



## China and Energy Security in Asia

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## Introduction

Twenty years ago, when Chinese leaders visited Africa and Latin America, their travels and meetings received little attention in Western and Japanese media, and were left out of discussions among economic policy circles. Today, when President Hu Jintao or Premier Wen Jiabao visit Brazil, Nigeria, Sudan, or Venezuela, not only do they receive the royal treatment by their local hosts, but also they generate intense scrutiny and speculation, particularly by scholars and experts of energy policy and energy security studies. Part of this new attention is understandable. China was not a major resource importing country in the 1980s—it did not become a net oil importer until the early 1990s—nor was it a major source of foreign aid and development loans to many African or Latin American countries. Moreover, at the time, American, European, and Japanese security studies scholars were not focused on China—which was viewed as merely an up-and-coming military and technological power—and energy policy scholars were simply uninterested in a country that was largely autonomous in terms of energy supplies and thus was disconnected from world energy markets.

Today, scholars and officials alike recognize that China is a major energy- and resource-consuming nation, one that must, because of its rapidly rising economy and large population, play a substantial role in future global energy markets and occupy an important position in the energy supply security plans of all nations. Unfortunately, the understanding of China's highly visible role in global resource markets has outpaced the common knowledge of important changes in the formation of energy policy and energy security strategies within China. The primary problem is the assumption that the leaders in Beijing are the important drivers of energy policy in China.

In this paper, I will attempt to demonstrate the danger of making this assumption through some simple analyses of subnational data not commonly used by energy policy and energy security studies scholars.<sup>1</sup> China's energy policies, and thus her energy security strategies, are largely decentralized. The challenge for foreign scholars and officials is to find new ways to include such a large and diverse collection of populous and wealthy localities within our studies of international energy markets and energy security institutions.

### The Decentralization of China's Energy Policy

Historically a collection of diverse and strong regional economies, China never created a central planned economy to match that of its socialist cousin, the Soviet Union. Even as the Soviet Union's *Gosplan* and *Gosarbitrash* employed tens of thousands of mathematicians to coordinate the prices and distribution of hundreds of basic goods and raw materials, China's State Planning Commission and State Economic Commission never employed more than a few hundred professional statisticians. In the current era of reform, these two key central planning agencies have had no more than a few thousand bureaucrats. The new National Development and Reform Commission has inherited these small agencies and a continuation of policies to downsize the central government, resulting in a national planning bureaucracy that is smaller than the planning bureaus and offices of many of the larger localities—the municipalities of Shanghai and Beijing, with populations of 20 and 14 million respectively, and the many provinces that have 60 to 80 million people—and of the largest state-owned enterprises (SOE), including the national oil companies, which employ millions of people throughout China. Counterintuitively, China's planned economy is very much a regionally planned economy.

To view the continuing effects of decentralization, look at the source of investments in China's energy infrastructure, as shown in **Table 1**.

**Table 1: Investment in Energy Fixed Assets in Urban Areas by Central Government and Local Government, 2006**

	Central Government (billion RMB)	Central (percent)	Local Government (billion RMB)	Local (percent)
Coal	14.3	9.8	131.5	90.2
Oil/Natural Gas	157.9	86.6	24.3	13.4
Refining	46.8	49.8	47.1	50.2
Power	266.1	36.5	461.2	63.5
Coal gas	5.0	15.1	28.0	84.9

Source: *China Statistical Yearbook 2007*, 206.

RMB = renminbi.

ful among the 190 key enterprises directly owned by the central government. The central government is also the key player in the nuclear power industry and in some renewables—notably the Three Gorges Dam Project in central China. However, for most of China’s energy supply and demand, the local governments dominate.

As **Table 2** shows, investment in China’s energy industry infrastructure is still mainly in coal-fired electricity enterprises, most of which are owned by provincial and subprovincial governments. Between 1995 and 2005, the proportion of total investment in fixed assets of energy SOE allocated to petroleum extraction and processing decreased from nearly one-fourth of all investments to only 6%. Investment in China’s power generation capabilities in the same period, however, increased from one-half to nearly three-fourths of all investments. The International Energy Agency estimates that China will require more than 3 trillion dollars of investment in the power industry between 2005 and 2030 in order to sustain current levels of economic growth.<sup>2</sup>

**Table 2: Proportion of Investment in Fixed Assets of State-Owned Enterprises in Energy Sectors**

Energy Industry	1995	2000	2005
Coal Mining, Processing	13.94%	7.00%	13.10%
Petroleum & Gas Extraction	24.67%	12.52%	5.86%
Electricity	51.48%	75.02%	72.50%
Petroleum Processing/Coking	7.98%	3.34%	6.17%
Coal Gas	1.93%	2.11%	2.37%

Source: State Statistical Bureau, 2006.

localities are investing several billion dollars in energy annually, with some, such as Guangdong Province, investing almost 4 billion dollars.

As Table 1 shows, in 2006 the investment in fixed assets of energy enterprises in urban areas was very much dominated by local governments. This finding is clearest in the coal industry—which is responsible for nearly 70% of China’s total primary energy demand—where the central government provided only 10% of investments. The same is true for electric power and coal gas. Only in the oil, gas, and refining industries is the central government a significant actor. This significance is largely because the central government’s investments include the resources of the three national oil companies, which are some of the most power-

**Table 3** shows that even as most of the 31 Chinese localities are focused on power generation development, there is considerable variation in the amount and type of investments they make.

First, the most economically vibrant and developed regions of China together make only about one-third of the investment in energy enterprises in a recent year (2005). Consider the populous coastal provinces of southern and southeastern China—Guangdong (8%), Fujian (2.4%)—and of eastern China—Jiangsu (6.6%), Zhejiang (6.2%), Shandong (4.6%)—plus the four major municipalities—Beijing (2.1%), Shanghai (2.3%), Tianjin (1.0%), and Chongqing (1.5%). At a 2005 conversion ratio of about eight renminbi (RMB) to one U.S. dollar, most Chinese

**Table 3: Investment in Fixed Assets by State-Owned Energy (SOE) Enterprises by Chinese Locality, with Proportions by Energy Sector, 2005**

Province, Municipality, Autonomous Region	Region	Total 2005 Invest in Fixed Asset Energy SOE, in Billion RMB	Coal (percent)	Power (percent)	Petroleum & Natural Gas Extraction (percent)	Petroleum Processing & Coking (percent)	Coal Gas (percent)	2005 Total All China Energy Fixed Asset Invest. (percent)	2006 China Total Pop. (percent)
Beijing	North	9.98	0.1	76.5	0.03	12.3	11.0	2.1	1.2
Tianjin	North	4.67	0	60.2	19.3	14.8	5.6	1.0	.8
Hebei	North	19.0	16.1	74.7	1.0	5.7	2.2	4.0	5.2
Shanxi	North	26.3	68.7	29.0	0	1.9	0.2	5.6	2.5
Inner Mongolia	North	38.2	8.3	80.5	4.7	6.0	.3	8.2	1.8
Liaoning	Northeast	12.3	12.3	62.1	17.4	4.6	3.3	2.6	3.2
Jilin	Northeast	4.6	10.8	87.2	0.2	0.5	.1	.9	2.0
Heilongjiang	Northeast	11.4	19.6	66.9	6.5	6.2	.6	2.4	2.9
Shanghai	East	10.8	0	95.2	0	0.8	1.0	2.3	1.3
Jiangsu	East	31.1	3.9	91.3	3.7	.4	.4	6.6	5.7
Zhejiang	East	29.1	0	89.7	0	0.1	10.0	6.2	3.7
Anhui	East	17.0	53.7	38.6	0	5.7	1.9	3.6	4.6
Fujian	East	11.4	1.5	82.4	0	9.6	6.4	2.4	2.7
Jiangxi	East	8.1	5.4	81.8	0	11.02	1.4	1.7	3.3
Shandong	East	21.6	25.7	64.6	0	7.6	2.0	4.6	7.0
Henan	Central/South	21.0	11.3	58.5	26.3	0.1	3.6	4.5	7.1
Hubei	Central/South	18.7	0	90.1	6.4	1.7	1.6	4.0	4.3
Hunan	Central/South	11.6	3.5	86.8	0	8.6	.9	2.4	4.8
Guangdong	Central/South	37.5	0	87.7	.1	9.7	2.9	8.0	7.0
Guangxi	Central/South	6.7	2.3	96.9	0	.3	.4	1.4	3.5
Hainan	Central/South	7.0	0	11.4	0	88.3	.1	1.5	.6
Chongqing	Southwest	7.3	6.8	90.7	0.3	0.1	1.8	1.5	2.1
Sichuan	Southwest	18.2	3.7	86.1	7.4	.1	2.4	3.9	6.2
Guizhou	Southwest	17.9	12.0	87.4	.2	0	.2	3.8	2.8
Yunnan	Southwest	14.0	4.4	92.8	0	.4	2.2	3.0	3.4
Xizang	Southwest	1.5	0	100	0	0	0	.3	.2
Shaanxi	West	23.7	5.4	46.2	39.8	7.1	1.3	5.0	2.8
Gansu	West	9.5	10.7	46.3	6.0	36.0	0.8	2.0	1.9
Qinghai	West	2.1	1.9	76.3	21.2	0	.4	.4	.4
Ningxia	West	6.0	54.0	44.7	0	.8	.3	1.2	.4
Xinjiang	West	7.4	9.3	50.3	28.6	9.6	2.0	1.5	1.5
<b>TOTAL</b>		<b>465.65</b>							

Source: State Statistical Bureau, *China Energy Statistical Yearbook 2006*, *China Statistical Yearbook 2007*.

Note: Darker shading = greatest percentage by energy form; lighter shading = >5%.

Moreover, some of the major investments are in scarcely populated areas. The Inner Mongolia Autonomous Region—a vast area of plains and desert directly north of Beijing and directly across the southern border of Mongolia itself—made about 5 billion dollars in investments in 2005, as much as Guangdong Province.

Second, the table also shows that there is considerable variation in the type of investments. Most of the 31 localities focus their investments on power generation, with most dedicating some 70–80% on new power plants. But some localities are focused mainly on coal—Anhui, Shanxi, and Ningxia—or on natural gas and oil—Hainan and Xinjiang. As the varying levels of shading in the table reveal, some are more comprehensive in their investments. Tianjin municipality and the provinces of Heilongjiang, Liaoning, Henan, and Shaanxi make significant investments (greater than 5% of total investments) in three or four energy sectors. China’s local energy planners, therefore, are varied in their skills, contacts, and recent experiences. Most are mainly power industry planning experts, but some local planning bureaus are much more comprehensive.

These areas of focus did not emerge overnight, however, because the current investments are the products of decades of planning. Since the reform era and gradual merger with the global economy began in the late 1970s, China’s local leaders have responded to increasing energy demand by trying to create more stable and diverse supplies of energy. To see this phenomenon, consider the history of energy infrastructure development at the local level over the past few decades, contrasting the coal with the oil sector. As seen in *Table 4*, 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 northern and western China, and increasingly from overseas. Moreover, even among these, Jiangxi, Shandong, and Hunan had gained relative coal independence.

The long-term energy autonomy of these localities, however, is constrained by the unequal distribution of coal beds across China. Some 55% of China’s ensured coal reserves are in North China’s Shanxi Province and the Inner Mongolia Autonomous Region, with another 17% in western China’s Guizhou and Shaanxi 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% 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 hungry east and south.

This dependence on 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 as conditions stopped the flow of coal from north to south and west to east. Thus, Central Party leaders scrambled to mobilize soldiers to clear railroad tracks and rebuild power lines, and they traveled to northern coal mines and ports to exhort workers to put in extra shifts in order to divert more coal to the east and south using coastal shipping.

Contrast the growth of the coal sector with the petroleum sector. As seen in *Table 5*, in 1988, 9 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

**Table 4: Coal Dependence of Chinese Localities, 1988 and 2005, with Relation to Proportion of Coal Reserves, Population, and Industrial Output**

Province, Municipality, Autonomous Region	Region	1988 Coal Production as Percentage of Consumption	2005 Coal Production as Percentage of Consumption	2006 Ensured Coal Reserves (100 million tons)	2006 Ensured Coal Reserves (percent total China)	2006 China Total Pop. (percent)	2006 Total Gross Ind. Output Value (percent)
Beijing	North	53.9	71.8	5.73	.17	1.2	2.5
Tianjin	North	6.6	0	2.97	.08	.8	2.6
Hebei	North	87.6	<b>108</b>	68.15	2	5.2	4.2
Shanxi	North	<b>354.7</b>	<b>1,291</b>	1,052	<b>32</b>	2.5	1.8
Inner Mongolia	North	<b>116.7</b>	<b>576.7</b>	802	<b>24</b>	1.8	1.3
Liaoning	Northeast	67.7	<b>182.8</b>	49.75	1.4	3.2	<b>4.4</b>
Jilin	Northeast	64.4	<b>103.1</b>	17.11	.5	2.0	1.5
Heilongjiang	Northeast	<b>130.2</b>	<b>497</b>	77.67	2	2.9	1.7
Shanghai	East	16.8	0	0	0	1.3	<b>5.8</b>
Jiangsu	East	40.4	60.2	18.30	.5	5.7	<b>13</b>
Zhejiang	East	7.6	1.2	0.49	.01	3.7	<b>9.2</b>
Anhui	East	<b>104.5</b>	<b>213</b>	119	3.5	4.6	1.8
Fujian	East	73	80.7	4.79	.1	2.7	<b>3.1</b>
Jiangxi	East	93.4	<b>169.9</b>	8.18	.2	3.3	1.3
Shandong	East	90.1	<b>1,497</b>	103	3	7.0	<b>12.2</b>
Henan	Central/South	<b>133.9</b>	<b>258.5</b>	123	3.6	7.1	4.3
Hubei	Central/South	39.3	16.6	3.26	.01	4.3	2.3
Hunan	Central/South	90.9	<b>117.3</b>	20.12	.6	4.8	1.9
Guangdong	Central/South	42.7	16.7	1.89	.1	7.0	<b>14.1</b>
Guangxi	Central/South	71.1	37.6	8.46	.2	3.5	1
Hainan	Central/South	0	0	0.90	.02	.6	.2
Chongqing	Southwest	n/a	<b>190.7</b>	18.26	.5	2.1	1
Sichuan	Southwest	<b>106.1</b>	<b>258.9</b>	50.26	1.5	6.2	2.5
Guizhou	Southwest	<b>142.5</b>	<b>248.2</b>	148	<b>4.4</b>	2.8	.6
Yunnan	Southwest	<b>108.3</b>	<b>245.8</b>	73.57	2.2	3.4	1
Xizang	Southwest	<b>100</b>	0	0.12	.03	.2	.01
Shaanxi	West	<b>111.2</b>	<b>547.5</b>	278	<b>8.3</b>	2.8	1.4
Gansu	West	84.1	<b>244.6</b>	61.70	1.8	1.9	.7
Qinghai	West	60.2	<b>174.4</b>	20.66	.6	.4	.2
Ningxia	West	<b>184.3</b>	<b>234.7</b>	70.06	2.1	.4	.2
Xinjiang	West	<b>117.1</b>	<b>265.5</b>	127	<b>3.8</b>	1.5	.8

Source: State Statistical Bureau, *China Energy Statistical Yearbook 1989*, *China Statistical Yearbook 2007*.

Note: Numbers in shading suggest relative energy independence; bold indicates greater proportion than average by population; n.a. = not available.

**Table 5: Oil Dependence of Chinese Localities, 1988 and 2005, with Relation to Oil Reserves, Population, and Gas and Diesel Consumption**

Province, Municipality, Autonomous Region	Region	1988 Oil Production as Percentage of Consump.	2005 Oil Production as Percentage of Consump.	2006 Ensured Oil Reserves (10,000 tons)	2006 Oil Reserves (percent China total)	2006 Total China Pop. (percent)	2005 Total China Gas Consump. (percent)	2005 Total China Diesel Consump. (percent)
<b>Beijing</b>	North	0	0	0	0	1.2	<b>3.7</b>	<b>1.3</b>
<b>Tianjin</b>	North	<b>102.5</b>	<b>269.2</b>	3,074.99	<b>1.1</b>	.8	<b>1.8</b>	<b>2.2</b>
<b>Hebei</b>	North	<b>170.6</b>	<b>58.3</b>	16,338.63	<b>5.9</b>	5.2	3.5	4.1
<b>Shanxi</b>	North	0	0	0	0	2.5	1.5	2.3
<b>Inner Mongolia</b>	North	0	0	5,526.32	<b>2.0</b>	1.8	<b>3.0</b>	<b>3.5</b>
<b>Liaoning</b>	Northeast	<b>107</b>	73.3	17,010.38	<b>6.1</b>	3.2	<b>5.6</b>	<b>5.0</b>
<b>Jilin</b>	Northeast	87.1	65.3	16,529.56	<b>5.9</b>	2.0	<b>2.6</b>	<b>2.2</b>
<b>Heilongjiang</b>	Northeast	<b>753.7</b>	<b>385.5</b>	62,196.71	<b>22.5</b>	2.9	<b>4.9</b>	<b>4.4</b>
<b>Shanghai</b>	East	0	15.3	0	0	1.3	<b>3.8</b>	<b>3.0</b>
<b>Jiangsu</b>	East	11.2	7.8	2,503.77	.9	5.7	<b>6.7</b>	<b>4.8</b>
<b>Zhejiang</b>	East	0	0	0	0	3.7	<b>5.8</b>	<b>7.5</b>
<b>Anhui</b>	East	1	0	137.88	.04	4.6	1.3	1.9
<b>Fujian</b>	East	0	0	0	0	2.7	<b>3.1</b>	<b>3.4</b>
<b>Jiangxi</b>	East	0	0	0	0	3.3	1.0	2.8
<b>Shandong</b>	East	<b>312.7</b>	90.3	34,747.87	<b>12.5</b>	7.0	<b>7.9</b>	<b>10.5</b>
<b>Henan</b>	Central/South	<b>314.7</b>	60.3	5,370.67	1.9	7.1	3.7	3.0
<b>Hubei</b>	Central/South	20.1	6.5	1,187.18	.4	4.3	<b>5.8</b>	<b>4.2</b>
<b>Hunan</b>	Central/South	0	0	0	0	4.8	4.3	<b>2.6</b>
<b>Guangdong</b>	Central/South	4.8	37.2	9.0	.03	7.0	<b>11.2</b>	<b>12.2</b>
<b>Guangxi</b>	Central/South	10.9	0.5	175.16	.06	3.5	<b>2.3</b>	3.0
<b>Hainan</b>	Central/South	0	0	40.80	.01	.6	.6	.4
<b>Chongqing</b>	Southwest	n/a	0	0	0	2.1	1.2	1.6
<b>Sichuan</b>	Southwest	5.9	0.02	345.05	.1	6.2	3.5	2.6
<b>Guizhou</b>	Southwest	0	0	0	0	2.8	1.0	1.3
<b>Yunnan</b>	Southwest	0	0	12.40	.04	3.4	1.9	2.6
<b>Xizang</b>	Southwest	0	0	0	0	.2	n/a	n/a
<b>Shaanxi</b>	West	35.5	<b>360.3</b>	19,884.83	<b>7.2</b>	2.8	<b>3.1</b>	1.6
<b>Gansu</b>	West	55.7	81.4	8,727.59	<b>3.1</b>	1.9	1.3	1.0
<b>Qinghai</b>	West	<b>149.7</b>	<b>373.1</b>	4,377.23	<b>1.5</b>	.4	.2	.2
<b>Ningxia</b>	West	<b>115.3</b>	0.03	139.91	.05	.4	.3	.5
<b>Xinjiang</b>	West	<b>211.2</b>	<b>257</b>	41,883.22	<b>15.1</b>	1.5	1.7	<b>2.8</b>
<b>OFFSHORE</b>		n/a	n/a	35,637.62	12.9	n/a	n/a	n/a

Source: State Statistical Bureau, *China Energy Statistical Yearbook 1989*, *China Statistical Yearbook 2007*.

Note: Numbers in shading suggest relative energy independence; bold indicates greater proportion than average by population; n.a. = not available

and relatively untapped 13% located offshore—the oil sector, which provides some 20% of China’s total energy supply, depends largely on oil production and extraction in just eight provinces and regions: North China’s Heilongjiang (Daqing Oilfield), Jilin, Liaoning (Liaohe Oilfield), and Hebei (Dagang Oilfield), eastern China’s Shandong (Shengli), and western China’s Shaanxi, 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. Here, unlike coal, where all provinces consume significant amounts to support industrial production, in the oil sector there are more elite or advanced consuming localities. 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 themselves are also significant gas and diesel consumers, in addition to the wealthier coastal provinces of eastern and southern China. Mountainous and relatively underdeveloped Sichuan Province in western China, for example, is home to more than 6% of China’s 1.3 billion population, and yet it consumes only 2–3% of China’s gasoline and diesel fuel.

Coastal Guangdong Province, only slightly larger in population, uses nearly 12% of these fuels. Beijing and Shanghai, where a growing middle class is buying cars and flooding freeways, make up only 2.5% of China’s population, and yet together they consumed almost 8% of its gasoline in 2006.

The central government does not play a very large direct role in moving crude oil and refined products from producing provinces to consuming localities. China has some 25 major crude pipelines, covering more than 10,000 kilometers, and yet only 11 of them connect two or more provinces, with most being managed by the China National Petroleum Corporation (CNPC) in the northeast or far west, as well as those of Sinopec in eastern China’s Shandong and Yangtze River delta region. With large investments by these companies in new pipelines, some half of the crude moved in China will soon move by pipeline. Most of the rest is transported by rail, including imports from Russia and Kazakhstan.

Although oil is not as important as coal to the economies of most provinces, the competition for oil among provinces is felt more intensely by some provinces than others. Whereas the eastern Chinese provinces and municipalities also depend 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, as well as through the crude and product pipelines of Sinopec in particular. In contrast, South China’s Guangdong Province not only depends on the central government for stable, low-cost coal supplies by rail, but also must 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.

And 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 recent completion of the west-to-east gas pipeline, thereby connecting 11 provinces and localities from western China’s Xinjiang Autonomous Region to Shanghai in eastern China. 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 liquefied natural gas (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 localities in other nations of the Pacific Rim, including those in Japan, Korea, Taiwan, and even the U.S. West Coast.

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 condi-

tions and needs. Most of the investment in the power generation that supports export-driven manufacturing growth is made by localities, with only most of the cost and coordination of shipping domestic coal from producing to consuming localities being 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 national oil companies (NOCs) and through support for oil transportation by rail. If the privatization of railways continues and if that change 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, as well as the competition among them to obtain stable, low-cost hydrocarbon supplies, it is not surprising that not only have local governments made major investments in power generation and coal mining in particular, but also they have developed local government organizational solutions to these energy supply problems. Here, 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 five-year plan—begun in 2006—the central government had a planning commission and an economic commission (the Chinese version of *Gosplan* and *Gosarbitrash*) to plan development and to coordinate all economic policy, and so did each of 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 the local governments had 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 National Development and Reform Commission (*fagaiwei*, or 国家发展和改革委员), 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 state-owned enterprises (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 Chinese Communist Party'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 underneath these offices are a variety of administrative departments and other 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.<sup>3</sup> 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.<sup>4</sup> Chongqing, China's fourth municipality directly under the central government, has an “energy department” (*nengyuan chu*, or 能源发展处) under

its municipal planning and reform commission. Perhaps, however, as a reflection of the preeminence of electric power generation in its energy development plans—the office is just upstream from the massive Three Gorges Dam—the department 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).<sup>5</sup>

Western China’s Xinjiang Autonomous Region, which is 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).<sup>6</sup> Resource-poor Guangdong Province in southern 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 party 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).<sup>7</sup>

The decentralized and locally idiosyncratic nature of governance in China thus poses a problem for energy policy studies: just who is managing energy policy in China? 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?

## Conclusion

Understanding China’s energy policy and energy security strategies increasingly requires a more sophisticated and complex understanding of the relationship between central and local government, and between governments and state-owned energy enterprises. As I have illustrated here through an examination of (a) the local sources of investments in energy infrastructure, (b) the historical variation in local investment plans across energy sectors, and (c) the different forms of energy administration that have developed across Chinese localities, China’s energy policy structure is indeed decentralized. Given the different needs and structure of demand for energy resources among Chinese localities and given the substantial resources they possess—many of China’s localities invest billions of dollars per year in energy infrastructure development—it is likely there is substantial variation in the energy security plans of China’s localities. Future studies of China’s role in energy security in Asia should examine the individual and collective role of these increasingly influential local governments.

## Endnotes

<sup>1</sup> For a more detailed and comprehensive study of the three Chinese national oil companies and their relationship to the formation of oil and gas sector energy policy, see Steven W. Lewis, “Chinese NOCs and World Energy Markets: CNPC, Sinopec, and CNOOC,” part of *The Changing Role of National Oil Companies in International Energy Markets*, an omnibus 2007 study published by the Energy Forum of the Baker Institute for Public Policy, Rice University; <http://www.bakerinstitute.org>. The author wishes to thank the following Rice University research interns for help with data collection and analysis for this paper: Dale Swartz, Yuanzhuo Wang, and Simon Meng Wu.

<sup>2</sup> International Energy Agency (IEA), *World Energy Outlook 2007: China and India Insights (World Energy Outlook)*, (Geneva: Organisation for Economic Co-operation and Development, 2007).

<sup>3</sup> For Shanghai, see the website of the municipal development and reform commission at <http://www.shdpc.gov.cn/sub2.jsp?num=10-4>; for Beijing, see the same at <http://www.bjpc.gov.cn/jgjs/jgsz/> (both accessed March 31, 2008).

<sup>4</sup> For Tianjin, see the website of the municipal development and reform commission at [http://www.tjdpc.gov.cn/templet/default>ShowClassList2.jsp?articleID=3821&id=jgsz&root\\_id=jggk&root\\_id=jggk](http://www.tjdpc.gov.cn/templet/default>ShowClassList2.jsp?articleID=3821&id=jgsz&root_id=jggk&root_id=jggk) (accessed March 31, 2008).

<sup>5</sup> For the Chongqing commission’s website, see <http://www.cqdpc.gov.cn/jtxx.asp?lm=2&lm1=4>; for the office’s website, see <http://www.cqdpc.gov.cn/txt/lyc%A3%A813%A3%A9.htm> (both accessed March 31, 2008).

<sup>6</sup> For the 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) (both accessed March 31, 2008).

<sup>7</sup> 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> (all accessed March 31, 2008).

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