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THE ROLE OF CHINA IN JAPAN'S QUEST FOR ENERGY SECURITY

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Abstract

This article examines the emergence of China as a new energy source for Japan in the course of the latter's efforts to diversify its overseas sources away from the traditional major suppliers. A stable flow of Chinese oil and coal into Japan is shown to have been guaranteed through the long-term trade agreements whose smooth implementation, in turn, is found to have been ensured by Japanese funded (Resource Bank Loans) joint energy development ventures and economic assistance (Yen Credits) targeted on coal related infrastructural projects.

Although China's share in Japan's total demand for energy imports has steadily grown over time, Japan continues to be overwhelmingly dependent on its traditional suppliers for both oil and coal. In the final analysis, China's energy export capacity will determine the country's future role in Japan's quest for energy security, suggesting better prospects for coal than oil.

Introduction

As a result of its increasing dependence on energy imports Japan has become a major actor in world energy markets. In response to the oil crises of 1973 and 1979 the Japanese government adopted the three goals of geographic diversification of oil sources, substitution of other types of energy with an emphasis on coal and natural gas, and introduction of energy conservation measures. By examining the role of China in Japan's quest for energy security, this article addresses the first two goals. China appeals as a source of energy supply not subject to the vagaries of Arab politics and possesses the additional attraction of being close to Japan geographically. Since China turned away from its policies of self-reliance at the end of 1978, it has become an important trading nation, accepted foreign loans and invited foreign participation in the exploration and development of its energy resources.

The article begins with an analysis of Japan's energy supply vulnerability to be followed by an overview of China's energy export capacity. Energy trade, joint energy development and economic assistance, the three major elements of cooperation in this area, are then examined in detail. Questions answered on the basis of empirical evidence include the following: To what degree have Japan's energy needs been met by imports from China? How actively has Japan been involved in the development of China's energy resources? To what extent have the selection criteria of government aid projects reflected Japan's energy policy? And most

importantly, what does the future hold for China as an energy supplier to Japan?

I. *Japan's Energy Dependence*

Coal, the country's most important mineral, is of relatively poor quality and difficult and expensive to mine. The importance of coal has been on a steady decline for two reasons. First, the domestic coal industry has suffered from the competition of cheaper foreign coal. Second, in the early 1960s, prompted by both economic and environmental considerations, the Japanese government began to encourage the import of oil to replace coal as a major energy source. During most of the 1960s, coal production was fairly static. But between 1970 and 1990 output decreased from 45 per cent to only 6 per cent of national requirements.[1] In fact, a report on new coal policies, submitted to the government in June 1991, recommended the phaseout of domestic coal production [*Nippon* (1992, pp. 234–35)].

Oil deposits are meagre and unless new fields are discovered, the reserves are likely to be exhausted by the 21st century. National output grew by nearly 50 per cent in the 1960s, but declined by 30 per cent during the 1970–1990 period. Oil has overtaken coal as the largest single source of energy, peaking at 78 per cent in 1973 [*Facts and Figures of Japan* (1991, p. 59)], on the eve of the first oil crisis. Subsequently the introduction of alternative sources of energy meant that the share of oil dropped year by year. None the less, Japan continues to be dependent on foreign sources for virtually all its oil and this dependence has risen slightly due to falling domestic production.

Since indigenous resources meet only a fraction of Japan's total demand, the country's degree of dependence on energy imports is very high, compared to the United States and Europe. Being the world's largest importer of coal and natural gas and the second largest importer of oil, Japan finds itself in a vulnerable position. As highlighted by Nemetz et al (1984–85, p. 554), vulnerability of supply has to be interpreted broadly, in terms of both *economic* and *physical* access to energy resources. Japan must attain an appropriate balance between cost minimisation and security. Up to 1973 the cost factor had been the greater concern for its policy makers and industry, then emphasis shifted to energy security.

As demonstrated in Table 1, oil has invariably been the largest item of Japan's energy import bill by far, while coal came second until it was overtaken by natural gas in 1979. Japan's spending on oil imports tripled in the wake of the first oil crisis in the fall of 1973. In a similar vein, it rose appreciably in 1979, and soared in 1980 and 1981 as a result of the second oil crisis. The problem of *economic* access ignited the export-fueled economy, because constantly growing exports were required to pay for imported oil. Table 1 shows that Japan's total energy imports in the early 1980s accounted for more than 45 per cent of all commodity imports in value terms. Indeed, nearly half of the country's total export earnings were needed in 1980 to pay for imports of oil, natural gas and coal. But since the plunge of world oil prices in 1986, which has led to a marked reduction in Japan's energy import bill, the financial aspect of dependence on foreign energy has played a diminishing role.

Japan's *physical* access to Middle East oil was suddenly interrupted by the 1973 Arab-

[1] Unless otherwise indicated, all figures given in the text were computed from raw data provided in either *Commodity Trade Statistics* or *Energy Statistics Yearbook*.

TABLE 1. JAPAN'S ENERGY IMPORT BILL, 1970–1992
(US$ million)

Year	Oil Imports (1)	Coal Imports (2)	Natural Gas Imports (3)	Total Energy Imports (4)	(4) as % of all Commodity Imports (5)	(4) as % of Total Export Earnings (6)
1970	2,236	1,015	105	3,356	17.8	17.4
1971	3,043	1,011	122	4,176	21.2	17.4
1972	3,927	1,080	169	5,176	22.1	18.1
1973	6,013	1,357	245	7,615	19.9	20.6
1974	18,906	2,901	858	22,665	36.5	40.8
1975	19,653	3,471	1,172	24,296	42.0	43.5
1976	20,111	3,570	1,431	25,112	38.9	37.4
1977	22,486	3,561	1,797	27,844	39.5	34.6
1978	22,662	3,084	2,546	28,292	35.9	29.0
1979	32,512	3,555	3,760	39,827	36.2	38.7
1980	51,033	4,469	7,671	63,173	45.2	48.7
1981	52,198	5,532	8,356	66,086	46.9	43.5
1982	45,449	5,793	8,416	59,658	45.8	42.9
1983	39,662	4,889	8,332	52,883	42.3	36.1
1984	39,000	5,322	9,529	53,851	39.5	31.7
1985	34,168	5,209	10,006	49,383	38.1	28.1
1986	18,967	4,944	7,843	31,754	26.6	15.2
1987	20,140	4,670	7,022	31,832	21.8	13.9
1988	18,451	5,421	7,128	31,000	16.5	11.7
1989	21,125	5,926	7,303	34,354	16.3	13.1
1990	30,995	6,252	9,227	46,474	19.8	16.2
1991	29,743	6,464	10,479	46,686	19.7	14.8
1992	29,621	6,133	10,159	45,913	19.7	13.5

Source: Compiled from data in various issues of *Commodity Trade Statistics*.

Israeli war that triggered the first oil crisis. The following facts and figures serve to illustrate the country's energy supply vulnerability at that particular point in time. First, Japan accounted for 10.8 per cent of total world oil consumption. Second, it depended on the Middle East, mainly Saudi Arabia and the United Arab Emirates, for approximately 80 per cent of its requirements. Third, the Arab oil embargo cut Japan's oil supplies by 6.3 per cent, or 15 million tons in 1974. The second oil crisis was precipitated by the Iranian Revolution in 1979. The experience of these threats to energy imports affected the future energy policy of Japan whose major concern, therefore, became to ensure a stable and sufficient supply of oil through a geographic diversification of overseas sources. Excessive dependence on the Middle East, where frequent political turmoil and military conflicts tend to interrupt the regular flow of oil, had to be reduced. Moreover, this dangerous energy situation led to a revaluation of coal as an alternative to oil. This explains Japan's efforts to also diversify its overseas coal sources away from the major suppliers of Australia, Canada and the United States.

II. *China's Energy Export Capacity*

China is well endowed with mineral resources, the most important of which is coal. Exploitable coal resources are concentrated in the North and Northwest, above all in Shanxi Province, Inner Mongolia Autonomous Region, and Hebei and Shandong Provinces, where reserves are not only abundant and readily minable but also mostly of good or exceptional quality. Shanxi is the leading coal-producing province and the largest exporter,[2] the Datong mining area yielding China's best steam coal. Inner Mongolia with the Jungar Coalfield and the Ordos Basin is expected to become the country's second largest coal producer by the end of the century. Most of the North's remaining coal reserves are in Hebei, mainly coking coal in the Kailuan mining area around the city of Tangshan which was seriously damaged in an earthquake in July 1976 [Smil (1988, pp. 31–33), Wang (1982, pp. 133–142), *Beijing Review* (No. 41, 1991, pp. 12–14)].

In 1977 China edged out the USSR to become the world's second largest coal producer and ten years later it overtook the United States as the world's leading coal producer, contributing in 1992 more than 30 per cent to total global output.[3] However, among the world's top five energy consumers, the structure of China's primary energy consumption represents a unique pattern with respect to its high dependence on coal. In fact, energy requirements derived from coal and oil accounted for 74 and 18 per cent respectively in 1994 [*Beijing Review* (No. 17, 1995, p. 18)]. Not surprisingly, only a minute fraction of national coal output is left as export surplus. Therefore, in 1992 China ranked only as the 6th largest coal exporter after Australia, the United States, South Africa, the Russian Federation and Canada. But coal exports have been growing steadily and even overtook oil exports in 1993 (*Statistical Yearbook for Asia and the Pacific 1994*).

The largest undeveloped petroleum potential in China today is onshore. One major oilfield complex is found in the northeast corridor, which extends from the Yellow River (Huanghe) to the northern border of Manchuria. China's most important oil-producing area, the supergiant Daqing field in the Songliao Basin of northern Heilongjiang Provine,was discoverd in 1959. Thanks to this discovery the country achieved self-sufficiency in oil in 1965 and began to export on a small scale in the early 1970s. Daqing oil production peaked in 1976 and from then on output was restricted to about 50 million tons per year. Important oilfields in the Bohai Basin include Shengli, near the mouth of the Yellow River in Shandong; Liaohe at the mouth of the Liao River near Shenyang in Liaoning Province; and Dagang near Tianjin in Hebei. Shengli, the number two field promises to eventually match Daqing's output. Moreover, steady development of the fields of Renqiu, or Huabei, in Hebei and Zhongyuan in Henan Province has compensated for Daqing's declining production [Woodard (1986, p. 93)].

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[2] Shanxi's coal export figure in 1985 reached 5 million tons, accounting for more than half of China's total coal exports (*Xinhua*, in English, 1 September 1985, *SWB*, FE/W 1355).

[3] Note that the average heating value of Chinese coal is estimated to be 10–15 per cent lower than the mean of United States coals [Wang (1982, p. 135)]. According to data of the World Energy Conference held in Istanbul in 1977, China's brown coal reserves account for less than one per cent of its total coal reserves (*China Newsletter*, No. 26, 1980, p. 26). Hence the inclusion of brown coal in China's coal production data is statistically insignificant.

The western basins, China's other major oilfield complex, include the Junggar Basin in the north of Xinjiang Uygur Autonomous Region with Karamay, the largest producer among the inland fields and the country's fourth largest oilfield after Daqing, Shengli and Liaohe; the Tarim Basin in southern Xinjiang; the Qaidam Basin in Qinghai Province; the Ordos Basin in Inner Mongolia; and numereous mid-sized basins [Woodard (1986, pp. 93–95), Smil (1988, pp. 99–101), Howard (1990, pp. 182–83), *Beijing Review* (No. 47, 1991, pp. 16–17)]. In early 1993, a colossal oilfield was found in the Tarim Basin [*Beijing Review* (No. 12, 1993, pp. 24–25)].

At the end of the 1980s, offshore oil accounted for less than one per cent of total output [*Beijing Review* (No. 45, 1990, p. 16)]. By 1993, this share had risen to 2.6 per cent [*Beijing Review* (No. 5, 1993, p. 28)], still far below the world average of approximately 20 per cent. Not surprisingly, advanced extraction methods have been introduced, mainly with foreign assistance, to develop China's continental shelf. Offshore reserves are concentrated in the following five basins: the Pearl River estuary (Zhujiangkou) in the South China Sea (Nanhai), the South Yellow Sea (Huanghai), the Gulf of Tonkin (Beibuwan) northwest of Hainan Island, the Yingge Sea (Yinggehai) southwest of Hainan Island, and the Bohai Sea [Woodard (1986, p. 93)].

In 1992 China was the fifth largest oil producer after the Russian Federation, Saudi Arabia, the United States, and Iran, contributing 4.7 per cent of world output. However, due to exports constraints arising from internal needs, it was only in 17th place as oil exporter, constituting as little as 1.4 per cent of global oil trade. China's oil surplus for exports in that year accounted for 15 per cent of national output. The country's oil export capacity has been declining since the mid-1980s. What is more, increasing crude oil imports, from 12.3 million tons in 1992 to 15 million tons in 1993, are now a cause of anxiety. According to the president of the China National Petroleum Corporation, in time imports may even exceed exports [*Beijing Review* (No. 39, 1993, p. 7)].

Natural gas represents the weakest part of China's hydrocarbon industry and production is clearly indicative of only modest reserves, being concentrated in Sichuan Province. Offshore natural gas was discovered south of Hainan Island in 1983 [Ledic (1989, pp. 97–98, 102)]. It is also found in small quantites as associated gas at the main oilfields of Daqing, Liaohe and at the main Shengli. Not surprisingly, unlike crude oil and coal, natural gas does not rank among China's major export commodities.

III. *Japan's Energy Imports from China*[4]

China was only a minor player in the oil trade in the early 1970s. In August of 1972, Chinese Premier Zhou Enlai confirmed to leading Japanese businessmen that there was a possibility of exporting Chinese crude oil to Japan [Payne (1982, p. 254)]. A group of Japanese companies negotiating the import of Chinese oil reached an impasse in February 1973. Negotiations were suspended, because the price demanded by China was too high in comparison to that for Indonesian oil [*Kyodo* (22 February 73), *SWB* (FE/W713)]. Two months later, the first contract was concluded between the China National Chemicals Import

[4] For China's oil and coal exports to Japan during the 1970–1992 period, see Table 2.

TABLE 2. CHINA'S OIL AND COAL EXPORTS, 1970–1992

Year	*Total Oil Exports* (million tons)	*Oil Exports to Japan* (mill. tons)	*Oil Exports to Japan* (% of total)	*Total Coal Exports* (million tons)	*Coal Exports to Japan* (mill. tons)	*Coal Exports to Japan* (% of total)
1970	0.19	–	–	2.27	0.24	10.6
1971	0.26	–	–	2.87	0.34	11.8
1972	0.64	–	–	2.82	0.25	8.9
1973	1.83	0.97	53.0	2.82	0.29	10.3
1974	5.07	3.90	76.9	2.87	0.41	14.3
1975	9.88	7.86	79.6	3.00	0.46	15.3
1976	8.50	6.06	71.3	2.27	0.32	14.1
1977	9.11	6.60	72.4	2.63	0.49	18.6
1978	11.31	7.50	66.3	3.12	0.77	24.7
1979	13.43	7.32	54.5	4.63	1.41	30.5
1980	13.31	7.87	59.1	6.32	2.07	32.8
1981	13.87	8.85	63.8	6.94	2.79	40.2
1982	14.68	9.11	62.1	6.73	3.12	46.4
1983	14.82	9.30	62.8	6.86	3.80	55.4
1984	22.01	11.08	50.3	7.04	3.93	55.8
1985	30.03	11.05	36.8	7.77	3.44	44.3
1986	28.50	13.03	45.7	9.82	3.77	38.4
1987	27.23	12.22	44.9	13.53	3.89	28.8
1988	26.05	13.60	52.2	15.65	4.08	26.1
1989	24.39	12.40	50.8	15.34	3.99	26.0
1990	23.99	13.69	57.1	17.29	4.56	26.4
1991	22.60	11.80	52.2	20.00	5.69	28.5
1992	21.51	12.82	59.6	19.70	6.24	31.7

Sources: For China's total oil and coal exports, see various issues of *Statistical Yearbook of China* and *China Statistical Yearbook*.
For China's oil exports to Japan, see various issues of *Commodity Trade Statistics*.
For China's coal exports to Japan for 1970–1975, see various issues of *Commodity Trade Statistics*; for 1976 & 1977, see *China Newsletter*, NO. 26, 1980, p. 27, Table 2; for 1978–1991, see various issues of *Energy Statistics Yearbook*; for 1992, see *China Newsletter*, No. 104, 1993, p. 24.

and Export Corporation and Japan's International Oil Trading Company[5] for the importation of one million tons of Daqing oil to be shipped from Dalian in Liaoning [*Kyodo* (25 April 73), *SWB* (FE/W722)].

In 1974 Japanese importers reduced the originally contracted 4.9 million tons of crude oil from China by 900,000 tons for two reasons. Most importantly, because of the strong position of the yuan in relation to the US dollar, the dollar price for the Chinese product turned out to be markedly higher than originally planned. Secondly, demand for oil had dropped as a result of the economic recession brought about by the first oil crisis in late 1973 [*Kyodo* (18 December 1974), *SWB* (FE/W807). Nonetheless, oil had already become the principal commodity in the structural transformation of Japan-China trade. Subsequent to the price revision talks in early 1975, when China agreed to trade on a dollar-quoted and dollar-settled

[5] This company was established for the purpose of importing oil from China by Japan's six major petroleum products companies, nine leading electric power companies and six leading iron and steel manufacturing companies (*China Newsletter*, no. 16, 1978, p. 10).

basis [*China Newsletter* (No. 7, 1975, p. 4)], oil imports from China doubled to nearly 8 million tons but fell to slightly over 6 million tons in the following year.

The beginning of China's coal trade with Japan dates back to earlier times. Japan's import of Chinese coking coal, mainly from Kailuan, peaked in 1967 at 920,000 tons and dropped to statistically insignificant quantities in the 1970s. Japan began to import steam coal from China in 1974, mostly Datong coal [*China Newsletter* (No. 16, 1978, pp. 14 & 17)]. In the wake of the first oil crisis, coal imports from China were to help reduce Japan's dependence on Middle East oil. However, mass imports were still far away in the 1970s, since coal production did not increase favourably during that decade. Due to China's limited coal export capacity, Japan imported less than a million tons of Chinese coal annually up to 1978.

So far imports of Chinese oil and coal had been conducted by private firms on a year-to-year basis. In September. 1975, a Japanese Ministry of International Trade and Industry (MITI) mission went to China to explore the possibilities of a long-term contract for oil and coal imports [*Japan Times* 23 September 1975, p. 11)]. By then China had recognised that the answer to the country's trade deficit problem with Japan lay in exporting its mineral fuels. But it was not until April 1977 that a Japanese economic delegation confirmed an agreement in principle that China would export more oil and coal to Japan [*Kyodo* (2 April 1977), *SWB* (FE/5480); *China Newsletter* (No. 14, 1977, pp. 17–18)].

The first Long-Term Trade Agreement (LTTA) was signed on February 16, 1978, set for an 8-year period from 1978 through 1985. It specified that Japan would export technology and plants, construction materials, and machinery and parts, in exchange for Chinese crude oil, coking coal and steam coal, representing an exchange of goods worth $10 billion each way. The volumes of Chinese crude oil, coking coal and steam coal to be exported to Japan in each year of the trade agreement are shown in Table 3. Initially, export quantities were established for the 1978–1982 period only. Concrete details for the last three years of the LTTA were to be worked out later, with the quantities of crude oil and coal exported from China to Japan to be increased gradually from those of the fifth year [*Kyodo* (in English, 16 February 1978), *SWB*, FE/5742)].

Not surprisingly, natural gas was not included under the terms of the LTTA. Suffice it to say that Chinese exports of natural gas to Japan, which did not commence until 1980, have remained statistically insignificant, accounting for only a fraction of one per cent of the country's total gas imports. Indonesia, the Middle East and Malaysia, in descending order of importance, continue to supply the bulk of Japan's requirements.

Japan's imports of Chinese oil rose to 7.5 million tons in 1978, exceeding the figure of 7 million tons set in the LTTA. However, in the following two years they fell slightly short of the quantities established in the LTTA. The Chinese authorities' wild optimism about the extent to which oil could be discovered and tapped was soon found to be unrealistic. In a similar vein, Japan had overcommitted itself with respect to the capacity of its petroleum industry to utilise China's heavy crude oil. In working out the draft proposal for the LTTA, Japanese oil refiners had already made it clear that Japan could only handle a limited import quantity of Chinese oil without building low-gravity oil cracking facilities [*China Newsletter* (No. 18, 1978, pp. 16–17)]. In September 1980 China notified Japan of its decision to cut oil supplies in 1981 and 1982 to 8.3 million tons. With respect to coal, Japan was assured that China would supply 2.5 to 2.7 million tons in 1981 and 3.5 to 3.7 million tons in 1982 [*Kyodo* (in English, 11 September 1980), *DR* (12 September 1980, D2)]. By that time a trend of

TABLE 3. JAPAN'S IMPORT LEVELS OF CHINESE OIL AND COAL UNDER THE FIRST AND SECOND LONG-TERM TRADE AGREEMENTS (LTTA) (million tons)

Year	Crude Oil	Coal
First LTTA		
1978[a]	7.0	0.30 – 0.50
1979[a]	7.6	0.65 – 0.70
1980[a]	8.0	1.50 – 1.60
1981	(9.5)[a] 8.3[b]	2.50 – 2.70[a]
1982	(15.0)[a] 8.3[b]	3.50 – 3.70[a]
1983[c]	8.0 – 8.6	4.5
1984	8.0 – 8.6[c]	(6.0)[c] 3.8 – 4.2[d]
1985	8.0 – 8.6[c]	(10.0)[e] 7.0 – 8.0[e]
1986[f]	8.8 – 9.3	3.7 – 4.1
1987[f]	8.8 – 9.3	3.7 – 4.1
1988[f]	8.8 – 9.3	3.7 – 4.1
1989[f]	8.8 – 9.3	3.7 – 4.1
1990[f]	8.8 – 9.3	3.7 – 4.1
Second LTTA		
1991[g]	8.8 – 9.3	3.9 – 5.3
1992[g]	8.8 – 9.3	3.9 – 5.3
1993[g]	8.8 – 9.3	3.9 – 5.3
1994[g]	8.8 – 9.3	3.9 – 5.3
1995[g]	8.8 – 9.3	3.9 – 5.3

Sources: [a] Article 2 of the LTTA, *The China Business Review*, No. 2, 1978, p. 46.
[b] *Kyodo*, in English, 11 September 1980, *DR*, 12 September 1980, D2.
[c] *Xinhua*, in English, 23 September 1982, *SWB*, FE/7139.
[d] *Kyodo*, 16 November 1983, *SWB*, FE/W1263.
[e] *Kyodo*, 23 September 1982, *SWB*, FE/7139.
[f] *Xinhua*, in English, 22 January 1986, *SWB*, FE/W1375.
[g] *Xinhua*, in Chinese, 18 December 1990, *SWB*, FE/W0160.
Note: Figures in parentheses are those prior to revision.

slackening oil demand was discernible due to the second oil shock. None the less, Japan's actual imports of Chinese oil exceeded the revised targets for those two years.

On March 19, 1979 the LTTA was extended by five years, from 1985 to 1990, and the value of trade was more than doubled, to between $40 billion and $60 billion. Specific targets could not, however, be established, because the Chinese could not be definite about oil and coal export levels, while the Japanese side was also not fully prepared for the expanded trade with China (*Kyodo*, 19 Mar 1979, *SWB*, FE/6076).

At their fourth meeting on the LTTA,[6] held in September 1982, both sides agreed that China export to Japan 8.0 to 8.6 million tons of oil annually between 1983 and 1985. In the event, actual shipments exceeded the commitments. The agreement also provided for coal exports of 4.5 million tons in 1983, 6.0 million tons in 1984, and 7.0 to 8.0 million tons in 1985 [*Xinhua* (in English, 23 September 1982), *SWB* (FE/7139)]. It should be noted that the 1985 target of coal exports meant a revision downward from the original goal of 10 million tons

[6] The Japan-China long-term trade council meets annually to monitor progress under the LTTA.

TABLE 4. MAJOR SOURCES OF JAPAN'S OIL IMPORTS, 1970–1992

Year	*Total* (1,000 tons)	*Middle East* (1,000 tons)	*Middle East* (% of total)	*Indonesia* (1,000 tons)	*Indonesia* (% of total)	*China* (1,000 tons)	*China* (% of total)
1970	169,016	145,680	86.2	21,010	12.4	–	–
1971	189,893	161,247	84.9	22,372	11.8	–	–
1972	213,237	174,589	81.9	27,728	13.0	–	–
1973	253,050	198,466	78.4	35,718	14.1	970	0.4
1974	238,037	182,630	76.7	33,551	14.1	3,898	1.6
1975	224,925	176,015	78.3	25,443	11.3	7,864	3.5
1976	216,658	170,762	78.8	26,632	12.3	6,058	2.8
1977	225,786	175,252	77.6	31,406	13.9	6,599	2.9
1978	223,022	174,020	78.0	29,208	13.1	7,503	3.4
1979	232,536	176,980	76.1	33,867	14.6	7,315	3.1
1980	208,708	152,769	73.2	30,009	14.4	7,867	3.8
1981	189,408	129,718	68.5	30,598	16.2	8,848	4.7
1982	177,455	124,182	70.0	27,292	15.4	9,109	5.1
1983	174,810	123,053	70.4	24,704	14.1	9,300	5.3
1984	180,097	126,670	70.3	23,257	12.9	11,084	6.2
1985	164,623	115,343	70.1	18,248	11.1	11,046	6.7
1986	183,991	125,920	68.4	21,122	11.5	13,030	7.1
1987	153,365	103,594	67.5	19,973	13.0	12,223	8.0
1988	159,783	108,033	67.6	20,975	13.1	13,597	8.5
1989	172,759	122,475	70.9	21,829	12.6	12,399	7.2
1990	189,795	134,773	71.0	23,075	12.2	13,639	7.2
1991	199,421	144,740	72.6	24,362	12.2	11,800	5.9
1992	209,165	157,356	75.2	20,767	9.9	12,618	6.0

Sources: Compiled from data in various issues of *Commodity Trade Statistics*.

[*Kyodo* (23 September 1982), *SWB* (FE/7139)]. At the end of 1983, Japan requested that its 1984 imports of coal from China be reduced to 1.5 to 1.7 million tons of coking coal and 2.3 to 2.5 million tons of steam coal [*Kyodo* (16 November 1983), *SWB* (FE/W1236)]. In 1983 and 1985, coal export volumes fell short of contract volumes.

In January 1986, the two countries agreed that China export to Japan 8.8 to 9.3 million tons of oil and 3.7 to 4.1 million tons of coal every year from 1986 to 1990 [*Xinhua* (in English, 22 January 1986), *SWB* (FE/W1375)], the remainder of the LTTA. Oil shipments during that period turned out to be far above the amounts stipulated, while coal deliveries roughly met the targets.

On December 18, 1990, Japan and China signed a new LTTA covering a 5-year period from 1991 to 1995. According to this agreement China was to increase the annual export volume of coal to 3.9 to 5.3 million tons in addition to maintaining the past annual export level of 8.8 to 9.3 million tons of oil (*Xinhua*, in Chinese, 18 December 1990, *SWB*, FE/W0160).

Apart from the fact that the LTTAs have played an important role in expanding overall bilateral trade,[7] they have ensured stable crude oil and coal suppy for Japan. Tables 4 and 5 show that shipments from China have increased over time, both in volume terms and as a percentage of Japan's total oil and coal imports. As discussed in the following two sections, this favourable trend was, without doubt,greatly facilitated through the provision of Resource

[7] For a detailed analysis of two-way trade between Japan and China during 1975–1985, see Platte (1991).

TABLE 5. MAJOR SOURCES OF JAPAN'S COAL IMPORTS, 1970–1992
(1,000 tons)

Year	Total	Austr.	Canada	US	SA	USSR	China
1970	50,333	16,625	3,740	25,295	340	2,855	242
		(33.0)	(7.4)	(50.3)	(0.7)	(5.7)	(0.5)
1971	46,979	16,648	6,780	18,490	229	2,484	344
		(35.4)	(14.4)	(39.4)	(0.5)	(5.3)	(0.7)
1972	49,306	20,584	7,795	16,544	104	2,519	251
		(41.7)	(15.8)	(33.6)	(0.2)	(5.1)	(0.5)
1973	56,914	24,955	10,424	16,539	235	2,765	294
		(43.8)	(18.3)	(29.1)	(0.4)	(4.9)	(0.5)
1974	64,421	23,119	9,704	25,412	170	3,329	405
		(35.9)	(15.1)	(39.4)	(0.3)	(5.2)	(0.6)
1975	62,313	23,138	10,768	22,418	108	3,207	456
		(37.1)	(17.3)	(36.0)	(0.2)	(5.1)	(0.7)
1976	58,790	24,710	10,600	17,060	1,180	3,230	322
		(42.0)	(18.0)	(29.0)	(2.0)	(5.5)	(0.5)
1977	62,360	29,530	10,370	14,390	2,490	3,140	491
		(47.4)	(16.6)	(23.1)	(4.0)	(5.0)	(0.8)
1978	52,180	25,180	10,970	8,870	2,530	2,480	770
		(48.3)	(21.0)	(17.0)	(4.8)	(4.8)	(1.5)
1979	58,550	27,040	10,580	13,500	2,400	2,340	1,410
		(46.2)	(18.1)	(23.1)	(4.1)	(4.0)	(2.4)
1980	68,230	29,330	10,930	19,560	3,290	2,140	2,070
		(43.0)	(16.0)	(28.7)	(4.8)	(3.1)	(3.0)
1981	78,270	34,820	10,690	23,710	4,280	1,410	2,790
		(44.5)	(13.7)	(30.3)	(5.5)	(1.8)	(3.6)
1982	79,091	31,920	10,838	25,539	5,914	1,346	3,117
		(40.4)	(13.7)	(32.3)	(7.5)	(1.7)	(3.9)
1983	74,666	36,010	10,816	15,647	5,944	1,954	3,799
		(48.2)	(14.5)	(21.0)	(8.0)	(2.6)	(5.1)
1984	87,228	40,788	15,864	15,586	7,733	2,493	3,922
		(46.8)	(18.2)	(17.9)	(8.9)	(2.9)	(4.5)
1985	93,448	43,989	17,981	13,729	8,560	3,726	3,438
		(47.1)	(19.2)	(14.7)	(9.2)	(4.0)	(3.7)
1986	90,392	42,274	17,610	12,177	8,834	5,323	3,770
		(46.8)	(19.5)	(13.5)	(9.8)	(5.9)	(4.2)
1987	92,628	47,126	16,845	9,256	7,560	6,367	3,893
		(50.9)	(18.2)	(10.0)	(8.2)	(6.9)	(4.2)
1988	101,243	49,008	19,783	13,456	6,153	7,260	4,080
		(48.4)	(19.5)	(13.3)	(6.1)	(7.2)	(4.0)
1989	101,509	52,121	19,039	11,864	4,953	8,018	3,986
		(51.3)	(18.8)	(11.7)	(4.9)	(7.9)	(3.9)
1990	103,580	54,137	18,921	10,994	4,802	8,327	4,559
		(52.3)	(18.3)	(10.6)	(4.6)	(8.0)	(4.4)
1991	109,382	60,832	19,192	12,023	5,216	297	5,687
		(55.6)	(17.5)	(11.0)	(4.8)	(0.3)	(5.2)
1992	109,120	...	15,720	11,161	...	7,799	6,236
			(14.4)	(10.2)		(7.1)	(5.7)

Sources: For 1970–1975, see various issues of *Commodity Trade Statistics*; for 1976 and 1977, see *China Newsletter*, No. 26, 1980, p. 27, Table 2; for 1978–1992, see various issues of *Energy Statistics Yearbook* (except for China, see *China Newsletter*, No. 104, 1993, p. 24). Comparable 1992 data for Australia and South Africa are not available.

Note: Figures in parentheses denote percentages of Japan's total coal imports.

Bank Loans and Yen Credits[8] to fund joint energy development and coal-related transport infrastructural projects respectively.

IV. *Resource Bank Loans*

In order to ensure the smooth implementation of the LTTA it was in Japan's interest to set up joint oil and coal development ventures with China to be financed through energy loans. As a first step towards this commitment, the First Resource Bank Loan was concluded under a memorandum signed on 15 May 1979 between the Export-Import Bank of Japan and the Bank of China. Japan agreed to extend loans to China totalling US$2 billion for the 1980–1984 period, repayable over fifteen years at 6.25 per cent, for the development of China's energy resources and their export to Japan (*Xinhua*, in English, 15 May 79, *SWB*, FE/6119). It was on the basis of this first batch of energy loans that the Japanese government's involvement in the development of China's oil and coal resources began in earnest in December 1979 and January 1980 respectively.

Years of stagnating oil output from onshore fields prompted China to initiate extensive offshore searches. On 6 December 1979, the Government financed Japan National Oil Corporation signed a basic agreement with the China National Oil and Gas Exploration and Development Corporation for the joint development of oil and natural gas deposits in the Bohai Sea, opening the way for China's first search for oil with a foreign interest. Japan was to share the development cost of US$1 billion 49/51 per cent with China and was entitled to 42.5 per cent of produced oil for 15 years. In addition, this semi-official agreement called for a US$210 million Japanese prospecting investment (*Kyodo*, 6 December 79, *SWB*, FE/6291). Starting with this contract, the Japanese have been the only important foreign participants in further exploration and development in the Bohai Sea [Smil (1988, p. 169)].

Japan-China joint development of the Chengbei oilfield in the western Bohai Sea did not start until after the promulgation of the "Regulations of the People's Republic of China on the Exploitation of Offshore Petroleum Resources in Cooperation with Foreign Enterprises" and the establishment of the China National Offshore Oil Corporation on 30 January 1982 [*China Official Annual Report*] (1982, p. 495)]. In 1985, Chengbei commenced production at an annual rate of 400,000 tons [*China Reconstructs* (No. 5, 1985, pp. 17–18)]. In the same year, the Japanese side decided to increase its share of the prospecting investment to US$600 million [*Xinhua* (in English, 11 September 1985), *SWB* (FE/W1357)].

In January 1980, Japan's MITI conferred with leaders of the country's electric, coal, iron and steel, cement and related industries to select Chinese coalfields for Japanese investment [Payne (1982, pp. 271–72)]. As summarised in Table 6, joint coal development involved seven mines with a total annual production capacity of 21 million tons of crude coal. Japan hoped to make these mines its major sources of coal supply from China. Four of them were in Shanxi, also known as "China's Ruhr Valley," two in Shandong and one in Hebei. Japan first gave the go ahead to the Baodian mine of the Yanzhou mining area and the Jiangzhuang mine of the Tengnan mining area in Shandong and to Xiqu, one of the three mines of the newly established

[8] Both Resource Bank Loans and Yen Credits are untied, meaning that any company from any country can bid on any project.

TABLE 6. OUTLINE OF THE SEVEN CHINESE COAL MINES FUNDED UNDER JAPAN'S FIRST RESOURCE BANK LOAN (1980–84)

Coal Mine	B	J	X	Q	M	Z	S
Investment (US$ mil.)	195	120	225	320	300	112	300
Coal Type	Steam	Steam	Coking	Coking	Coking	Coking	Steam
Exploitable Reserves (mil. tons)	310	200	542	345	940	247	539
Crude Coal Production (mil. tons/ year)	3.0	1.5	3.0	4.0	4.0	1.5	4.0
Clean Coal Production (mil. tons/ year)	2.04	1.08	1.62	1.60	2.16	0.81	2.88
Producing Years	74	88.5	130	60	157	117	133

Source: Compiled from *China Newsletter*, No. 36, 1982, p. 6, Table 3; p. 7, Table 4; p. 11, Table 9.
Note: Key to Coal Mines: B = Baodian (Shandong)
J = Jiangzhuang (Shandong)
X = Xiqu (Shanxi)
Q = Qianjiaying (Hebei)
M = Malan (Shanxi)
Z = Zhenchengdi (Shanxi)
S = Sitaigou (Shanxi)

Gujiao mining area in Shanxi. After a survey of the Chinese coal situation by a Japanese mission, subsequent approval was given for the Qianjiaying mine of the Kailuan mining area in Hebei, the Malan and Zhenchengdi mines of the Gujiao mining area and the Sitaigou mine of the Datong mining area in Shanxi [*China Newsletter* (No. 36, 1982, p. 5)].

The Baodian mine was expected to be completed in 1983, and the Jiangzhuang and Qianjiaying mines in the following year [*The China Business Review* (No. 2, 1982, p. 28)]. As far as the four Shanxi mines are concerned, Xiqu went into operation in December 1984 [*Xinhua* (in English, 1 December 1984), *SWB* (FE/W1317)]. Zhenchengdi began construction in 1982 and was planned to commence production in 1986. Construction of the Malan mine began at the end of 1983 [*Beijing Review* (No. 51, 1984, p. 23)] and was completed in mid-1990 [*Xinhua* (in English, 29 June 1990), *SWB* (FE/W0136)]. Construction of Sitaigou started in December 1984 and the mine went into operation after seven years [*Xinhua* (in English, 13 December 1991), *SWB* (FE/W0211)]. The latter is the only one of the seven Export-Import Bank financed projects to include Japanese technical cooperation [*China Newsletter* (No. 32, 1981, pp. 25 & 28)]. In fact, Mitsui Mining Co. Ltd. provided consulting services for the design of the mine [*Xinhua* (in English, 20 December 1983), *SWB* (FE/W

1268)].

On 26 October 1984, Japan's Export-Import Bank agreed to provide China with another batch of energy loans for the 1984–1988 period, worth US$2.4 billion and repayable over 15 years at 7.125 per cent annual interest. The Second Resource Bank Loan was to be used to develop the three onshore oilfields of Dagang, Liaohe and the outer lane of Daqing; two offshore oilfields in the southern and western sections of the Bohai Sea; but only two coal mines, located in Inner Mongolia and Shanxi respectively [*Xinhua* (in English, 26 October 1984), *SWB* (FE/W1312); *DR* (14 December 1984, D1)]. The declining demand for coal made it difficult for Japan to fund a project to develop coal. Moreover, fears that world coal shortages would occur had proved groundless. Though once considered a key to reducing Japan's dependence on Middle East oil, coal was now taking a back seat to other alternative energy sources such as nuclear power and natural gas. In addition, rationalisation in Japan's steel industry and a structural shift in the economy away from energy-intensive industries had reduced coal consumption.

After the Chengbei oilfield in the western part of the Bohai Sea, the Bozhong 28–1 and the Bozhong 34–2/4 oilfields in the southern part of the Bohai Sea were the second and third to be jointly explored and developed by China and Japan. The BZ 28–1 went into commercial operation in July 1989, with an annual production capacity of 430,000 tons and an expected mining capacity of eleven years [*Tianjin Ribao* (3 July 1989), *SWB* (FE/W0088)]. The BZ 34–2/4, which can produce 440,000 tons annually, began to operate one year later [*Beijing Review* (No. 33, 1990, p. 28)]. Japanese oil companies have also been awarded contracts for offshore concessions in the Pearl River estuary and the Gulf of Tonkin. However, the yields there have been disappointing so far in comparison with the Bohai Sea. China has carefully limited its oil contract areas to undisputed coastal waters, thus avoiding joint exploration in the area of the Senkaku (Diaoyudao) Islands, at the edge of the East China Sea (Donghai) continental shelf.

The Dongqu underground mine in the Gujiao mining area in Shanxi and the first phase of the Jungar opencut mine in southwest Inner Mongolia were to receive energy loans of US$200 million and US$800 million respectively under the Second Resource Bank Loans. The Dongqu mine, with an annual capacity exceeding 4 million tons, started construction in 1985 and was scheduled to go into operation in 1990. Construction of the enormous Jungar mine commenced in 1989, and it was expected to produce 15 million tons of coal annually after completion of the first stage of the project during the Eighth Five-Year Plan period of 1991–95 [*China Coal Industry Yearbook* (1987, p. 62), *Beijing Review* (No. 25, 1990, pp. 16–17)]. As discussed below, this mine was one of the three coal related projects rejected to receive official development aid under the Second Yen Credit.

An agreement on the Third Resource Bank Loans, worth US$5 billion to be used for energy development, was signed in July 1992. Among the twenty-seven projects were fourteen onshore oilfields, four offshore oilfields and nine coal mines [*Almanac* (1993, p. 449), *Xinhua* (2 July 1992), *DR* (2 July 1992, p. 2)]. The selection of projects to be funded under the latest energy loan package suggests that China and its foreign partners have shifted their attentions back to onshore oil development. In fact, in December 1993 Japan's Sumitomo, in partnership with two other foreign firms, won a contract for petroleum prospecting, exploration and production in the southeastern part of the Tarim Basin, the first of its kind signed by China with foreign companies since inviting foreign investment in petroleum exploration in the

Tarim Basin [*Beijing Review* (No. 2, 1994, p. 27)]. In February 1994, the second contract was signed by a consortium of five foreign firms, including the Japanese Energy Corporation and the Japanese Petroleum Exploration Company [*Xinhua* (in English, 8 February 1994), *SWB* (FE/W0320).

V. *Yen Credits*

As Japan's demand for Chinese coal increased in the wake of the second oil crisis, the Japanese government decided to provide financial cooperation in the form of Official Development Assistance (ODA) loans for the construction of railways and port facilities to guarantee that the developed coal could be transported to Japan. The First Yen Credit, worth US$1.5 billion, was pledged by Prime Minister Ohira on 6 December 1979, not long after the signing of the First Resource Bank Loan in May 1979. It represented a direct inter-governmental loan package provided in fiscal-year instalments over the 1979–1983 period through the Japanese Overseas Economic Cooperation Fund (OECF), which handles low-interest concessional financing to developing countries. Thus the terms were precisely the same as those applied by Japan to the ASEAN countries. The First Yen Credit was repayable over 30 years after a 10 -year grace period, at a low interest rate of 3 per cent per annum [*Kyodo* (in English, 6 December 1979), *SWB* (FE/6292)]. The actual funding more or less coincided with China's Sixth Five Year Plan (1981–85), which focused on development in the energy and transport sectors.

The major problem facing China's energy industries was its inadequate coal transportation capacities, including deep water ports, quay facilities and land communication lines. Japan's interest in assuring supplies of coal was obvious from the aid projects selected for the First Yen Credit. In the wake of the second oil crisis in late 1979, the Japanese government considered coal as the primary means of reducing its dependence on Middle East oil. Of the six high-priority modernisation projects chosen by Japan for economic assistance the following four were coal related transport infrastructural projects expected to expand China's inadequate coal transport capacity, thus expediting Chinese coal exports into Japan:

1. Construction of a deep-water wharf as an extension (phase two) to the Shijiusuo coal port on the Yellow Sea in Shandong. The new project would include one berth that could handle the export of 10 million tons of coal a year;
2. Construction of a 300 km single nonelectrified railway line from the Yanzhou mining area in Shandong to the Shijiusuo coal port to facilitate the transport of coal produced in Yanzhou and in the Gujiao mining area in Shanxi;
3. Construction of a new 300 km electrified double-track railway from Beijing to the port city of Qinhuangdao in Hebei Province to accelerate the transport of coal from the Datong mining area in Northern Shanxi and the Kailuan mining area in Hebei; and
4. Expansion (phase two) of the coal wharf of Qinhuangdao port in Hebei, North China's only ice-free harbour, which handles exports of Datong steam coal and Kailuan coking coal. The new wharf was expected to have a capacity of handling 20 million tons of coal a year [*Xinhua*, (in English, 7 December1979), *SWB* (FE/6292); *China Newsletter* (No. 27, 1980, pp. 18–20)].

Although these funds were not tied to imports from Japan, they created a market for

Japanese industrial goods. In fact, Japan provided some of the port facilities for the Shijiusuo and Qinhuangdao projects through bidding.The second phase of Qinhuangdao port, designed and constructed by China itself, was completed at the end of 1984 as the first of the four projects built with Japanese government loans [*Almanac* (1986, p. 767)]. The Shijiusuo new deep-water coal wharf started operations in December 1985, and the Yanzhou-Shijiusuo railway went into service at the same time [*Xinhua* (in English, 31 December 1985), *SWB* (FE/W1371)]. The Beijing-Qinhuangdao railway was expected to be completed by end-1986 [*Almanac* (1986, p. 768)].

Shortly after the First Yen Credit finished in 1983, a second inter-governmental loan package was formally offered by Prime Minister Nakasone in March 1984. The money was to be disbursed over the 1984–90 period [*Xinhua* (in English, 26 March 1984), *SWB* (FE/7601)], which roughly coincided with China's Seventh Five Year Plan (1986–90). The Second Yen Credit was worth US$2.08 billion and repayable over 30 years after a 10-year grace period at an interest rate of 3.5 per cent [*Xinhua* (in English, 28 May 1986), *SWB* (FE/W1392)].

The new ODA loans clearly reflect the diminishing concern of Japanese policy makers for energy security. The preference for coal transport related projects during the period covered by the First Yen Credit was no longer a paramount consideration in project selection for the Second Yen Credit. Japan simply did not need coal in 1984 to the extent it had in 1979 for mainly two reasons. First, demand for energy had dropped due to improved energy productivity and a move away from energy-intensive industries. Second, given the trend of falling global oil prices, coal was becoming increasingly less competitive. Not surprisingly, only one of the seven aid projects chosen was to facilitate Chinese coal exports into Japan, namely the expansion of the coal berth at Qingdao Harbour in Shandong, to be completed by 1991 [*Beijing Review* (No. 30, 1987, p. 29)]. The other three coal related projects rejected by Japan included the construction of an electrified railway connecting the Datong coal mining area in Shanxi with Qinhuangdao coal port in Hebei; the building of a coal berth at Qinhuangdao; and the development of the Jungar coal mine in Inner Mongolia [Story (1988, p. 240)].

In August 1988, Prime Minister Takeshita pledged another package of OECF loans covering the 1990–1995 period, thus shortening the duration of the Second Yen Credit by one year. The Third Yen Credit, worth US$6 billion, was to be used for fourty-two construction projects [*Kyodo* (25 August 1988), *SWB* (FE/0241); *Taipei* (in English for abroad, 30 August 1988), *SWB* (FE/0244)]. Suffice it to say that none of these aid projects chosen by Japan was coal related [*Beijing Review* (No. 3, 1991, p. 30)]. Obviously, given the heavy fall of oil prices and the global coal glut, economic cooperation no longer focused principally on coal development.

VI. *Perspectives and Prospects*

From the Chinese perspective (see Table 2), Japan has been China's principal customer ever since the latter started to export oil in 1973. Following the signing of the first LTTA in 1978, Japan has also become one of China's major markets for coal.[9] By comparison, from the

[9] In recent years, the United States and Singapore have been China's other major oil customers, while Japan and North Korea have represented China's most important markets for coal.

Japanese perspective (see Tables 4 & 5), China's share in Japan's total demand for energy imports is still relatively small, even though it has steadily grown over time. It is true that in the early 1980s China became Japan's fifth largest crude oil supplier after Saudi Arabia, Indonesia, the United Arab Emirates and Iran and that it has ranked as Japan's fifth or sixth largest coal supplier following Australia, the United States, Canada, South Africa and the former USSR. In volume terms, however, Japan continues to be overwhelmingly dependent on its traditional foreign sources for both oil and coal which is hardly surprising for a number of reasons.

To start with, China was a latecomer in the world energy market as a result of which export growth proceeded from a low base. But more importantly, unlike Japan's principal suppliers with well-established export-oriented energy sectors, China's export capacity has been severely constrained by huge domestic requirements. Apart from these adverse supply side factors, it is questionable whether Japan's dependence on Middle East oil could have been reduced any faster given that its petroleum refining industry is equipped with desulferising devices designed for the Middle East's high sulfur crude oil. Not only does the construction of special refining facilities for the utilisation of China's waxy product involve large investment, but it also requires considerable lead time.

The key problem facing China's oil industry is that new discoveries are virtually offset by the progressively decreasing production capacity of the main oilfields which went into operation in the 1960s and 1970s. Apart from the plunging oil prices, the pressure of domestic demand could well be the decisive factor undermining the country's future export capacity. In fact, China's total oil exports have been declining and those to Japan virtually stagnating since 1986 (see Table 2). This trend can only be expected to continue judging by a recent official Chinese news release according to which "by the year 2000 China's oil output will not meet demand" [*Xinhua* (in English, 19 January 1994), *SWB* (FE/W0318)]. Recent empirical evidence suggests a slight shift towards greater dependence for Japan on Middle East oil in the 1990s in response to the steadily falling oil prices. The crude oil market is still a buyer's market with a surplus of supplies in spite of the Gulf War of 1991. However, the fact that the global oil glut has delayed the process of Japan's geographic diversification of overseas sources does not mean that it will stop it, as evidenced by the selection of as many as eighteen Chinese oilfields to be funded under the latest Resource Bank Loans.

As for coal, China continues to face stiff competition from the other large mining nations. Not only is the country's coal production qualitatively inferior, but also the *declining* quality of its export coal has become a serious problem [*Xinwen She* (29 May 1990), *SWB* (FE/W 0131)]. But with more Japanese funded mines coming on stream, the problem of the short production capacity should gradually ease. While the global glut of coal has lessened the urgency for Japan to develop new mines in China, the selection of another nine coal projects to be funded under the latest Resource Bank Loans shows that the world oversupply situation has not discouraged Japan's interest in guaranteeing a continued supply of Chinese coal into the next century.

What are the prospects for the future judging from the analysis here presented? For Japan the absolute necessity of diversifying its overseas energy sources remains basically unchanged. The country's long-term commitment to this strategy is clearly born out by its growing involvement in China's energy development calling for increasingly larger sums of economic assistance. In a nutshell, the role of China in Japan's quest for energy security essentially

hinges on the former's export capacity. The prospects are obviously better for coal than for oil, given their diametrically opposed export trends since the mid-1980s (see Table 2). While China is well on the way towards becoming a major supplier of coal, the ability to export oil in the 21st century will depend on the success or otherwise of its large-scale oil exploration and development program.

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