentive to continue to use CCP membership recruitment and promotion methods to manage their subsidiaries, especially in areas of China in which they have not previously operated. As they seek to become more integrated as oil companies, they will continue to move into new localities, extending the influence of the CCP as well. CCP membership and the *nomenklatura* system are thus likely to continue, posing additional obstacles for the corporatization and internationalization of these NOCs and energy SOEs in general.

IV. Hydrocarbon Management in China: Conclusions and Future Research

This paper argues that China's energy policy institutions continue to be fragmented by privatization and decentralization. China's leaders have created a National Energy Commission

to steer energy policy toward national economic development goals that reduce the country's dependence on hydrocarbons (both domestic and imported), create more sources of renewable energy supply, and attempt to conserve energy through demand management by state enterprises, local governments, and citizen consumers alike. I argue that the continued organizational diversity of energy policymaking institutions at the local level, the continuation of the *nomenklatura* system of party appointments to manage state energy corporations, and the relative inexperience and unfamiliarity with both local governments and state energy enterprises of the cabinet ministers on the National Energy Commission demands that China's tough national energy policy decisions must be made by the NEC's boss: the Politburo of the Chinese Communist Party. In contrast with the NEC, the Politburo comprises individual leaders who have risen up the ranks of China's semi-privatized industrial enterprises and its powerful local governments.

It is still too early to make predictions about leadership changes in 2012, but we can speculate that if the 18th Central Committee, and especially its Politburo, does not follow its predecessor in bringing to the top cadres with experience in hydrocarbon management from local government and national energy companies, there will be increasing conflict between center and locality, government and state enterprise. There are certainly already key leaders from the energy industry—leaders of CNPC, Sinopec, and CNOOC, and also the state power corporations and nuclear industries—in the Central Committee moving from NOC to provincial leadership positions. We must look to see if they continue to rise to the top. Furthermore, we must also watch the development of the energy efficiency experiments begun during the 11th Five Year Plan, including the 1,000 Enterprise Efficiency Program and the Low-Carbon Localities. It is as yet too early to assess the real long-term impact of these, but we can be sure that any movement to take these programs and expand them to include more localities and more state enterprises will be greatly facilitated by personal involvement and direction by Politburo members. The National Energy Commission, as it is currently constituted, does not seem to have the personal experience, connections, or knowledge to manage such reforms involving many localities and the powerful central owned state enterprises, such as the NOCs.

Appendix: Table 1
Locations of Chinese Major Domestic Crude Pipelines, 2006
(Trans-Province Pipelines in Shading)

Pipeline	Km.	Ton	Destinations	Yr.	Company	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Xibu	1550	2000	Xinjiang Shanshan-GansuLanzhou	2007	CNPC TaHe	X			X																												
YiChang	1005	2700	JiangsuYizheng-HunanChangling	2006	Sinopec													X	X					X		X											
YongHu-Ning	666	2500	ZhejiangNingbo-Shanghai-JiangsuNanjing	2004	Sinopec																			X	X	X											
Luning	665	2000	ShandongLinyi-Jiangsu Yizheng	1978	Sinopec										X										X												
QingTie (2)	516	9000	HeilongjiangDaqing-LiaoningTieling	1973	CNPC Daqing																																
KuShan	475	1000	XinjiangKuerqin-Shanshan	1997	CNPC Karim	X																															
TieDa	459	2000	LiaoningTieling-DalianXingang	1975	CNPC Liaohe																																
TieZou	454	2000	LiaoningTieling-HebeiZouhuangdao	1973	CNPC Liaohe																																
HuaGe	439	200	QinghaiHuashigou-Geermu	1989	CNPC			X																													
Jing Cheng (2)	436	475	ShaanxiJingli-Chengyang	2001	CNPC Changqing					X																											
Asai	361	1000	NeimengguAershan-Saihantala	1989	CNPC Erlian																																
ZouJing	349	750	HebeiZouhuangdao-Beijing	1975	CNPC Liaohe																																
KeMa	326	300	XinjiangKelamayi-Wulumuqi	1973	CNPC Kelamayi	X																															
TaLun	302	600	XinjiangTazhong-Lunnan	1996	CNPC Talimu	X																															
Dong-Huang (2)	251	3000	ShandongDongying-Huangdao	1986	Sinopec Shengli																	X															
Zhong-Luo	286	500	HenanPuyang-LuoyangPetrochem	1992	Sinopec																	X															
ADu	246	1000	XinjiangAlashanmu-Dushanzi	2005	CNPC Kelamayi	X																															
PuLin	242	200	HenanPuyang-ShandongLinyi	2002	Sinopec																	X	X														
WeiJing	224	350	HenanWeigang-HubeiJingmen	1978	Sinopec																	X	X														
Dagang	211	500	HebeiDagang-Zhoulizhuang	1968	CNPC Dagang																																
HongTi	210	350	HubeiHonghu-Jingmen	1995	Sinopec																																
JingBo	200	120	ShaanxiJingli-NingxiaBoancheng	1998	CNPC Changqing		X			X																											

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing. Source: Sinopec 2007.

Appendix: Table 2
Locations of Service of the 25 Non-Military Members of the Politburo of the 16th Central Committee of the CCP
(Names of those continuing to 17th CCP-CC Politburo in 2007 in shaded areas)

NAME	NAME	NAME	#	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Chen	Liangyu	陈良宇	1																							X									
He	Guoqiang	贺国强	3									X								X		X													
He	Yong	何勇	1														X																		
Hu	Jintao	胡锦涛	3				X		X		X																								
Huang	Ju	黄菊	1																							X									
Hui	Liangyu	回良玉	4														X								X			X							
Jia	Qinglin	贾庆林	3																		X	X												X	
Li	Changchun	李长春	3											X				X											X						
Li	Keqiang	李克强	3															X										X						X	
Liu	Qi	刘淇	2													X																		X	
Liu	Yunshan	刘云山	1																										X						
Luo	Gan	罗干	1															X																	
Wang	Gang	王刚	1	X																															
Wang	Lequan	王乐泉	2	X																X															
Wang	Qishan	王岐山	3										X		X																				X
Wang	Zhaoguo	王兆国	3															X							X		X								
Wen	Jiabao	温家宝	1				X																												
Wu	Bangguo	吴邦国	1																							X									
Wu	Guanzheng	吴官正	3														X		X	X															
Wu	Yi	吴仪	2			X																													X
Yu	Zhengsheng	俞正声	3														X		X													X			
Zeng	Peiyan	曾培炎	2					X																	X										
Zeng	Qinghong	曾庆红	2													X									X										
Zhang	Dejiang	张德江	3											X										X			X								
Zhang	Lichang	张立昌	1																														X		
Zhou	Yongkang	周永康	5	X								X								X						X		X							
Total per Locality			2.32 AVG	2	0	1	2	1	1	0	1	1	1	1	0	3	2	5	3	5	2	2	1	2	1	5	2	2	3	1	0	1	1	5	

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

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Appendix: Table 3
Locations of Service of the 23 Non-Military Members of the Politburo of the 17th Central Committee of the CCP
(Names of returning 16th CCP-CC Politburo members in shaded areas)

NAME	NAME	NAME	#	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SOE			
Bo	Xilai	薄熙来	2										X																									
He	Guoqiang	贺国强	3										X						X		X																CHEM.	
Hu	Jintao	胡锦涛	3				X		X		X																										POWER	
Hui	Liangyu	回良玉	4														X					X			X			X										
Jia	Qinglin	贾庆林	3																	X	X													X		MACHINE		
Li	Changchun	李长春	3											X				X																		ELEC.		
Li	Keqiang	李克强	3															X																	X			
Li	Yuanchao	李源潮	2																						X	X												
Liu	Qi	刘淇	2														X																	X		IRON		
Liu	Yandong	刘延东	1																															X		CHEM.		
Liu	Yunshan	刘云山	1																															X				
Wang	Gang	王刚	1	X																																		
Wang	Lequan	王乐泉	2	X															X																			
Wang	Qishan	王岐山	3											X		X																			X		BANK	
Wang	Zhaoguo	王兆国	3															X						X			X										AUTO	
Wang	Yang	汪洋	3										X		X								X															
Wen	Jiabao	温家宝	1				X																															LAND
Wu	Bangguo	吴邦国	1																							X												ELECTR.
Xi	Jinping	习近平	5										X								X		X		X								X					
Yu	Zhengsheng	俞正声	3															X		X														X			MACHINE	
Zhang	Dejiang	张德江	3												X								X					X										
Zhang	Gaoli	张高丽	3												X					X															X			
Zhou	Yongkang	周永康	5	X									X							X							X		X								OIL	
Total per Locality			2.52 AVG	3	0	0	2	0	1	0	1	1	4	1	0	5	1	3	2	5	1	3	2	3	2	3	2	2	2	4	1	0	2	1	5			

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

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Appendix: Table 4

Locations of Service of the 23 Non-Military Full Members of the 16th Central Committee of the CCP Who Have Served in Energy- Related Enterprises and Energy Sector (16th CCP-CC Politburo members in shaded areas)

NAME	NAME	NAME	#	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SECTOR	
Chai	Songyue	柴松越	1																						X										Coal	
Chen	Yunlin	陈云林	1																								X								Chem	
Chu	Bo	储波	1													X														X					Chem	
Dai	Xianglong	戴相龙	3						X																X							X			Coal	
Guo	Jinlong	郭金龙	3					X			X											X													Power	
Han	Zheng	韩正	1																						X										Chem	
He	Guoqiang	贺国强	3									X						X		X															Chem	
Hong	Hu	何勇	2			X																						X							Chem	
Huang	Huahua	黄华华	1												X																				Coal	
Huang	Ju	黄菊	1																							X									Power	
Li	Rongrong	李荣融	1																						X										Chem	
Li	Yizhong	李毅中	3																X						X				X						Oil	
Liu	Yandong	刘延东	1																														X	Chem		
Tian	Chengping	田成平	5			X												X				X									X			X	Oil	
Wang	Shucheng	汪恕诚	1																															X	Power	
Wang	Yunkun	王云坤	1																									X							Chem	
Wang	Yunlong	王云龙	2									X																				X			Chem	
Wen	Shizhen	闻世震	1																										X						Oil	
Wu	Guanzheng	吴官正	3															X		X	X														Chem	
Wu	Yi	吴仪	2			X																											X		Oil	
Xu	Rongkai	徐荣凯	2						X		X																								Power	
Zeng	Qinghong	曾庆红	2														X									X									Oil	
Zhou	Yongkang	周永康	5	X							X							X									X		X						Oil	
Total per Locality			2	1	0	3	0	0	1	2	0	3	2	0	0	1	2	1	0	5	1	1	2	1	3	3	3	2	2	3	1	2	0	1	4	

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

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Carbon Management in China

Appendix: Table 5
Locations Served in by the 27 Members of the “Develop the West Leading Group,” 2007
(16th CCP-Central Committee members in bold, Politburo members in shaded areas)

NAME	NAME	NAME	#	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	9	8	7	6	5	4	3	2	1	SECTOR		
Bo	Xilai	薄熙来	2										X														X						None		
Du	Qinglin	杜青林	3								X		X													X							Auto		
Gao	Qiang	高强	1																											X		Health			
Hu	Zhenmin	胡振民	1																										X			Prop.			
Jia	Zhibang	贾治邦	1				X																									Forestry/Radi			
Li	Dek Su	李德洙	1																							X						Ethnic			
Li	Shenglin	李盛霖	1																											X		SETC/tractor			
Liu	Zhijun	刘志军	4											X		X	X										X					Railway			
Ma	Kai	马凯	1																												X	NDRC			
Sun	Jiazheng	孙家正	2																				X			X						Culture			
Sun	Wensheng	孙文盛	2												X														X			MLR			
Wan	Xueyuan	万学远	2																		X		X									Personnel			
Wang	Guangtao	汪光焘	2																			X		X								Construct			
Wang	Shucheng	汪恕诚	0																													Power/Water			
Wang	Taihua	王太华	2														X		X													Anhui			
Wang	Xudong	王旭东	2																										X	X		Information			
Wen	Jiabao	温家宝	1				X																									CCP			
Xie	Xuren	谢旭人	1																			X										Finance			
Xu	Guanhua	徐冠华	0																													MST			
Yin	Weimin	尹蔚民	0																													Personnel			
Zeng	Peiyan	曾培炎	2					X																X								NDRC			
Zhang	Qingwei	张庆伟	0																													Space/SOE			
Zhang	Weiqing	张维庆	1																										X			Family			
Zheng	Silin	郑斯林	3					X														X				X						Labor/SS			
Zhou	Ji	周济	0																													Educ.			
Zhou	Shengxian	周生贤	1		X																											SEPA			
Zhou	Xiaochuan	周小川	0																													Finance			
Total per Locality			1.3		0	1	0	1	3	0	0	0	1	1	1	0	1	1	1	1	0	1	0	1	2	3	2	1	3	3	0	2	3	2	1

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Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

Note: the West includes: all West, Xinjiang, Ningxia, Qinghai, Gansu, Shaanxi, all Southwest: Xizang, Yunnan, Guizhou, Sichuan, Chongqing, and one Southern region, Guangxi, and one Northern Region, Inner Mongolia. <http://www.chinawest.gov.cn/web/index.asp>.

Carbon Management in China

Appendix: Table 6
Locations Served in by the 31 Members of the “Revitalize the Northeast and Old Industrial Areas Leading Group,” 2007
(16th CCP-Central Committee members in bold, Politburo members in shaded areas; members of “Develop West Group” marked with asterisk)

NAME	NAME	NAME	#	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	9	8	7	6	5	4	3	2	1	SECTOR		
				1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0									
Bai	Chunli	白春礼	0																													Science		
Bo*	Xilai	薄熙来	2										X													X						None		
Du*	Qinglin	杜青林	3									X	X													X						Auto		
Huang	Ju	黄菊	1																				X									Shanghai		
Jin	Renqing	金人庆	2						X																						X	Tax		
Li	Changjiang	李长江	2																	X					X							Quality Cont.		
Li	Rongrong	李荣融	1																		X											SASAC		
Liu	Mingkang	刘明康	2																X			X										Finance		
Liu*	Zhijun	刘志军	4											X		X	X									X						Railway		
Ma*	Kai	马凯	1																												X	NDRC		
Sun*	Jiazheng	孙家正	2																			X			X							Culture		
Sun*	Wensheng	孙文盛	2												X													X				MLR		
Wan*	Xueyuan	万学远	2																		X		X									Personnel		
Wang*	Guangtao	汪光焘	2																		X		X									Construct		
Wang*	Shucheng	汪恕诚	0																													Power/Water		
Wang*	Taihua	王太华	2															X		X												Anhui		
Wang*	Xudong	王旭东	2																										X	X		Information		
Wen*	Jiobao	温家宝	1				X																									CCP		
Xie*	Xuren	谢旭人	1																			X										Finance		
Xie	Zhenhua	解振华	1																						X							Environ.		
Xu*	Guanhua	徐冠华	0																													MST		
Zhang	Bailin	张柏林	0																													Personnel		
Zhang	Chunxian	张春贤	3						X							X		X														Communic.		
Zhang	Guobao	张国宝	0																													NDRC		
Zhang	Junjiu	张俊九	0																													Ordinance		
Zhang	Yunchuan	张云川	4													X			X										X			CSTIND		
Zeng*	Peiyan	曾培炎	2				X																X									NDRC		
Zheng*	Silin	郑斯林	3				X															X				X						Labor/SS		
Zhou*	Ji	周济	0																													Educ.		
Zhou*	Shengxian	周生贤	1	X																												SEPA		
Zhou*	Xiaochuan	周小川	0																													Finance		
Total per Locality			1.5	1	1	0	1	2	0	2	0	1	1	1	0	1	3	1	2	0	2	1	1	3	5	3	2	3	3	0	1	2	1	2

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Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

Note: Northeast includes provinces of Heilongjiang, Jilin and Liaoning.

Appendix: Table 7
Locations Served in by the 16 Members of the “Energy Leading Group,” 2005
(16th CCP-Central Committee members in bold, 16th Politburo shaded areas)

NAME	NAME	NAME	#	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SECTOR	
Bo	Xilai	薄熙来	2										X																X						None	
Chai	Songyue	柴松越	1																				X													Coal
Du	Qinglin	杜青林	3									X		X														X								Auto
Ge	Zhenfeng	葛振峰	0																																	PLA
Huang	Ju	黄菊	1																							X										Power
Jin	Renqing	金人庆	2						X																									X		Tax
Li	Rongrong	李荣融	1																					X												Chem
Li	Yizhong	李毅中	3															X					X					X								Oil
Li	Zhaoxing	李肇星	0																																	MFA
Ma	Kai	马凯	1																														X		NDRC	
Sun	Wensheng	孙文盛	2													X																X			MLR	
Wen	Jiabao	温家宝	1				X																													CCP
Xie	Zhenhua	解振华	1																								X									NDRC
Xu	Guanhua	徐冠华	0																																	MST
Zhang	Yunchuan	张云川	4	X												X				X													X			ST-Def
Zeng	Peiyan	曾培炎	2					X																		X										NDRC
Total per Locality			1.4 AVG.	1	0	0	1	1	0	1	0	1	1	1	0	0	2	0	0	1	1	0	0	1	2	2	1	1	2	0	1	1	0	2		

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

Appendix: Table 8
Locations Served in by the 23 Members of the Energy Commission, 2010
(17th CCP-Central Committee members in bold, Politburo members in shaded areas)

NAME	NAME	NAME	#	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	9	8	7	6	5	4	3	2	1	SOI		
Chen	Deming	陈德铭	2					X														X													
Chen	Lei	陈雷	1	X																														WATER	
Geng	Huichang	耿惠昌	0																																
Li	Keqiang	李克强	4													X						X					x						X		
Li	Shenglin	李盛霖	1																												X		TRACTOR		
Liu	Mingkang	刘明康	2																X			X											BANK		
Liu	Tienan	刘铁男	0																																
Luo	Lin	骆琳	1																							X									
Miao	Wei	苗圩	1												X																			AUTO	
Wan	Gang	万钢	0																															AUTO	
Wang	Yong	王勇	0																															AEROSP.	
Wen	Jiabao	温家宝	1				X																											LAND	
Wu	Xinxiong	吴新雄	2														X					X												TEXTILE	
Xiao	Jie	肖捷	0																																
Xie	Xuren	谢旭人	1																			X												BANK	
Xu	Shaoshi	徐绍史	1											X																					
Yang	Jiechi	杨洁篪	0																																
You	Quan	尤权	0																																
Zhang	Ping	张平	1																			X													BANK
Zhang	Qinsheng	章沁生	0																																
Zhou	Shengxian	周生贤	1		X																														
Zhou	Xiaochuan	周小川	0																																BANK
Zhu	Zhixin	朱之鑫	2																			X													
Total per Locality			.9 AVG.	1	1	0	1	1	0	0	0	0	0	0	1	0	1	1	0	1	1	3	1	3	0	0	0	3	0	0	0	1	1		

Note: WEST: 31=Xinjiang; 30=Ningxia; 29=Qinghai; 28=Gansu; 27=Shaanxi; SOUTHWEST: 26=Xizang; 25=Yunnan; 24=Guizhou; 23=Sichuan; 22=Chongqing; CENTRAL/SOUTH: 21=Hainan; 20=Guangxi; 19=Guangdong; 18=Hunan; 17=Hubei; 16=Henan; EAST: 15=Shandong; 14=Jiangxi; 13=Fujian; 12=Anhui; 11=Zhejiang; 10=Jiangsu; 9=Shanghai; NORTHEAST: 8=Heilongjiang; 7=Jilin; 6=Liaoning; NORTH: 5=Inner Mongolia; 4=Shanxi; 3=Hebei; 2=Tianjin; 1=Beijing.

Note: Northeast includes provinces of Heilongjiang, Jilin and Liaoning.

Bibliography

English-language Periodicals and Books

- Aegis Energy Advisors. February 2004. "State Oil Company Privatization: Aegis Energy's Perspectives on Best Practices," published as part of "Brazilian Energy Sector Reform," Energy Forum of the James A. Baker III Institute for Public Policy at Rice University. Available on the website of the Baker Institute Energy Forum at <http://www.rice.edu/energy/publications/brazilenergysector.html>.
- Andrews-Speed, Philip. 2004. *Energy Policy and Regulation in the People's Republic of China*. The Hague, Netherlands.
- Bacon, Robert. 1999. "A Scorecard for Energy Reform in Developing Countries," in *Public Policy for the Private Sector*, note no. 175, available at <http://www.worldbank.org/html/fpd/notes/175/175bacon.pdf>.
- Bo, Zhiyue. 2004. "The Institutionalization of Elite Management in China." In *Holding China Together: Diversity and National Integration in the Post-Deng Era*, edited by Barry J. Naughton and Dali Yang. Cambridge, UK: Cambridge University Press.
- Bo, Zhiyue. 2004. "The 16th Central Committee of the Chinese Communist Party: Formal Institutions and Factional Groups." *Journal of Contemporary China* 13, no. 39.
- Bo, Zhiyue. 2002. *Chinese Provincial Leaders: Economic Performance and Political Mobility Since 1949*. Armonk, New York: M.E. Sharpe.
- Burns, John. 1987. "China's Nomenklatura System." *Problems of Communism* 28, no. 2.
- Burns, John. 1994. "Strengthening Central CCP Control of Leadership Selection: the 1990 Nomenklatura." *China Quarterly*.
- Chan, Hon S. 2004. "Cadre Personnel Management in China: The *Nomenklatura* System, 1990-1998." *China Quarterly* 179.
- Chou, Benjamin. May 2011. "The Petroleum Faction in the 17th Central Committee and the 2012 Leadership Transition." Unpublished manuscript, "Asia and Energy Seminar," Ting Tsung and Wei Fong Chao Center for Asian Studies, Rice University.
- Downs, Erica S. 2004. "The Chinese Energy Security Debate." *China Quarterly* 177.
- Downs, Erica S. December 2006. "Energy Security Series: China." The Brookings Foreign Policy Studies Energy Security Series.

- Downs, Erica S. November-December 2008. "China's 'New' Energy Administration." *Chinabusinessreview.com*. Accessed October 10, 2011. http://www.brookings.edu/articles/2008/11_china_energy_downs.aspx.
- Frazier, Mark. January 2006. "Chinese Views on Pension Reforms." *Asia Policy*. Gates, David F. 2007. "The demand for and supply of energy in China: implications for the private sector." In *Private Enterprises and China's Economic Development*, edited by Shuanglin Lin and Xiaodong Zhu. London: Routless.
- Hargrove, Erwin C. 1994. *Prisoners of Myth: the Leadership of the Tennessee Valley Authority, 1933-1990*. Princeton, New Jersey: Princeton University Press.
- Hassard, John and Jackie Shehan. 2007. *China's State Enterprise Reform: From Marx to Market*. Edited by Meixiang Zhou, Jane Terpstra-Tong and Jonathan Morris. 2007. London: Routledge.
- Heilmann, Sebastian. 2005. "Policy-Making and Political Supervision in Shanghai's Financial Industry." *Journal of Contemporary China* 14, no. 45.
- Heilmann, Sebastian. 2005. "Regulatory Innovation by Leninist Means: Communist Party Supervision in China's Financial Industry." *China Quarterly* 181.
- Houser, Trevor. 2008. "The Roots of Chinese Oil Investment Abroad." *Asia Policy* 5.
- International Energy Agency (IEA). 2007. *World Energy Outlook 2007: China and India Insights (World Energy Outlook)*. Geneva: Organization for Economic Cooperation and Development.
- Irwin, Timothy and Chiaki Yamamoto. February 2004. "Some Options for Improving the Performance of State-Owned Electricity Utilities." Washington, D.C.: World Bank, Energy and Mining Sector Board Discussion Paper No. 11.
- Kong, Bo. 2010. *China's International Petroleum Policy*. Santa Barbara: Praeger Security International.
- Lam, Willy Wo-Lap. 2006. *Chinese Politics in the Hu Jintao Era: New Leaders, New Challenges*. Armonk, New York: M.E. Sharpe.
- Lam, Willy Wo-Lap. April 22, 2011. "The Rise of the Energy Faction in Chinese Politics." *China Brief* XI, no. 7. Washington, D.C.: Jamestown Foundation.

- Lam, Willy Wo-Lap. October 28, 2011. "Jockeying for Position Intensifies Among Candidates for Politburo Standing Committee." *China Brief* XI, no. 20. Washington, D.C.: Jamestown Foundation.
- Lardy, Nicholas. October 2006. "China: Toward a Consumption-Driven Growth Path." *Policy Briefs in International Economics*, no. PB06-6. Washington, D.C.: Institute for International Economics.
- Lewis, Steven W. 1996. "Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China." Unpublished dissertation manuscript, Washington University in St. Louis.
- Lewis, Steven W. 1999. "Privatizing China's State Owned-Oil Companies." Paper prepared as part of "China and Long-Range Asian Energy Security: An Analysis of the Political, Economic and Technological Factors Shaping Asian Energy Markets," sponsored by the Center in International Political Economy and the James A. Baker III Institute for Public Policy at Rice University.
- Lewis, Steven W. February 2004. "Privatization Best Practices and Comparisons: Case Study Petrobras," published as part of "Brazilian Energy Sector Reform," Energy Forum of the James A. Baker III Institute for Public Policy at Rice University.
- Li, Cheng. 2004. "Political Localism Versus Institutional Restraints: Elite Recruitment in the Jiang Era." In *Holding China Together: Diversity and National Integration in the Post-Deng Era*, edited by Barry J. Naughton and Dali Yang. Cambridge, UK: Cambridge University Press.
- Libecap, Gary D. and James L. Smith. 2002. "The Economic Evolution of Petroleum Property Rights in the United States." *Journal of Legal Studies* 31, no. 2: 589-608.
- Lieberthal, Kenneth. 1995. *Governing China: From Revolution Through Reform*. New York: Norton.
- Lieberthal, Kenneth and Michel Oksenberg. 1986. *Bureaucratic Politics and Chinese Energy Development*. A study prepared for the Department of Commerce. Washington: Department of Commerce Press.
- Lieberthal, Kenneth and Michel Oksenberg. 1988. *Policy Making in China: Leaders, Structures and Processes*. Princeton, New Jersey: Princeton University Press.

- Lieberthal, Kenneth G. and David M. Lampton. 1992. *Bureaucracy, Politics, and Decision Making in Post-Mao China*. Berkeley: University of California Press.
- Lieberthal, Kenneth G. and Bruce J. Dickson. 1989. *A Research Guide to Central Party and Government Meetings in China 1949-1986*. New York: M. E. Sharpe.
- Lin, Kun-Chin. April 11, 2005. "The Nexus of State-Owned Enterprises and the Local State: Origins and Pressure Points During Privatization." Presentation at "Investment in China's Local Energy Infrastructure," James A. Baker III Institute for Public Policy at Rice University.
- Lin, Kun-Chin. 2006. "Embedding Socialist Firms as a Statist Project: Restructuring the Chinese Oil Industry, 1997-2002." *Enterprise and Society* 7, no. 1.
- Lin, Shuanglin and Shunfeng Song, eds. 2007. *The Revival of Private Enterprise in China*. London: Ashgate.
- Manion, Melanie. 1985. "The Cadre Management System, Post-Mao: The Appointment, Promotion, Transfer and Removal of Party and State Leaders." *China Quarterly* 102.
- Manion, Melanie. 1993. *Retirement of Revolutionaries in China: Public Policies, Social Norms, Private Interests*. Princeton, New Jersey: Princeton University Press.
- Marks, Danny. 2010. "China's Climate Change Policy Process: Improved but Still Weak and Fragmented." *Journal of Contemporary China* 19, 971-986. <http://dx.doi.org/10.1080/10670564.2010.508596>.
- Meggison, William L. and Jeffrey Netter. 2001. "From State to Market: A Survey of Empirical Studies on Privatization." *Journal of Economic Literature* 39, no. 2.
- Meggison, William L. 2005. *The Financial Economics of Privatization*. London: Oxford University Press.
- Meidan, Michal, Philip Andrews-Speed, and Ma Xin. 2009. "Shaping China's Energy Policy: Actors and Processes." *Journal of Contemporary China* 18, 591-616.
- Miller, Alice L. Spring 2008. "The Work System of the New Hu Leadership." *China Leadership Monitor* 24.
- Miller, H. Lyman. Winter 2006. "More Already on Politburo Processes Under Hu Jintao." *China Leadership Monitor* 17.
- Miller, H. Lyman. Summer 2004. "Party Politburo Processes Under Hu Jintao." *China Leadership Monitor* 11.

- Nanto, Dick K., et al. September 15, 2005. "China and the CNOOC Bid for Unocal: Issues for Congress." Washington, D.C.: Congressional Research Service.
- Naughton, Barry. 1996. *Growing out of the Plan: Chinese Economic Reform, 1978-1993*. Cambridge, UK: Cambridge University Press.
- Naughton, Barry. 2007. *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts: MIT Press.
- North, Douglass C. 1996. "Privatization, Incentives, and Economic Performance." In *The Privatization Process: A Worldwide Perspective*, edited by Terry L. Anderson and Peter J. Hill. Lanham, Maryland: Rowman & Littlefield.
- PricewaterhouseCoopers. 2000. *The Impact of Competition*. Report by the Utilities Project. San Francisco, California: Montgomery Research.
- State Statistical Bureau. 2007. *China Statistical Yearbook 2007*. Beijing: State Statistical Press.
- Trinh, Tamara. February 17, 2006. "China's Pension System: Caught Between Mounting Legacies and Unfavorable Demographics." Deutsche Bank Research. Frankfurt, Germany.
- U.S. Department of Energy. February 2006. "Energy Policy Act 2005: Section 1837–National Security Review of International Energy Requirements." Washington, D.C.
- Walder, Andrew G and Jean C. Oi, eds. 1999. *Property Rights and Economic Reform in China*. Stanford, California: Stanford University Press.
- Wang, Hui. 2001. "Contemporary Chinese Thought and the Question of Modernity." In *Whither China: Intellectual Politics in Contemporary China*, edited by Xudong Zhang. Durham, North Carolina: Duke University Press.
- Wang, Shaoguang. 2001. "The Changing Role of Government in China." In *Whither China: Intellectual Politics in Contemporary China*, edited by Xudong Zhang. Durham, North Carolina: Duke University Press.
- World Bank and IESM. 2001. "Modernizing China's Oil and Gas Sector: Structure Reform and Regulation—A consolidated joint report of the World Bank and the Institute of Economic System and Management, the State Council Office for Reform of the Economic Structure (PRC), (in Chinese and English)." Beijing: 中国财政经济出版社.
- World Energy Council. 1999. *The Benefits and Deficiencies of Energy Sector Liberalisation*. London, UK: World Energy Council.

- Yan, Arthur Jiantao. April 11, 2005. "China's Localities, State Energy Companies, and the Development of the West-East Gas Pipeline." Presentation at "Investment in China's Local Energy Infrastructure," James A. Baker III Institute for Public Policy at Rice University.
- Yuan, Victor Yue. June 30, 2004. "Chinese Residents' Perceptions of Environment and Energy." Report presented at "Energy and Environmental Awareness in China," workshop co-sponsored by the James A. Baker III Institute for Public Policy and UFJ Research at Rice University.
- Yusuf, Shahid and Kaoru Nabeshima and Dwight H. Perkins, eds. 2006. *Under New Ownership: Privatizing China's State-Owned Enterprises*. Washington, D.C.: The World Bank.
- Zhang, Jin. 2004. *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry*. London: RoutledgeCurzon.
- Zhang, Xudong. 2001. "The Making of the Post-Tiananmen Intellectual Field: A Critical Overview." In *Whither China: Intellectual Politics in Contemporary China*, edited by Xudong Zhang. Durham, North Carolina: Duke University Press.

Chinese-language Periodicals and Books

- CNPC, 中国石油天然气集团公司年鉴 2005, *China National Petroleum Corporation 2005 Yearbook*, 中国石油出版社 (Beijing: China Petroleum Industry Press, 2005).
- CNPC, 外事规章和礼仪常识, *An Introduction to Foreign Rules, Regulations and Etiquette*, 中国石油出版社 (Beijing: China Petroleum Industry Press, 2004).
- China Petroleum Industry Press, 俄罗斯投资环境研究, *Research on the Investment Environment in Russia*, 中国石油出版社 (Beijing: China Petroleum Industry Press, 2005).
- Nanhai Xibu Oil Company, 南海西部石油公司志, *Gazette of the Nanhai Xibu Oil Company*, 1988.
- Shaw, Chong-Hai (邵宗海), 中共中央工作領導小組的組織定位" (CLSG: Definition and Status in the CCP." *中国大陆研究 (China Mainland Studies)*, 第四十八卷第三期 中華民國九十四年七月, pp. 1-25, (Vol. 48, No. 3, 2005). Available at <http://iir.nccu.edu.tw/index.php?include=journal&kind=2>.

Sinopec, 中国石油石化工程建设年鉴 2001-2005 (*China Petroleum and Petrochemical Industry Construction Yearbook 2001-2005*), 中国石化出版社, (Beijing: Sinopec Press, 2007).

Sinopec, 中国石油化工集团公司年鉴 2006, (*Sinopec Co. Yearbook 2006*) 中国石化出版社, (Beijing: Sinopec Press, 2006).

Zhang, Zhongxiang and Yunchang Jeffrey Bor, eds. (张中祥, 白云昌) 海峡两岸 能源经济政策, (*Energy Economics and Policy in Mainland China and Taiwan*) Beijing: 中国环境科学出版社 (China Environmental Science Publishing House) (2006).

Notes

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2. Bo Kong, "China's International Petroleum Policy," *Santa Barbara: Praeger Security International* (2010): 16.

3. Erica S. Downs, "China's 'New' Energy Administration," *Chinabusinessreview.com*, (November-December 2008): 42, accessed October 10, 2011, http://www.brookings.edu/articles/2008/11_china_energy_downs.aspx.

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5. Meidan et al., "Shaping China's Energy Policy: Actors and Processes," *Journal of Contemporary China* 18, no. 61 (2009): 591-61.

6. Kong, "China's International Petroleum Policy," 17.

7. Kong, "China's International Petroleum Policy," 18.

8. Downs, "China's 'New' Energy Administration," 45.

9. Kenneth Lieberthal, *Governing China: from Revolution through Reform* (New York: Norton, 1995), 233

10. Kong, "China's International Petroleum Policy," 25.

11. Lieberthal, *Governing China*, 234.

12. Lieberthal, *Governing China*, 207.

13. Kenneth Lieberthal and Michel Oksenberg, *Bureaucratic Politics and Chinese Energy Development* (Washington: Department of Commerce Press, 1986), 38.

14. Lieberthal and Oksenberg, *Bureaucratic Politics*, 138.

15. Danny Marks, "China's Climate Change Policy Process: Improved but Still Weak and Fragmented," *Journal of Contemporary China* 19, no. 67 (2010): 981, accessed October 10, 2011, <http://dx.doi.org/10.1080/10670564.2010.508596>.
16. Marks, "China's Climate Change Policy," 976.
17. Kenneth Lieberthal and Michel Oksenberg, *Policy Making in China: Leaders, Structures and Processes* (Princeton, New Jersey: Princeton University Press, 1988), 30.
18. Lieberthal and Oksenberg, *Bureaucratic Politics*, 385.
19. Lieberthal and Oksenberg, *Policy Making in China*, 27.
20. Lieberthal and Oksenberg, *Policy Making in China*, 156.
21. Downs, "China's 'New' Energy Administration," 43.
22. Lieberthal, *Governing China*, 189.
23. Lieberthal, *Governing China*, 194.
24. Lieberthal, *Governing China*, 192.
25. Lieberthal, *Governing China*, 193.
26. Lieberthal, *Governing China*, 198.
27. Lieberthal, *Governing China*, 198.
28. Lieberthal and Oksenberg, *Policy Making in China*, 24.
29. Viewed at the level of the national economy, China would not seem to be susceptible to the development problems of "resource curse" economies, and yet the development of resource-providing regions in northeast China allowed China to become an oil-exporting country in the oil crisis of the 1970s, with the foreign currency from these enabling central government and military leaders to modernize the defense industry with foreign technology. For a discussion of the resulting creation of a "petroleum faction" within the Chinese central government, CCP, and military, see Lieberthal and Oksenberg, *Policy Making in China*. Although trade liberalization and surging demand for foreign supplies of hydrocarbons, and the resulting changes in the leadership institutions of the central government and party, may have largely removed the influence of such a faction in national politics, the long-term impact of these at the local and firm level has largely been unexplored by scholars. Here, we might ask: What is the long-term effect of having one oil field administration in particular (Daqing) play such a leading role in the development of a nation's oil and gas industry? The creation of a subnational oil producer cartel may lead to the creation of relations or coalitions among local governments that

obstruct the development of national-level oil industry regulatory institutions. For a discussion of this in the American historical context (the Interstate Oil Compact Commission as a cartel) see Gary D. Libecap and James Smith, “The Economic Evolution of Petroleum Property Rights in the United States,” *Journal of Legal Studies* 31, no. 2 (2002): 589-608. For a discussion of how the training practices within one state enterprise may create long-term constraints on the development of national civil service regulatory institutions and private production and transmission institutions in the electric power sector, see Erwin C. Hargrove, *Prisoners of Myth: the Leadership of the Tennessee Valley Authority, 1933-1990* (Princeton, New Jersey: Princeton University Press, 1994). Some scholars of Chinese NOCs have examined the role of Daqing in maintaining intra-firm pricing mechanisms that favor its economic position within CNPC and China’s domestic oil sector, and concluded that Daqing has been able to do so because of the political power it wields. See Kun-Chin Lin, “Embedding Socialist Firms as a Statist Project: Restructuring the Chinese Oil Industry, 1997-2002,” *Enterprise and Society* 7, no. 1 (2006): 59-97; and also Jin Zhang, *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* (London: RoutledgeCurzon, 2004). Such studies may inadvertently discount the largely informal and long-term influence Daqing has had through the managerial, accounting, and legal training of its officials and professionals, and its creation of uniform production, distribution, and sales standards. Its role as both an organizational model and political icon was established in the Maoist era with the mandatory mass popularization of the slogan, “In Agriculture Study Dazhai, In Industry Study Daqing” (“农业学大寨，工业学大庆”).

30. For a relatively concise survey of privatization studies, see William L. Megginson and Jeffrey Netter, “From State to Market: A Survey of Empirical Studies on Privatization,” *Journal of Economic Literature* 39, no. 2 (2001). For an authoritative broad discussion of privatization and economic development, including surveys of research on China and other transition economies, and on case studies in various sectors, including the energy sector, see William L. Megginson, *The Financial Economics of Privatization* (London: Oxford University Press, 2005).

31. Douglass C. North, “Privatization, Incentives, and Economic Performance,” in *The Privatization Process: A Worldwide Perspective*, eds. Terry L. Anderson and Peter J. Hill (Lanham, Maryland: Rowman & Littlefield, 1996), 25-38.

32. Steven W. Lewis, “Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China,” (unpublished dissertation manuscript, Washington University in St. Louis, 1996); and Steven W. Lewis, “Privatizing China’s State Owned-Oil Companies,” (paper prepared as part of “China and Long-Range Asian Energy Security: An Analysis of the Political, Economic and Technological Factors Shaping Asian Energy Markets,” sponsored by the Center in International Political Economy and the James A. Baker III Institute for Public Policy at Rice University, 1999).

33. See Shahid Yusuf et al., eds., *Under New Ownership: Privatizing China’s State-Owned Enterprises* (Washington, D.C: The World Bank, 2006); World Bank, *Bureaucrats in Business: The Economics and Politics of Government Ownership* (Oxford, UK: Oxford University Press, 1995); Robert Bacon, “A Scorecard for Energy Reform in Developing Countries,” *Public Policy for the Private Sector*, note No. 175 (April 1999), <http://www.worldbank.org/html/fpd/notes/175/175bacon.pdf>; World Energy Council, *The Benefits and Deficiencies of Energy Sector Liberalisation* (London, UK: World Energy Council, 1999); Montgomery Research/PriceWaterhouseCoopers, *The Utilities Project: The Impact of Competition* (San Francisco, California: Montgomery Research, 2000); World Bank and IESM, “Modernizing China’s Oil and Gas Sector: Structure Reform and Regulation,” (consolidated joint report of the World Bank and the Institute of Economic System and Management, the State Council Office for Reform of the Economic Structure, in Chinese and English, Beijing, PRC: 中国财政经济出版社, 2001); Timothy Irwin and Chiaki Yamamoto, “Some Options for Improving the Performance of State-Owned Electricity Utilities,” (Energy and Mining Sector Board discussion paper no. 11, February 2004); Aegis Energy Advisors, “State Oil Company Privatization: Aegis Energy’s Perspectives on Best Practices,” in “Brazilian Energy Sector Reform,” by the Energy Forum of the James A. Baker III Institute for Public Policy at Rice University (2004), <http://www.rice.edu/energy/publications/brazilenergysector.html>.

34. Lewis, “Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China.” Lewis, “Privatizing China’s State Owned-Oil Companies.”

35. Yusuf et al., *Under New Ownership*. World Bank, *Bureaucrats in Business*. Bacon, “A Scorecard for Energy Reform in Developing Countries.” World Energy Council, *The Benefits and Deficiencies of Energy Sector Liberalisation*. Montgomery Research/

PriceWaterhouseCoopers, *The Utilities Project*. World Bank and IESM, *Modernizing China's Oil and Gas Sector*. Irwin and Yamamoto, "Some Options for Improving the Performance of State-Owned Electricity Utilities." Aegis Energy Advisors, "State Oil Company Privatization: Aegis Energy's Perspectives on Best Practices."

36. There are even fewer studies of privatization of the energy sector, and these do not look at the structural or institutional aspects of privatization, viewing it as a macro-economic theoretical investigation. For an example, see David F. Gates and Jason Z. Yin, "The demand for and supply of energy in China: implications for the private sector," in *Private Enterprises and China's Economic Development*, eds. Shuanglin Lin and Xiaodong Zhu (London: Routledge, 2007), 173-190.

37. For useful recent studies of the incremental emergence of China's decentralized pension and social welfare systems, see Mark Frazier, "Chinese Views on Pension Reforms," *Asia Policy*, January (2006): 43-68; and Tamara Trinh, "China's Pension System: Caught Between Mounting Legacies and Unfavorable Demographics," Deutsche Bank Research (February 17, 2006), accessed November 20, 2006. <http://www.dbresearch.com>.

38. Chinese scholars have debated about the long-term impact of this lack of a national privatization program, speculating about whether or not it has become a lost opportunity for national discussion of critical social welfare issues in general. See Hui Wang, "Contemporary Chinese Thought and the Question of Modernity," in *Whither China: Intellectual Politics in Contemporary China*, ed., Xudong Zhang (Durham, North Carolina: Duke University Press, 2001), 161-198; and Shaoguang Wang, "The Changing Role of Government in China," in *Whither China*, 123-160; and for a broad-ranging summary see also Xudong Zhang, "the Making of the Post-Tiananmen Intellectual Field: A Critical Overview," in *Whither China*, 1-78.

39. For a discussion of the role of networks across generations of Chinese leaders, by one of Hong Kong's most "well-connected" political affairs journalists, see Willy Wo-Lap Lam, *Chinese Politics in the Hu Jintao Era: New Leaders, New Challenges* (Armonk, New York: M.E. Sharpe, 2006); and for more systematic studies of the Central Committee, revealing the increasingly large role played by "factions" representing local government interests, see Zhiyue Bo, "The Institutionalization of Elite Management in China." in *Holding China Together: Diversity and National Integration in The Post-Deng Era*, eds., Barry J. Naughton and Dali Yang (Cambridge, UK: Cambridge University Press, 2004), 70-100; and also Zhiyue Bo, "The 16th

Central Committee of the Chinese Communist Party: formal institutions and factional groups,” *Journal of Contemporary China* 13, no. 39 (2004): 223-256, and Zhiyue Bo, *Chinese Provincial Leaders: Economic Performance and Political Mobility Since 1949* (Armonk, New York: M.E. Sharpe, 2002), and Cheng Li, “Political Localism Versus Institutional Restraints: Elite Recruitment in the Jiang Era,” in *Holding China Together*, 29-69.

40. For the agenda-setting role of local-level privatization experiments and economic development zones in the privatization of China’s post-Mao planned economy, see Steven W. Lewis, “Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China” (unpublished dissertation manuscript, Washington University in St. Louis, 1996); and for studies of these reforms across a range of localities and economic sectors, see also Andrew Walder and Jean C. Oi, eds., *Property Rights and Economic Reform in China* (Stanford, California: Stanford University Press, 1999). For informative recent omnibus studies of the privatization of state enterprises in general, but not the energy sector, see John Hassard et al., eds., *China’s State Enterprise Reform: From Marx to Market* (London: Routledge, 2007); and Lin, *The Revival of Private Enterprise in China*.

41. Lewis, “Privatizing China’s State Owned-Oil Companies.”

42. According to interview with advisers to the NOCs and the central government at the time, both CNPC and Sinopec presented plans to the State Council designed to subsume each other within their own corporate hierarchies, and to merge CNOOC and its offshore fields into the resulting very large NOC. Central government leaders reportedly responded by asking each to prepare plans to swap assets in order to become equivalent vertically integrated oil and gas companies. See the gazettes of the central NOCs for this period in the late 1990s, Annual Yearbook of Sinopec (中国石油化工总公司年鉴) and Annual Yearbook of CNPC (中国石油天然气总公司年鉴).

43. For a recent study of the formation of China’s decentralized energy sector in general, see Philip Andrews-Speed, *Energy Policy and Regulation in the People’s Republic of China* (Netherlands: the Hague, 2004). For a discussion of the gradual integration of individual oil fields and refineries in China’s localities within a Ministry of Petroleum beneath the State Planning Commission and State Economic Commission of the 1970s and 1980s, see Lieberthal and Oksenberg, *Policy Making in China: Leaders, Structures and Processes* (Princeton, New Jersey: Princeton University Press, 1988). For a discussion of the various state agencies currently

playing a role in national energy policy formation see “National Security Review of International Energy Requirements,” in Energy Policy Act 2005: Section 1837 (February 2006). For a discussion of the role of ad hoc and long-term leadership groups, and the officials who constitute them, in party and central government energy policy formation, and of the role of the Energy Leading Group and the State Energy Office under the National Development and Reform Commission in particular, see Erica S. Downs, “Energy Security Series: China,” The Brookings Foreign Policy Studies Energy Security Series (December 2006). For a discussion of the interaction of government academic think tanks, state-owned media and energy policy agency officials, see Erica S. Downs, “The Chinese Energy Security Debate,” *China Quarterly* 177 (2004): 21-41.

44. For a discussion of how subsidiary oil field administrations and large refineries within CNPC and Sinopec have opposed the centralization efforts of corporate headquarters and central government leaders on such issues as pricing, privatization, and personnel appointments, see Lin, “Embedding Socialist Firms as a Statist Project”; and for studies of Daqing and Yanhua in particular, see also Jin Zhang, *Catch-up and Competitiveness in China: The case of large firms in the oil industry* (London: Routledge-Curzon, 2004).

45. “Three Oil Giants Make Up 31.7% of SOE’s Profits in 2010,” *China Wire*, Xinhua English, October 22, 2011, <http://china-wire.org/?p=16249>.

46. For a U.S. government-sponsored analysis of the issues involved, see Dick K. Nanto et al., “China and the CNOOC Bid for Unocal: Issues for Congress,” (Washington D.C.: Congressional Research Service, September 15, 2005).

47. CNOOC clearly models itself after the IOCs in presenting itself to potential investors as a responsible corporate citizen. For example, see the discussion of its social obligations in its *2005 Social Responsibility Report*. http://www.cnooltd.com/pdf/CNOOC_social_responsibility_report_2005-e.pdf.

48. Kun-Chin Lin, “The Nexus of State-Owned Enterprises and the Local State: Origins and Pressure Points During Privatization,” (presented at “Investment in China’s Local Energy Infrastructure,” James A. Baker III Institute for Public Policy at Rice University, April 11, 2005); and Steven W. Lewis, “Privatization Best Practices and Comparisons: Case Study Petrobras,” (paper published as part of “Brazilian Energy Sector Reform,” Energy Forum of the James A. Baker III Institute for Public Policy at Rice University, February 2004).

49. See Arthur Jiantao Yan, “China’s Localities, State Energy Companies, and the Development of the West-East Gas Pipeline,” (paper presented at “Investment in China’s Local Energy Infrastructure,” James A. Baker III Institute for Public Policy at Rice University, April 11, 2005).

50. For pioneering Western studies of the *nomenklatura* system in China of the late 1980s and early 1990s, see John Burns, “China’s Nomenklatura System,” *Problems of Communism* 28, no. 2 (1987): 36-51; and John Burns, “Strengthening Central CCP Control of Leadership Selection: The 1990 Nomenklatura,” *China Quarterly* (1994): 458-489; and for a study of the *nomenklatura* system in the late 1990s, after the large government restructuring and downsizing of 1998, see Hon S Chan, “Cadre Personnel Management in China: the Nomenklatura System, 1990-1998,” *China Quarterly* 179 (2004): 703-734; for discussions of the role of the *nomenklatura* system of appointments in cadre management and party personnel issues in general, see Melanie Manion, “The Cadre Management system, Post-Mao: The Appointment, Promotion, Transfer and Removal of Party and State Leaders,” *China Quarterly* 102 (1985): 203-233, and also Melanie Manion, *Retirement of Revolutionaries in China: Public Policies, Social Norms, Private Interests* (Princeton, New Jersey: Princeton University Press, 1993).

51. See advertisements by individual oil field administrations in China energy industry journals, including China Energy (中国能源), China Petroleum and Petrochemical (中国石油石化), and Energy Information (能源知识); See also the gazettes of the central NOCs: *Annual Yearbook of Sinopec* (中国石油化工总公司年鉴) and *Annual Yearbook of CNPC* (中国石油天然气总公司年鉴). A recent search on Google Hong Kong using “石油局” (Petroleum Office) quickly turned up links to the oil field administrations of East China, North China, Southwest China, Sichuan Province, and many more regions.

52. For an examination of how the centralization of China’s financial institutions in the late 1990s and early parts of the 21st century under the Central Financial Work Commission (CFWC) failed to reestablish control over China’s rapidly growing local financial systems, see Sebastian Heilmann, “Regulatory Innovation by Leninist Means: Communist Party Supervision in China’s Financial Industry,” *China Quarterly* 181 (2005): 1-21; and for a study of how Shanghai municipal authorities established new intra-party and intra-government oversight institutions to manage the local financial industry, see Sebastian Heilmann, “Policy-Making and

Political Supervision in Shanghai's Financial Industry," *Journal of Contemporary China* 14, no. 45 (2005): 643-668.

53. See Victor Yue Yuan, "Chinese Residents' Perceptions of Environment and Energy," (published full research report presented at "Energy and Environmental Awareness in China," an international workshop co-sponsored by the James A. Baker III Institute for Public Policy and UFJ Research at Rice University, June 30, 2004).

54. Given the incremental and bottom-up development of Chinese state-owned enterprises, however, even CNOOC has historical ties to local governments, many of which worked with exploration units of the Ministry of Geology, the Chinese military, the northern oilfield administrations that later came to be CNPC and Sinopec, and the IOCs, in order to find and develop fields close to the shore of Guangdong province and what would later become Hainan Province, in South China; see the many accounts of the development of individual blocks in the South China Sea in the Gazette of the Nanhai Xibu Oil Company (南海西部石油公司志), 1988.

55. Here even the state-controlled media are competing with other Chinese state-owned enterprises, including the NOCs. When CNOOC made its bid for Unocal, *Xinhua Financial News Wire* commentators in Hong Kong expressed doubts about the economic viability of such a merger.

56. See especially Barry Naughton, *Growing out of the Plan: Chinese Economic Reform, 1978-1993* (Cambridge, UK: Cambridge University Press, 1996), and Barry Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge, Massachusetts: MIT Press 2007).

57. State Statistical Bureau, *China Statistical Yearbook 2007* (Beijing: State Statistical Press, 2007).

58. International Energy Agency (IEA), *World Energy Outlook 2007: China and India Insights* (Geneva: Organization for Economic Cooperation and Development, 2007).

59. IEA, *World Energy Outlook 2007*.

60. See the website of the municipal development and reform commission. For Shanghai, <http://www.shdpc.gov.cn/sub2.jsp?num=10-4>, and for Beijing, <http://www.bjpc.gov.cn/jgjs/jgsz/>.

61. See the website of Tianjin's municipal development and reform commission, http://www.tjdpc.gov.cn/templet/default/ShowClassList2.jsp?articleID=3821&id=jgsz&root_id=jggk&root_id=jggk.

62. For the Chongqing commission's website, see: <http://www.cqdpc.gov.cn/jttx.asp?lm=2&lm1=4>; for the office's website, see: <http://www.cqdpc.gov.cn/txt/lyc%A3%A813%A3%A9.htm>.

63. For Xinjiang commission's website see: [http://www.xjdrc.gov.cn/1\\$001/1.jsp](http://www.xjdrc.gov.cn/1$001/1.jsp); for the department's website, see: [http://www.xjdrc.gov.cn/1\\$001/1\\$001\\$003/1\\$001\\$003\\$004/206.jsp?articleid=2006-5-26-0021](http://www.xjdrc.gov.cn/1$001/1$001$003/1$001$003$004/206.jsp?articleid=2006-5-26-0021).

64. For the Guangdong province commission's website see: <http://www.gddpc.gov.cn/>; for the description of the energy department, see: <http://www.gddpc.gov.cn/class/base.asp>; for the website of the leadership of the commission, see: <http://www.gddpc.gov.cn/class/base-1.asp>.

65. For example, see Lieberthal and Oksenberg, *Policy Making in China*, and Kenneth G. Lieberthal and David M. Lampton, *Bureaucracy, Politics, and Decision Making in Post-Mao China* (Berkeley: University of California Press, 1992).

66. For example, see Lam, *Chinese Politics in the Hu Jintao Era*.

67. For example, see Downs, "Energy Security Series: China"; or Trevor Houser. "The Roots of Chinese Oil Investment Abroad," *Asia Policy* 5 (2008); or Mikkal E. Herberg, "Energy Security Survey 2007: The Rise of Asia's National Oil Companies," *NBR Special Report No. 14* (December 2007).

68. Lieberthal, Kenneth G. and Bruce J. Dickson, *A Research Guide to Central Party and Government Meetings in China 1949-1986* (New York: M. E. Sharpe, 1989).

69. See Alice L. Miller, "The Work System of the New Hu Leadership," *China Leadership Monitor* 24 (2008); H. Lyman Miller, "More Already on Politburo Processes Under Hu Jintao," *China Leadership Monitor* 17 (2006); and H. Lyman Miller, "Party Politburo Processes Under Hu Jintao," *China Leadership Monitor* 11 (2004).

70. Note that there are also leadership small groups within localities. For a study of several influential leadership small groups, especially in foreign affairs, see Chong-Hai Shaw, "CLSG: Definition and Status in the CCP" ("中共中央工作領導小組的組織定位"), *China Mainland Studies* (《中国大陆研究》) 48, no. 3 (2005): 1-25, <http://iir.nccu.edu.tw/index.php?include=journal&kind=2>.

71. See especially Bo, "The Institutionalization of Elite Management in China," and Bo, "The 16th Central Committee of the Chinese Communist Party: formal institutions and factional groups."

72. The 16th Central Committee had some 198 full members, and 148 alternate members. The role of alternate members is widely assumed to be largely that of observers in training for full membership. This study draws upon the official biographies of central committee members collected on the website of China Vitae: <http://chinavitae.com>. Almost all full members have detailed biographies on this website, but many alternate members do not. This is a firm measure of the lack of transparency of the Chinese political system, in that even the state news agency does not have biographies of all of the top 350 members of the Communist Party.

73. Benjamin D. Chou, “The Petroleum Faction in the 17th Central Committee and the 2012 Leadership Transition” (unpublished manuscript for “Asia and Energy Seminar,” Ting Tsung and Wei Fong Chao Center for Asian Studies, Rice University, May 2011).

74. Lam, Willy Wo-Lap, “The Rise of the Energy Faction in Chinese Politics,” *China Brief* XI, no. 7 (April 22, 2011), Washington DC: Jamestown Foundation.

75. I am indebted to Erica Downs for this observation.

76. Lam, Willy Wo-Lap, *China Briefing* (Jamestown Foundation, October 2011).

77. CNPC, *China National Petroleum Corporation 2005 Yearbook* (2005 中国石油天然气集团公司年鉴) (Beijing: China Petroleum Industry Press [中国石油出版社], 2005).