

Asian Development Bank (ADB)
and
The People's Republic of China (PRC):
Partnership in the Energy Sectors

Introduction

Several studies have found that provision of adequate infrastructure, including energy, is a necessary condition to reduce poverty. Millions of jobs need to be created to win the war against poverty. The private sector will be the engine for future economic growth and job generation. An ADB financed survey of domestic private firms found that many of them cited infrastructure constraints as a problem for their companies. Problems in the energy sector were cited as constraints by 23% of the companies --17% mentioning problems with electricity and 6% mentioning problems with fuel, oil or natural gas. The infrastructure constraints are more evident in the central and western provinces where the majority of the poor live.

ADB's Experience in the PRC Energy Sector

The PRC is the second largest electricity producer in the world after the United States. Power consumption in 2004 grew by 14.9% year-on-year. By the end of 2004, the total installed generating capacity had reached 440 gigawatts (GW) and the annual electricity generation was 2,187 terawatt-hour (TWh). Thermal power contributes about 73.7% of the installed capacity, hydropower 24.5%, and nuclear and wind power 1.8%. For most years since 1988, 11 to 17 GW has been added to the existing system¹, and about 42 GW in 2004. This massive increase in generating capacity overcame the chronic energy shortages that were common until the mid-1990s. However, power has been short of supply since late 2002. In 2003, 21 provinces/municipalities experienced power shortages, and 26 provinces continued electricity shortages in 2004. These power shortages were mainly resulted from fast growth in energy-intensive industries including aluminum, steel, and auto industries. Currently, the shortage in capacity is about 10%. The slowdown in expanding generating capacity after the Asian financial crises contributed to the emerging power shortages. However, other factors also contributed such as coal transport bottlenecks, disputes over the price of coal, rigidities in the mechanism to adjust power tariffs, slow progress on improving energy efficiency, and deterioration in PRC's attractiveness as a destination for foreign direct investment in the power sector.

Weaknesses in the transmission and distribution systems have also contributed to the power shortages. Not all grids are inter-connected. There are currently six regional and five independent provincial power networks. By end of 2002, the total length of transmission lines above 35 kilovolt (kV) was 806,500 kilometer (km), including 34,939 km of 500 kV transmission lines. The total capacity of 35kV and above substations has reached 1,194 GVA. In recent years, the Government has accelerated the strengthening of the transmission systems, the urban power distribution systems and the rehabilitation of rural power grids. As a result, the reliability and safety of power distribution networks have improved. About 98% of the country's villages and 97% of the rural population have access to electricity.

PRC's annual coal production hit the record of 1.8 billion tons in 2004, a 15% surge as compared

¹ This is equivalent to adding the existing installed capacity of Belgium, Finland, and Netherlands each in one year.

with 2003. Yet it still could not meet the market demand. The Government has launched a set of new large coalmines, and huge investment was also poured into coal subsector to increase the capacity of existing coalmines. Coal consumption in 2005 is expected to reach 2 billion tons. The annual petroleum production was 160 million tons in 2004, which meets only 60% of the market demands. The remaining 40% of demand was met by import of about 120 million tons. The sharp increase in energy consumption raises serious concerns over the inadequate transport capacity, high energy intensity, and inadequate efforts on energy conservation. Energy shortages have become a key bottleneck for the growing economy.

In June 2004, the State Council approved a medium- and long-term energy development program, covering the period from 2004 to 2020. The program stresses major measures to sustain the energy sector development, including (i) making energy conservation the top priority; (ii) optimizing energy structure with coal forming the mainstay and electricity the center of the energy structure, while promoting development of oil, gas, and renewable energies; (iii) rationalizing locations of energy projects and ensuring coordinated development of energy and communication projects; (iv) promoting energy production by exploring both domestic and overseas resources; (v) promoting technical innovation in energy development; (vi) enhancing environmental protection ; and (vii) realigning energy policies and increasing investments in the energy sector.

The main activities to be undertaken during the Tenth Five-year-plan period (2001 – 2005) include: (i) power sector reform to increase efficiency by relying more on market forces, (ii) strengthening the rural and urban electricity networks; (iii) strengthening of power transmission systems to form three major transmission corridors and transfer electricity from mine-mouth coal fired power plants and hydropower plants in the west to the east; (iv) promoting nationwide interconnection of power grids, (v) promoting the adoption of clean coal technologies for power generation and the development of hydropower and renewable energy projects, and (vi) transporting the natural gas resources in the west to consumers in the east through a 4,000 km pipeline.

ADB's investments in energy sector projects, including power projects, have helped to create the conditions necessary to facilitate economic growth, increase the efficiency of energy supply and use, and reduce pollution associated with the production and use of energy. These investments, along with support for policy reforms and institutional development, have contributed to meeting the need for energy sector financing, enhancing the environment for private sector investment, improving management of the environment, and promoting better corporate governance and commercial performance.

The development of power projects, particularly the expansion and upgrading of electricity transmission and distribution systems, has provided the poor with better access to more affordable electricity, improved their environment by reducing their dependence on coal to meet their energy needs, and created employment opportunities for the poor as economic growth takes place with the better supply of energy in project areas. Consequently, these investments have helped improve the incomes and living standards of the poor and reduce poverty.

ADB's Strategic Agenda in the Energy Sector

ADB's strategic agenda in the power sector includes pricing and tariff reforms, sector restructuring, enterprise reform, increasing private sector participation, and promoting energy efficiency and environmental protection. In the energy sector, ADB is focusing its activities on: (i) assisting the poor and less developed central and western regions, (ii) promoting the development of clean energy, and (iii) increasing interregional power transmission capacity and improving power system efficiency.

ADB's Role in Reducing Poverty Through Energy Projects

The energy/poverty/environment nexus is complex. The production and use of energy have environmental consequences to which the poor are especially vulnerable. People living in the poverty are often disproportionately exposed to the negative environmental impacts of energy use. Addressing the problems of poverty involves improving the level of energy services. The supply of cleaner energy and more efficient energy conservation efforts will result in significant gains in terms of the welfare of the poor. Such investments can also help to improve the enabling environment of the private sector to create the job opportunities that are necessary to win the war on poverty and a cleaner environment, to factors that are essential for the poor to improve their lives. Access to modern and reliable energy is helpful in the fight against poverty. Electricity is the most convenient form of energy. The availability of even small quantities of electricity can dramatically improve the quality of life. For example, small businesses can be set up that use machines with electric motors, children can study at night to improve their educational attainment and the poor can broaden their horizons through access to a wider world through television and radio.

ADB's energy sector operations are aligned with its poverty reduction objectives. Energy projects are designed to support pro-poor growth. Energy projects are also designed to maximize their impact on the poor. ADB support for energy projects is targeted on projects that are located in relatively poor areas or provinces. As three quarters of the PRC's population live in the countryside, providing a reliable supply of electricity in rural areas is important. ADB-financed power projects include specific poverty-related components such as rural electrification and provision of energy efficient lighting for the poor. Assistance is also being provided to design special electricity tariffs targeted on the poor so that they can afford the electricity provided by such projects.

Examples of ADB Assistance to the Energy Sector

Power Sector Restructuring and Introduction of Competitive Power Markets.

Under the next stage of the reform process, the Government is planning to introduce an increasingly competitive environment in the power sector. This will require further structural reforms in the sector, an assessment of the types of commercial entities required, and the creation of conditions conducive to the development of competitive power markets. The introduction of competitive power markets should lead to efficiency gains and downward pressure on electricity prices through competition at all levels within the power system. It should also help to minimize the need for excessive regulation or Government intervention. Profitability of the sector entities will be the key measure of performance, but benefits in supply standards and customer services can also be expected.

ADB helped the Government to study the most suitable plan to be adopted for restructuring the power sector. Power projects often include components to assist with the implementation of provincial or regional power sector restructuring action plans. This has helped regional and provincial power sector companies to prepare themselves for the sector restructuring.

In 1997, ADB provided technical assistance (TA) to prepare a plan for power sector restructuring to introduce competitive markets. Under this TA recent international experience and trends in structural reforms in the power sector were studied, and the options for sector restructuring and the mechanisms needed to introduce competitive markets were examined to determine their

suitability for the PRC power sector. The east and northeast regions were selected as models for the study. The TA recommended an evolutionary development of the organizational structures, which would be required in a competitive power sector, and identified governance requirements and reporting procedures that would promote the establishment of competitive wholesale and retail electricity markets. The TA also evaluated the policy and legal changes, which would be required to create a competitive power sector and a suitable regulatory regime for the same.

In April 2002, The Government announced a power sector restructuring plan, which has as its main objective the separation of power generation from transmission. This plan draws on the advice provided by ADB. As a part of this restructuring plan, the Government established a regulatory agency. ADB is providing support under a follow-on TA approved in 2002. The TA is helping the State Electricity Regulatory Commission promote competitive power markets, increase efficiency, encourage new investment, and ensure that customers receive a fair share of the efficiency gains.

Promotion of Private Sector Participation

ADB is encouraging private sector participation in power sector by helping create an enabling environment, assisting in preparing projects suitable for such participation, and assisting in the financing of private power projects through equity and loan financing. ADB has also helped mobilize additional financing from the private sector for power sector projects through its complementary financing scheme. To facilitate private sector participation in energy projects, ADB will continue to help the development of domestic capital markets and improve the availability of long-term finance for private sector investment as well as promote private/public sector partnerships.

In the past, ADB provided TA for processing of Build-Operate-Transfer (BOT) projects using competitive bidding and international best practices to support private sector investments in the PRC power sector. The TA provided (i) recommendations for strengthening the BOT bid documents to enhance their quality in accordance with international standards, and (ii) a computer model for efficient evaluation of the BOT bids received. In addition to that policy related work, ADB has provided financial assistance for two independent power producers -- the Guangzhou Pearl River Power Company, which received a loan of \$50 million for its 1,200 MW coal-fired BOT power plant in September 1992 and the Fujian Pacific Electric Company (the Meizhouwan Project), for which provided a loan of \$40 million and an equity investment of \$10 million for its 720 MW coal-fired Meizhouwan power plant in Fujian Province in February 1998.

Many lessons have learned from the Meizhouwan Project that reveal the general difficulties faced by investors in a country where a conducive policy environment based on the rule of law has yet to be put in place. During the implementation of the Meizhouwan Project, the underlying power demand changed, going from a power deficit to a power surplus situation. After construction disputes arose regarding the tariff, which was considerably higher than the average tariff in the grid, the capital cost which was higher than similar plants using domestic equipment, high operating costs, and technical reliability. Although these issues were covered in the legal documents, disputes still arose that were a major concern to international financiers. Steps were taken to reduce costs and the required tariff. Similar problems related to the renegotiations of legal agreements on which investments were based have affected many BOT power projects in the PRC. One of the lessons learned from this experience is that the reform of the power sector to competitive markets increases the risks for BOT projects. In competitive markets power is dispatched in order of merit based on the least cost. This system is inconsistent with the types of obligations included in the power purchase and off-take agreements on which BOTs are based.

When a sector is being restructured, the legal and regulatory risks faced by projects increases.

Promotion of Cleaner and Renewable Energy Resources.

The emission of major air pollutants peaked in 1995. According to official data, emissions have declined since then: SO₂ by 16%; dust by 33%; industrial TSP by 37%; CO₂ by 17%. Energy efficiency has improved and coal consumption has declined. Because of this, CO₂ emissions are less than the projected in the early 1990s. Despite the improvement, air pollution remains a serious problem, which affects the environment and people's health. Over 63% of major cities do not meet the Grade II national quality standard. Because of PRC's dependence on coal for about 80% of its energy needs, the energy sector is a major contributor to air pollution. The poor are most vulnerable to environment-induced diseases and are least capable of paying for adequate medical attention for the respiratory illnesses associated with breathing polluted air. Improving the environment is part of any pro-poor development strategy.

ADB is actively supporting the use of cleaner fuels and the development of renewable energy resources. Under the Ping Hu Oil and Gas Development Project town-gas was replaced with natural gas in the Pudong area of Shanghai. The project has been successful and also other parts of Shanghai are now supplied with natural gas produced under the project. ADB has also provided financial assistance for the establishment of natural gas distribution networks in Beijing and Shaanxi Province, as well as the establishment of coal gasification plants in Qingdao, Tangshan, Chengde, and Taiyuan. These projects are having major impacts in reducing the air pollution associated with coal combustion.

In 2004, ADB approved two loans to help the Government develop coal bed methane (CBM)/coal mine methane(CMM) in Liaoning and Shanxi provinces. Under the two projects, CBM and CMM collected will either be utilized for power generation, or distributed to urban households to meet their daily needs for gas. The two projects will demonstrate the ways for effective exploration and use of CBM/CMM, and will help improve safety of coalmines, and reduce emission of methane² that would be otherwise be released to the atmosphere without the projects.

In addition to the project financing, ADB's policy dialogue is helping to achieve environmental objectives in the energy sector. For example, there are immense environmental benefits from power sector reforms, market-based incentives for energy conservation, increased energy efficiency, and cleaner fuel substitution including promotion of renewable energy sources. ADB's support to relevant agencies in the areas of promoting market-based instruments for environmental improvement, strengthening pollution levy systems, SO₂ and acid rain control, demonstration trials in emission trading in heavily polluted cities, (e.g. Taiyuan in Shanxi Province) and the establishment of cleaner production centers in Beijing, Chengdu, and Tianjin. With the PRC's entry into the WTO, initiatives to improve environmental policy tools and other regulatory mechanisms such as high quality environmental assessment procedures, environmental labeling, and promulgation of cleaner production laws, will be of major prominence in the country. The more recent promotion of the Clean Development Mechanism (CDM) to instigate financing opportunities for promotion of renewable energy and energy efficiency in the PRC (particularly in Gansu and Guanzhi provinces), can potentially harness market forces in reducing air pollution and improving environmental quality.

The PRC has abundant wind resources. The Government is planning to increase the wind power capacity to 20 GW by the year 2020. In 2000, ADB approved a loan to help develop three

² Methane, as a green house gas, is 21 times more potent than carbon dioxide (CO₂).

grid-connected wind farms, one each in the Xinjiang Autonomous Region and the provinces of Heilongjiang and Liaoning with a combined capacity of 78 MW. This project involved cofinancing from Global Environment Facility for barrier removal and institutional strengthening to promote developing additional wind farms. However, the loan was cancelled in 2003 because the proposed tariff could not be approved by the Government. It appears that renewable energy, including wind power, cannot compete on the basis of price with conventional coal-fired power. This is partly because that the environmental benefits of the wind power are not taken into account when pricing the wind power. Also, the current legislative framework on renewable energy and emissions control does not create enough market incentives to the development of wind power. The cancellation of this Project and slowdown or cancellation of other wind farms demonstrates a need to improve the legal/ regulatory/ policy framework for renewable energy, clean production, and environmental protection.

Promotion of Tariff Reforms

Unification of tariffs to ensure charging, on a cost recovery basis, the same price for the same quality of electricity to a certain class of consumers in a particular grid, is an important policy objective. Although progress has been made since 1999 with regard to tariff reforms in the areas of end-consumer tariff unification at provincial level and rationalization of consumer categories, elimination of surcharges remains a challenge. Also, transmission tariffs have not yet been clearly defined. The retail tariffs to consumers are not adequate to provide a reasonable return on transmission and distribution infrastructure and not guided by principles of cost recovery, transparency, and nondiscrimination. A sound methodology to determine transmission tariffs needs to be developed to eliminate arbitrariness in the current practice of levying such tariffs. The Government has recognized these problems and is endeavoring to rationalize the tariff structure. In 2003, ADB approved a TA to help the Government formulate power pricing strategy and a reform action focusing on tariff setting and tariff regulation. Assistance is provided under ADB-financed power projects to help the power companies develop time-bound tariff reform action plans, which will be carried out during project implementation.

The consumer tariff structure in rural areas can vary from county to county even in the same province. Rural consumers pay much higher electricity tariffs than do consumers in urban areas (often one to two times more) even though average urban household incomes are more than three times the average of rural households. The rural-urban gap in the income levels and living standards is growing, and the incidence of absolute poverty is higher in rural areas than in urban areas. The higher rural electricity tariffs reflect both the additional costs of providing electricity to rural consumers and the surcharges added by the local governments and power supply entities. Although it costs more to provide electricity to rural than to urban communities, there is considerable scope for rationalizing rural power tariffs and developing a sound methodology to determine consumer tariffs and eliminate arbitrariness in the levy of surcharges. The Government intends to lower rural electricity tariffs to the levels of urban tariffs to support rural development. An ADB TA for rural electricity supply supported this Government strategy by developing a sustainable development strategy for rural electricity supply. The TA recommended tariff reform measures and a plan for their implementation.

As part of the tariff reform action plans in connection with the Shen-Da Power Transmission Project and the Hebei Zhanghewan Pumped Storage Project, rural tariffs will be reduced to ensure that the electricity is affordable to the poor and the rural electrification could make a significant impact on the poor. Related assessments indicate that lower rural tariffs could lead to 15% to 20% increase in income per capita for the rural poor in the provinces in the medium term.

ADB has also provided TA to help the Government reform the urban heating sector and promote sustainable urban heating supply by (i) formulating pro-poor national heating tariff guidelines, and (ii) establishing an effective heating tariff collection mechanism to promote private sector participation in the subsector.

List of PRC Energy Projects Supported by ADB

ADB has had a long association with the energy sector. ADB began its lending to the energy sector in 1987, one year after the PRC joined ADB. ADB has approved about \$ 2.87 billion to the energy sector to finance 26 projects, including two private sector power projects. By the end of 2004 ADB had provided \$1.6 billion (including loans through private sector window) to finance the construction of 6,368 MW of new generation capacity (3,160 MW of hydro, 3,220 MW thermal and 78 MW renewables) and 1,916 km of transmission lines. ADB has also provided 81 TA projects for the energy sector amounting to more than \$39 million. The type of activities financed under ADB's TA program for the energy sector include (i) feasibility studies, (ii) tariff and pricing studies, (iii) energy planning, energy efficiency improvement, and environment management studies, (iv) power sector planning, including rural electricity supply, and restructuring studies, (v) assistance for institutional strengthening, and (vi) studies on the suitability and adoption of new technologies and new financing modalities.

List of Loans Approved in the Energy Sector

No.	Loan	Project Name	Loan Amount (\$million)	Date of Approval
Public Sector Projects				
1	880-PRC	Fuel Conversion	33.3	21-Dec-87
2	1091-PRC	Shanxi-Liulin Thermal Power	65.0	25-Jul-91
3	1178-PRC	Industrial Energy Conservation and Environment Improvement	107.0	24-Sep-92
4	1205-PRC	Qingdao Environmental Improvement	103.0	10-Dec-92
5	1242-PRC	Guangzhou Pumped Storage Stage II	200.0	03-Aug-93
6	1270-PRC	Tangshan and Chengde Environmental Improvement	140.0	25-Nov-93
7	1318-PRC	Hunan Linjintan Hydropower	116.0	27-Sep-94
8	1328-PRC	Qitaihe Thermal Power and Environmental Improvement	165.0	27-Oct-94
9	1336-PRC	Beijing Environmental Improvement	157.0	29-Nov-94
10	1400-PRC	Henan Power	200.0	07-Nov-95
11	1417-PRC	Fujian Mianhuatan Hydropower	170.0	14-Dec-95
12	1419-PRC	Ping Hu Oil and Gas Development	130.0	21-Dec-95
13	1436-PRC	Second Industrial Energy Efficiency and Environment Improvement	178.0	09-May-96
14	1463-PRC	Anhui Fuyang Engineering Technical Assistance Loan	2.0	24-Sep-96
15	1543-PRC	Xi'an-Xianyang-Tongchuan Environment Improvement	156.0	24-Sep-97
16	1582-PRC	Northeast Power Transmission	150.0	25-Nov-97
17	1644-PRC	Yunnan Dachaoshan Power Transmission	100.0	27-Nov-98
18	1715-PRC	Shanxi Environment Improvement	102.0	07-Dec-99
19	1818-PRC	Wind Power Development	58.0	20-Dec-00
20	1901-PRC	Shen-Da Power Transmission and Grid Rehabilitation	100.0	20-Dec-01
21	1922-PRC	Hebei Zhanghewan Pumped Storage Project	144.0	18-Oct-02
22	2032-PRC	Gansu Clean Energy Development	35.0	05-Dec-03
23	2112-PRC	Liaoning Environmental Improvement Project	70.0	25-Nov-04
24	2146-PRC	Shanxi Coal Mine Methane Development Project	107.0	20-Dec-04
Private Sector Projects				
25	1177/7087	Guangzhou Pearl River Power Co.	50.0	22-Sep-92
26	1610/7144	Fujian Pacific Electric Co. Ltd. (excl. \$10 million ADB equity)	40.0	26-Feb-98
Total			2,878.3	

List of Technical Assistance (TA) Projects to the Energy Sector

No.	TA No.	Project Name	TA Mount (\$)	Date of Approval
Electric Power				
1	938	Institutional Development of HNPGC	350,000	21-Dec-87
2	989	Liu-Lin Thermal Power Plant	100,000	22-Jun-88
3	1051	Technology Transfer in Hydropower Design	375,000	27-Oct-88
4	1543	Institutional Development of the Power Company	500,000	25-Jul-91
5	1544	Power System Planning	600,000	25-Jul-91
6	1628	Energy-cum-Electricity Demand and Supply Analysis	600,000	16-Dec-91
7	1734	Hunan Lingjintan Hydro Power	99,750	21-Jul-92
8	1867	Power Subsector Energy Conservation Study in Jiangsu Province	479,500	14-Apr-93
9	1919	Qitaihe Thermal Power	438,000	2-Aug-93
10	1920	Electricity Efficiency Study	340,000	3-Aug-93
11	1921	Financial and Management Information Systems Study	375,000	3-Aug-93
12	1922	Support for Power Sector Tariff and Financing Reforms	450,000	3-Aug-93
13	1950	Hunan Lingjintan Hydropower	100,000	10-Sep-93
14	2085	Preliminary Analysis of the Fujian Mianhuatan Hydropower	100,000	21-Apr-94
15	2168	Fujian Mianhuatan Hydropower	385,000	26-Sep-94
16	2169	Institutional Strengthening of the Hunan Electric Power Company	400,000	27-Sep-94
17	2170	Introducing BOO/BOT Concept for Shanghai Waigaoqiao Stage II	600,000	27-Sep-94
18	2191	Institutional and Management Strengthening of HEPC	600,000	27-Oct-94
19	2192	Energy Efficiency and Environmental Improvement Study	150,000	27-Oct-94
20	2270	Henan Integrated Power	100,000	27-Dec-94
21	2309	Preliminary Analysis of Guizhou Hongjiadu Hydropower and Hebei	100,000	9-Mar-95
22	2310	Preliminary Analysis of Gansu Xiaoxia and Jiangxi Taihe Hydrop	100,000	9-Mar-95
23	2341	Anhui Fuyang Thermal Power	500,000	5-Jun-95
24	2363	Support of Corporatization Plan Preparation for Fujian Province	70,000	18-Jul-95
25	2398	Improving Environmental Monitoring and Enforcement in Henan	90,000	15-Sep-95
26	2436	Strengthening EPH Power System Planning Capability	422,000	7-Nov-95
27	2472	Implementation of the Fujian Provincial Electric Power Bureau	300,000	14-Dec-95
28	2476	Guizhou Hongjiadu Hydropower	599,000	18-Dec-95
29	2477	Hebei Zhanghewan Pumped Storage	512,000	18-Dec-95
		Hebei Zhanghewan Pumped Storage (Supplementary)	340,000	3-Feb-99
		Hebei Zhanghewan Pumped Storage (Supplementary)	148,000	3-Sep-01
30	2509	Strengthening Financial Management in Provincial Power Utility	720,000	22-Dec-95
31	2510	Policy, Regulatory and Institutional Framework for Foreign Direct Investment in the PRC Power Sector	751,000	22-Dec-95
32	2620	Northeast Power Transmission	590,000	30-Jul-96
33	2730	BOT Changsha Power	597,000	23-Dec-96
34	2789	Strengthening Power Sector Demand Side Management in Guanadona	575,000	7-May-97
35	2842	Yunnan Dachaoshan Power Transmission	550,000	13-Aug-97
36	2917	Power Sector Restructuring	804,700	24-Nov-97
37	2919	Institutional Strengthening of the Northeast Electric Power	336,000	25-Nov-97
38	2932	North Power Transmission	500,000	10-Dec-97
39	3036	Power Rehabilitation and Environmental Improvement	1,000,000	30-Jun-98
40	3056	Renewable Energy Development	656,000	19-Aug-98
41	3071	Wind Power Development	600,000	21-Sep-98
42	3105	Institutional Reform of Yunnan Electric Power Group Corporation	785,000	27-Nov-98
43	3346	Shen-Da Power Transmission and Grid Rehabilitation	700,000	17-Dec-99
44	3369	Rural Electricity Supply Study	700,000	26-Dec-99
45	3547	Interregional Power Transmission Network Development Strategy	800,000	16-Nov-00
46	3730	Preparing the Gansu Hydropower Project	950,000	27-Sep-01
47	3931	Establishing the National Electricity Regulatory Commission	500,000	24-Sep-02
48	4117	Power Pricing Strategy: Tariff Setting and Regulation	500,000	21-May-03
49	4309	Renewable Energy for Poverty Reduction	600,000	19-Dec-03
50	4389	Waste Coal Utilization Study	400,000	13-Sep-04
51	4416	Capacity Strengthening of Power Planning Process	500,000	20-Oct-04
52	4402	Heating Supply for Urban Poor in Liaoning Province	500,000	05-Nov-04

No.	TA No.	Project Name	TA Mount (\$)	Date of Approval
53	4511	Energy Development Strategy for the Inner Mongolia Autonomous Region	500,000	20-Dec-04
Fuel Minerals				
54	832	Fuel Substitution	75,000	15-Dec-86
55	2298	Improving Coal Efficiency and Reducing Environmental Pollution	570,000	7-Feb-95
56	2662	Study of Coal Bed Methane Production in the PRC	100,000	14-Oct-96
57	2792	Study on Clean Coal Integrated Gasification Combined Cycle	500,000	19-May-97
Natural Gas				
58	1758	Ping Hu Gas Development	600,000	29-Sep-92
59	2062	Hydrocarbon Sector Study	100,000	17-Feb-94
60	2493	Strengthening the Accounting and Financial Management Systems	330,000	21-Dec-95
61	2494	Sound Safety and Environmental Practices for Offshore Oil and Gas Production	600,000	21-Dec-95
62	3081	Coalbed Methane Demonstration	600,000	1-Oct-98
63	3081	Coalbed Methane Demonstration (Supplementary)	398,000	11-Jun-02
Energy – Others				
64	1021	Industry Energy Conservation Program	830,000	2-Aug-88
65	1490	Industry Energy Efficiency and Environment Management	100,000	1-Mar-91
66	1549	Qingdao Environmental Improvement	100,000	18-Jul-91
67	1754	Management of Energy Conservation Program	600,000	24-Sep-92
68	1831	Tangshan and Chengde Environmental Improvement	100,000	31-Dec-92
69	1917	Beijing Environmental Improvement	600,000	28-Jul-93
70	2087	Second Industrial Energy Conservation and Environment Improvement	393,000	26-Apr-94
71	2100	Rural Energy Development Study	500,000	16-Jun-94
72	2445	Xi'an-Xianyang-Tongchuan Environment Improvement	500,000	16-Nov-95
73	2675	Market-Based Energy Conservation and Environmental Improvement	597,000	30-Oct-96
74	2901	Shanxi Environment Improvement	590,000	21-Oct-97
75	3100	Institutional Strengthening of the China Huaneng Group	750,000	25-Nov-98
76	3462	Acid Rain Control and Environmental Improvement	964,000	27-Jun-00
77	3673	Pro-Poor Urban Heating Tariff Reforms	850,000	19-Jun-01
78	3840	Opportunities for the CDM in the Energy Sector	775,000	11-Mar-02
79	3919	Liaoning Environmental Improvement	500,000	4-Sep-02
80	4195	Jiangsu Urban Environment Improvement	500,000	14-Oct-03
81	4309	Power Pricing Strategy: Tariff Setting and Regulation	600,000	19-Dec-03
Total			39,159,950	

Proposed ADB Projects in the Energy Sector

During 2005-2007, ADB is planning to provide financing for 4 new projects in the energy sector in an amount of about \$300 million. During the same period, financing will be provided for 6 TAs totaling \$2.5 million.

Year	Proposed Loans	Loan Amount (\$ million)
2005	Jiangsu Urban Environment Improvement	100
2006	Inner Mongolia Environmental Improvement	100
2007	Energy Conservation and Resources Management	100
Total		300

Year	Proposed TA Projects	TA Amount (\$ '000)
2005	Inner Mongolia Environmental Improvement	500
	Energy Conservation and Resources Management	500
2006	Coalbed Methane Project II	500
	Urban Environmental Improvement Project	500
2007	Study on Interprovincial Acid Rain Control	500
	Power Sector Restructuring III	
	Total	2,500