

# CHINA ENERGY TECHNOLOGY PROGRAM

## ANNOTATED BIBLIOGRAPHY (JUNE 1999)

(MIT Library references in brackets [ ].)

Asian Development Bank. **Economic Analysis of Investment in Power Systems.** Manila: 1991.  
[Dewey HC411.A8325]

*Characterizes the physical, economic and institutional elements which comprise the operating environment of a given power system. Elaborates four steps in power investment planning: 1) simulation of alternative system expansion plans, 2) identification of least-cost expansion plan and long-run marginal cost of supply, 3) cost-benefit analysis of least-cost plan and 4) iterative revision of load forecasts to equate electricity tariff and long run marginal cost. The methodology described is not similar to multi-attribute tradeoff analysis, though the paper does include a useful discussion of disaggregated demand forecasting.*

\_\_\_\_\_. **Electric Utilities Databook.** Manila, Philippines: 1997.

*A compendium of electricity consumption and infrastructure data for all of Asia. Covers China's regional and provincial power networks; information on Shandong Provincial Power Network (SPPN) includes the following for FY's 1991-1994: installed capacity and annual gross generation by fuel type, transmission line type, length and configuration, T&D and system losses, sectoral breakdown of demand and extent of rural electrification. Includes additional notes on SPPN's power quality, system reliability, load management and capital investment, though does not include any information on financial performance.*

Aiyah, Leffman and Lewis, China: **The Rough Guide.** London: Penguin Books, 1997.

*Travelers' guide to China, including a section on Shandong province from a tourist's perspective.*

Pacific Northwest National Laboratory, Beijing Energy Efficiency Center and Energy Research Institute of China. **China's Electric Power Options: An Analysis of Economic and Environmental Costs.** Washington, DC: Battelle Memorial Institute, 1998.

*A report on the current status of electricity infrastructure and demand constraints in China and a technology assessment of least-cost and least-emissions development strategies over a 22 year timeframe. Forecasts electricity demand for this period for seven regions and suggests some policies that would help achieve economic and environmental goals. Recommendations include continued improvements in energy efficiency, more aggressive pursuit of sulfur controls, development of natural gas and wind resources, further cultivation of DFI and improvements in interregional transmission.*

Binsheng, Li and James P. Dorian. **Change in China's Power Sector.** Energy Policy 23(7): 619-626.  
[Dewey Journal]

*Explains causes and consequences of China's electricity demand shortfall in 1995. Assesses measures already taken and planned at that time to address it, including foreign exchange and project approval process reforms and legal reforms. Estimates extent of foreign investment needed to meet China's long-term capacity growth needs.*

Blackman, Allen and Winston Harrington. "Using Alternative Regulatory Instruments to Control Fixed Point Air Pollution in Developing Countries: Lessons from International Experience." Washington, DC: Resources for the Future, 1998.

*Discusses the theoretical advantages and disadvantages of applying non command-and-control environmental regulation in developing countries. Argues that market-based instruments are generally impractical given the financial and institutional constraints regulators in many of these countries face. Suggests, however, that modified emissions fees and/or taxes on dirty inputs may be effective measures for fixed sources of air pollution.*

**Blackman, Allen and Xun Wu. "Foreign Direct Investment in China's Power Sector: Trends, Benefits and Barriers." Washington, DC: Resources for the Future, 1998.**

*Chronicles the history of foreign investment in China's power sector, assesses the extent to which private power has permeated China and characterizes China's IPP stock. Concludes that private power has great potential in China for increasing energy efficiency and reducing emissions, in spite of an inadvertently persistent institutional bias in favor of small scale plants.*

**Borray, Edward. "Structural Change in the PRC." Independent Energy 25(6): 24-28. [Rotch Journal]**

*Points out key issues faced in the structuring and development of private power projects in China. Includes highlights of US and European participation in larger (>300MW) projects in the early to mid-nineties, and identifies key Chinese participants in the private power market, including Shandong Huaneng Power Development Company. Touches upon prospects for renewably-generated private power in China.*

**Chen, Weixing. "The Political Economy of Rural Industrialization in China." Modern China 24(1): 73-96. [Dewey Journal]**

\_\_\_\_\_. "Politics and Paths of Rural Development in China: The Village Conglomerate in Shandong Province." Pacific Affairs 71(1): 25-39. [Dewey Journal]

*These articles describe the progression of rural industrialization in Shandong province in the post-Mao years, focusing in particular on land tenure and labor reform, and on the role of Township and Village Enterprise activity under Village Conglomerate administration.*

**China Energy Efficiency Bulletin. Pacific Northwest National Laboratory/Advanced International Studies Unit, [www.pnl.gov/china/](http://www.pnl.gov/china/) (accessed June, 1999).**

*Covers upcoming events and reruns newswire items relating to energy efficiency, power plant construction and finance as well as electricity regulatory reform in China.*

**Working Group on Environment in US-China Relations. China Environment Series, Issues 1 and 2. Washington, DC: The Woodrow Wilson International Center for Scholars, 1998.**

*A compilation of papers written by Woodrow Wilson visiting scholars relating to how the US might craft policy and target assistance so as to encourage more environmentally sound development in China. Topics covered include China's chronic water shortages and pollution, the potential in China for natural gas and renewable energy technologies, how the Chinese media treat environmental issues and how China's governing system and institutional structures impact the environmental legislative and enforcement processes.*

**"Chinese Boiler Contracts: Persistence Pays Off." Modern Power Systems 18(8): 33. [Barker Journal]**

*Chronicles the bidding, negotiation and approval process for the boiler contracts for Shandong's Heze and Liaocheng plants, which will comprise 60% of the 3000MW Shandong power project, China's largest IPP. Details the equity and managerial arrangements for the project under the direction of Shandong Zonhghua Power Company, a Sino-foreign joint venture.*

**Chow, Gregory, C. Understanding China's Economy. Singapore: World Scientific Publishing Co. Pte. Ltd., 1994.**

*Includes a concise history of China's pre-Mao economic institutions, land tenure, labor and property laws. Covers post-Mao economic reforms in depth as they relate to agricultural production, State-Owned Enterprises, housing, foreign investment and trade.*

**Clear Thinking.** *China Infrastructure* 2(6): 2. [www.clearthinking.com](http://www.clearthinking.com) (accessed June 1999).

*Clear Thinking is a business consultancy and Economist Intelligence Unit correspondent in Beijing. China Infrastructure is a fortnightly newsletter covering the energy, construction and transportation sectors from an international investment perspective. Though not analytically sustained, its coverage is current. Recent items of note appear in volumes 2(11), p. 8, 2(3), p. 3, 3(4), p. 8, 2(10), p. 3 and 2(80), p. 5, which are all available as PDF files on Clear Thinking's website.*

**The Economist Intelligence Unit.** "Accounting Standards: Improving the Numbers." *Business China* 22(7): 5-7. [Dewey Journal]

*Business China is EIU's fortnightly publication on economic, political, legal and regulatory developments impacting the business environment in China. It regularly covers the electricity sector. All EIU/Business China entries are unannotated as articles are generally 1-2 pages in length and contents are implicit in titles.*

- \_\_\_\_\_. "Agreements for Power Stations: Back on Line." *Business China* 23(1): 4-5..
- \_\_\_\_\_. "The Bohai Rim: All in the Concept." *Business China* 23(13): 1-3.
- \_\_\_\_\_. "BOT is in Trouble: Changing Flavours." *Business China* 24(5): 8-9.
- \_\_\_\_\_. "Cheung Kong Infrastructure vs. China Light and Power: When Hong Kong is China." *Business China* 23(12): 12.
- \_\_\_\_\_. "China Reorganises its Energy Sector: Change for the Better?" *Business China* 22(2): 6-7.
- \_\_\_\_\_. "China's Leaders Try to Look Green: Turning Over a New Leaf." *Business China* 24(13): 7-8.
- \_\_\_\_\_. "China's Power Sector: Just Enough for Now." *Business China* 24(6): 8-9.
- \_\_\_\_\_. "China's Ricketty Financial System: Debt Problem." *Business China* 24(2): 3-5.
- \_\_\_\_\_. "China's Water Resources are Draining Away: Thirsty." *Business China* 24(11): 12.
- \_\_\_\_\_. "Convincing the Chinese Government that Liquid Natural Gas is Good: It Takes Just One Spark." *Business China* 24(20): 8-9..
- \_\_\_\_\_. "Development Zones: Ripe for Investment." *Business China* 22(12): 8-9.
- \_\_\_\_\_. "Government Restructuring Delays BOT Regulations: BOTched." *Business China* 24(9): 5-6.
- \_\_\_\_\_. "Environmental Regulation: Through the Labyrinth." *Business China* 22(7): 1-10.
- \_\_\_\_\_. "Foreign Power Developers Lower Their Expectations." *Business China* 23(25): 8-9.
- \_\_\_\_\_. "Has the Coal Industry Really Been Turned Around?: Back in the Black." *Business China* 23(18): 8-9.
- \_\_\_\_\_. "Huaneng Power International: Failed in New York, Try Hong Kong." *Business China* 24(3): 9.
- \_\_\_\_\_. "Huaneng Power International: Lean Machine." *Business China* 22(21): 7-9.

- \_\_\_\_\_. "In Search of Foreign Money for Environmental Infrastructure: Mr. Xie Goes Fishing." Business China 24(4): 3-4.
- \_\_\_\_\_. "Land-Use Rights: Quicksand in China." Business China 23(3): 8-9.
- \_\_\_\_\_. "Multilateral Investment Guarantee Agency: Just in Case." Business China 22(22): 3-4.
- \_\_\_\_\_. "New Project Finance Regulations: Still Holding Out." Business China 23(11): 12.
- \_\_\_\_\_. "Power Supplement." Business China 21(8): 1-7.
- \_\_\_\_\_. "Pricing Electricity: The Price is Wrong." Business China 24(22): 6-7.
- \_\_\_\_\_. "Qingdao: Investors at Last." Business China 21(6): 8-9.
- \_\_\_\_\_. "Shandong Huaneng Power Development: Provincial Power." Business China 22(25): 8-9.
- \_\_\_\_\_. "The Shape of Things to Come: The North Will Rise Again." Business China 25(1): 6-7.
- \_\_\_\_\_. "The Shengli Oil and Petrochemicals Complex: Extracting Itself From its Past." Business China 26(16): 8-9.
- \_\_\_\_\_. "The Simple Truths Driving China's Oil Policy: Crude Prospects." Business China 23(24): 5-6.
- \_\_\_\_\_. "Why China is Not About to Devalue the Renminmbi: Much Ado About Nothing." Business China 25(3): 12.

**Energy Information Administration. International Energy Outlook 1998. Washington, DC: US Department of Energy, 1998.**

*A prospectus for trends and patterns in energy use worldwide, published annually by EIA. Includes projected primary fuel use, electricity consumption, electricity infrastructure financing and public policy reform data at the country level.*

\_\_\_\_\_. **Country Analysis Briefs- China. Washington, DC: US Department of Energy, 1999.**

*Provides overview of China's economics, demographics and environment. Offers concise analysis of the energy industries in China. Includes information regarding the coal, oil, gas and electric power industries, as well as a section on the organizational structure of the energy ministries.*

**Guohua, W. et al. China-Electricity: Industry Report. Merrill Lynch Capital Markets, 1998.**

*Assesses foreign investment opportunities in China's electricity sector and reports on the current performance of three large Chinese IPPs. Includes earnings records, valuation data, balance sheets, cashflow statements for Beijing Datang, Huaneng Power and Shandong Huaneng Power Corporations. Concludes the current private power investment environment in China is poor due to weak power demand as a consequence of the general Asian economic downturn. Mentions Shandong Huaneng has an unfavorable position in the province with respect to obtaining dispatch from the grid.*

**Handbook of Regulations on Environmental Protection in China. Washington, DC: Resources for the Future, 1994). [Rotch KNQ3217.A28]**

*Direct translation of landmark Chinese environmental legislation, regulations and standards. Includes Air Pollution Control Act of the PRC, Water Pollution Control Act of the PRC and Water Act of the PRC among other laws. Does not include any updates to environmental legislation since 1988, and offers no analysis of monitoring, enforcement or compliance. Good resource, however, for media and pollutant-specific standards and for the exact letter of the law.*

**International Energy Agency. The Clean and Efficient Use of Coal and Lignite: Its Role in Energy, Environment and Life. Paris: Organization for Economic Cooperation and Development, 1993. [Dewey TP325.C486]**

*Conference proceedings. Includes many papers on various clean coal technologies. Also includes papers on status of clean coal production facilities in China, benefits of coal bed methane and coal slurry use, and on the general statutory framework conducive to effective electricity sector deregulation.*

\_\_\_\_\_. **The Clean Use of Coal. Paris: Organization for Economic Cooperation and Development, 1985. [Dewey TP325.I74]**

*An assessment of handling methods and technologies that make coal use cleaner. Treats techniques appropriate to pre-combustion, combustion and post-combustion phases separately. Includes a table of clean coal technologies and several flowcharts of waste disposal alternatives. Also includes a short section on coal itself and on how mining techniques can impact coal quality*

\_\_\_\_\_. **Energy Efficiency Improvements in China. Beijing: Chinese State Planning Commission, 1996. [Dewey HD9502.C62.E54]**

*Proceedings of an IEA-sponsored conference on energy efficiency policy, financial and technological developments in China. Though as proceedings they are not synthesized or edited into one voice, they do contain some data on the status of renewables and on clean coal combustion and desulfurization demonstration projects in China.*

\_\_\_\_\_. **Factors Affecting the Take-Up of Clean Coal Technologies. Paris: Organization for Economic Cooperation and Development, 1996. [Dewey TN816.F33]**

*Overviews the power plant planning process, and specifies nine key factors affecting a utility's choice among clean coal technologies, e.g. plant size, efficiency, environmental performance and cost. Discusses each factor with respect to the performance of the following technologies: sub and supercritical PF, AFBC, PFBC and IGCC. Identifies main barriers to the widespread diffusion of clean coal technologies and makes recommendations for increasing their market penetration.*

\_\_\_\_\_. **Industry Attitudes to Combined Cycle Clean Coal Technologies. Paris: Organization for Economic Cooperation and Development, 1994. [Dewey TN816.I53]**

*A survey of attitudes toward IGCC and PFBC/CC among executives from the utility, coal production and combustion equipment manufacturing industries. Respondents identify criteria for commercial acceptance of the technologies in question as well as perceived barriers to and potential roles for government in their widespread adoption. Though respondents are limited to OECD membership some discussion of combined cycle coal technology transfer to developing nations is included.*

**Jiacheng, Zhang and Zhiguang, Lin. Climate of China. Shanghai: Scientific and Technical Publishers, 1992.. [Lingren QC990.C5.C4413]**

*Contains general information on China's climate zones and weather. Also includes tables of monthly and annual means for temperature and precipitation on a provincial basis, as well as insolation and windspeed/frequency data for selected cities.*

**Liu, F. Energy Use and Conservation in China's Residential and Commercial Sectors: Patterns, Problems and Prospects. Berkeley: Lawrence Berkeley Laboratory, 1993.**

*Evaluates the effectiveness of residential and commercial energy conservation programs in China in the eighties. Characterizes patterns of energy end- use in each sector, identifies inefficient practices and recommends viable alternatives.*

**Logan, Jeffrey and William Chandler. "Natural Gas Gains Momentum." China Business Review. August, 1998: 1-7. [Dewey Journal]**

*A recent assessment of China's domestic natural gas and coal bed methane reserves and distribution infrastructure. Focuses in particular on international pipeline prospects and on persistent barriers in China to foreign participation in natural gas exploration and development. Also available at Pacific Northwest National Laboratory's website, [www.pnl.gov.china/cbr1.htm](http://www.pnl.gov.china/cbr1.htm).*

**Logan, Jeffrey et al. Climate Action in the United States and China. Washington, DC: Battelle Memorial Institute/Woodrow Wilson International Center for Scholars, 1998.**

*Pamphlet outlining the obligations, actions and accomplishments to date of the US and China under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Offers a parallel presentation of treaty and domestic activities taken by each country to reduce greenhouse gas emissions.*

**Nautilus Institute. Financing Clean Coal Technologies in China. Berkeley, CA: 1999.**

*Focuses on financial disincentives to China's adoption of Integrated Gasification Combined Cycle (IGCC) turbines. Does not compare or contrast IGCC with other clean coal technologies, but does identify current and potential mechanisms for financing IGCC. These include USDOE, MITI (Japan), World Bank, Asian Development Bank, the Global Environment Facility (GEF) and Joint Implementation Initiative under the Kyoto Protocol.*

**Proposal for a Global Environment Facility (GEF) Technology Risk Guarantee Mechanism. Berkeley: Nautilus Institute, 1999.**

*A short paper advocating that the Global Environment Facility serve as a project performance guarantor for new and/or unconventional energy technologies. Lays out how a technology risk guarantee mechanism would work, and argues such a provision would encourage greater private investment in GEF projects. Offers good background on GEF.*

**Russo, Christopher J. A Multi-Attribute Analysis of Electrical System Expansion Options for China. Cambridge, MA: Massachusetts Institute of Technology, 1999.**

*Applies multi-attribute tradeoff analysis (MATA) of electricity infrastructure development options in China. Describes the attribute identification and scenario specification processes, and exercises MATA with a focus on Shandong province.*

**Shandong Electric Power Group Corporation. Shandong Facilities. Jinan, Shandong: SEPCO, 1999.**

*Preliminary inventory of generating units for which SEPCO dispatches. Excel spreadsheet contains the following information for each unit: name, location, type of ownership, installed capacity (MW), GWh generated during 1998. More detail on SEPCO units is forthcoming in July, 1999.*

**Singapore-Shandong Business Council, 1999. [www.ssbcb.org.sg/sd](http://www.ssbcb.org.sg/sd) (accessed 4/8/99).**

*An orientation to Shandong targeted at the foreign business community. Includes recent economic statistics.*

**Sinton, Jonathan. China Energy Databook. Berkeley, CA: Lawrence Berkeley Laboratory, 1996.**

*A comprehensive and accessible collection of energy, electricity and environmental data on China compiled from Chinese statistical abstracts. Includes orientation to and brief analysis of issues for which relevant data are presented in each section.*

\_\_\_\_\_. "Energy Efficiency in China: Accomplishments and Challenges." Berkeley, CA: Lawrence Berkeley National Laboratory, 1997. [Note: draft, submitted to Energy Policy for publication in March, 1997.]

*In depth analysis of the decline of energy intensity in China since the late 1970's. Attributes this to changing energy consumption patterns within industrial subsectors rather than to structural change in the economy overall. Identifies and ranks the contributing subsectors and explores the underlying drivers of efficiency improvements within them.*

\_\_\_\_\_. **Regional Cooperation Strategies to Mitigate Acid Rain in Northeast Asia: Promoting Energy Efficiency in China.** Berkeley: Lawrence Berkeley National Laboratory.

*Advocates energy efficiency as a low-cost way for China to reduce acid rain precursors. Surveys China's opportunities for improving energy efficiency in industrial processes and boilers, electric utilities and buildings, and identifies cooperative means whereby north Asia could promote and accelerate China's adoption of energy efficient technologies.*

**STAT-USA. Industrial Sector Analysis Reports: Industrial Air Pollution Control Equipment.** Washington, DC: US Department of Commerce, 1998.

*Assessment of Chinese market for industrial air pollution control equipment. Segments the market according to the following applications: 1) desulfurization, 2) particulate control, 3) coal cleaning and combustion, 4) ambient and point source environmental monitoring and 5) NOx control. Characterizes extent of domestic industry's foothold in each technology and ranks best sales prospects for foreign firms.*

**Triolo, Paul S. "The Shandong Experiments." China Business Review 23(5): 12-13. [Dewey Journal]**

*A report on private power's progress in Shandong from the US Embassy in Beijing. Many publications relevant to energy and air quality in China are available via the Science and Environment section of the Embassy's website, [www.usembassy-china.gov/](http://www.usembassy-china.gov/).*

**United Nations Development Programme. Support for Sustainable Development of the Yellow River Delta.** Dongying, Shandong: 1997.

*Outlines Dongying Municipality's and the surrounding area's strategy for long-range integrated regional growth planning that encompasses sustainable economic, environmental and social development. While the project's focal point is Dongying's recurring seasonal water shortage, the report does mention plans to add 750 MW of generating capacity at the nearby Shengli Power Plant before 2000.*

**Watson, James W. Constructing Success in the Electric Power Industry: Combined Cycle Gas Turbines and Fluidised Beds.** Sussex, England: University of Sussex Science Policy Research Unit, 1997.

*A doctoral thesis exploring the relative success of CCGT technology over fluidised bed combustion. Explains widespread gas turbine adoption in both developed and developing countries as a result of 1) the flexibility and thus longevity of gas turbine technology 2) a historical focus and reliance on gas turbines in the heavy electrical equipment industry 3) trends toward electricity market liberalization worldwide and 4) increasingly stringent environmental regulation.*

**World Bank. China: Issues and Options in Greenhouse Gas Emissions Control- Summary Report.** Washington, DC: China and Mongolia Department, 1994.

*Summarizes the findings of a two-year investigation on greenhouse gases in China undertaken by World Bank, the Global Environment Facility, United Nations Development Programme, Chinese National Environmental Protection Agency and State Planning Commission. The study evaluates the logistical and financial potential for reducing greenhouse gas emissions from a variety of sources in China over a 25 year timeframe. Analyses in the study's eleven subreports (entries follow) are lengthy and thorough. Overall conclusions echo those in the current literature on China -e.g. high growth and*

*the structure of China's economy continue to fuel GHG emissions; energy efficiency and alternative energy sources plus policy and investment reform are needed, etc..*

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**. China: Issues and Options..., Subreport 1: Estimation of Greenhouse Gas Emissions and Sinks in China, 1990. Washington, DC: China and Mongolia Department, 1994.**

*Establishes a baseline inventory of carbon dioxide, methane and nitrous oxide sources and sinks for China in 1990. Finds carbon emissions from energy sources contribute over 80% of total GHG emissions. Other GHG sources identified include: cement production, landfills, agriculture, biomass and deforestation.*

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**. China: Issues and Options..., Subreport 2: Energy Demand in China: an Overview. Washington, DC: China and Mongolia Department, 1995.**

*Presents business-as-usual, slower-growth and high-efficiency energy demand scenarios for China for 2000, 2010 and 2020. Projections based on an overview of recent demand trends and on macroeconomic modeling of the subsectors of China's economy. Forecasting is not regionally specific.*

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**. China: Issues and Options..., Subreport 3: Energy Efficiency in China: Technical and Sectoral Analysis. Washington, DC: China and Mongolia Department, 1994.**

*Assesses the potential for energy efficiency improvements in the following subsectors of China's economy: industry, coal mining, power, agriculture, transportation and buildings. Identifies technically and financially viable energy saving technologies for the various subsectors and estimates the potential efficiency gains and emissions reductions for years 2000 and 2010 from their adoption.*

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**. China: Issues and Options..., Subreport 4: Energy Efficiency in China: Case Studies and Economic Analysis. Washington, DC: China and Mongolia Department, 1994.**

*Analysis of 25 industrial energy efficiency investments in China. Case studies related to the electric sector include coal washing, line loss reduction, clean coal combustion and conservation in residential buildings. Concludes structural, management and policy reform are as consequential in achieving energy savings as are strictly technical investments.*

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**. China: Issues and Options..., Subreport 5: Alternative Energy Supply Options to Substitute for Carbon Intensive Fuels. Washington, DC: China and Mongolia Department, 1994.**

*A technical and economic assessment of the potential for low-carbon energy technologies to supplement and/or replace China's existing energy practices. Addresses the substitution of hydropower, nuclear and renewables for coal in electricity generation and the use of natural gas, biomass and other renewables in direct applications such as industrial processes, home heating and cooking.*

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**. China: Issues and Options..., Subreport 6: Greenhouse Gas Emissions Control in the Forestry Sector. Washington, DC: China and Mongolia Department, 1994.**

*Evaluates the impact forest management practices have on China's net carbon emissions.*

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**. China: Issues and Options..., Subreport 7: Greenhouse Gas Control in the Agricultural Sector. Washington, DC: China and Mongolia Department, 1994.**

*Estimates China's emissions in 1990 of nitrous oxide and methane from agriculture and animal husbandry; summarizes Chinese research aimed at curbing these emissions and projects N<sub>2</sub>O and CH<sub>4</sub> levels to 2020.*

\_\_\_\_\_. **China: Issues and Options..., Subreport 8: Valuing the Health Effects of Air Pollution: Application to Industrial Energy Efficiency Projects in China.** Washington, DC: China and Mongolia Department, 1994.

*Expresses the health effects of SO<sub>2</sub> and TSP exposure in real Chinese cities in numbers of emergency room visits, hospital outpatient visits and hospital admissions. Calculates the health effect values of per-ton reductions in SO<sub>2</sub> and TSP emissions for a hypothetical Chinese city constructed to represent a composite of 13 actual Chinese cities.*

\_\_\_\_\_. **China: Issues and Options..., Subreport 9: Potential Impacts of Climate Change on China.** Washington, DC: China and Mongolia Department, 1994.

*Estimates the impact of global warming on agriculture, animal husbandry, fisheries, coastal regions, wetlands and desertification in China.*

\_\_\_\_\_. **China: Issues and Options..., Subreport 10: Residential and Commercial Energy Efficiency Opportunities (Taiyuan Case Study).** Washington, DC: China and Mongolia Department, 1994.

*Estimates the energy saving potential of conservation measures implemented in the residential and service sectors of Taiyuan city. Includes a section on the cost-effectiveness of recommended measures.*

\_\_\_\_\_. **China: Issues and Options..., Subreport 11: Pre-Feasibility Study on High Efficiency Industrial Boilers.** Washington, DC: China and Mongolia Department, 1994.

*Presents current practices in China's industrial boiler manufacturing industry. Identifies technical and organizational impediments to GHG emissions control in the boiler sector. Makes recommendations for technology transfer and organizational changes to improve efficiency in industrial boilers.*

\_\_\_\_\_. **China: Power Sector Regulation in a Socialist Market Economy.** Washington, DC: 1997.

*Describes the recent evolution of China's institutional and regulatory framework for electricity provision and regulation in the context of increasing demand, diminishing public finance and economic reform. Identifies the fundamental impediments to more open and efficient electricity markets in China.*

\_\_\_\_\_. **China: Reform and the Role of the Plan in the 1990's.** Washington, DC: 1992. [HC427.92.C46454]

*Focuses on the economic and development reform strategies China set for the 1990's based on its macroeconomic and reform performance in the late 80's. Characterizes China's unique reform style and highlights its positive impacts on national output, trade and private economic activity. Identifies reform priorities in the following sectors: State-Owned Enterprises, fiscal, financial and raw materials pricing. Good orientation to China's blend of market reforms and a planned economy, though does not focus on the energy sector.*

\_\_\_\_\_. **China-Shandong Environment Project CNPA40185.** Washington, DC: 1999.

*A project brief outlining tasks of the partially World Bank-financed \$215m Shandong Environment Project. The Project generally aims to address air pollution, acid rain, groundwater supply and wastewater treatment issues.*

\_\_\_\_\_. **China: Socialist Economic Development, Volume 1- The Economy, Statistical System and Basic Data.** Washington, DC: 1983. [HC427.92.C46455]

Contains a section on the history, development, organization and extent of coverage of the Chinese Statistical System. Also explains national income accounting in China, and describes the process of conversion from Net Material Product to both GDP and GNP.

\_\_\_\_\_. **China: World Bank Economic and Sector Work Reports 1980-1994: A Collection of Summaries and Conclusions, V. I and II.** Washington, DC: 1994. [HC427.92.C455]

Summarizes country economic studies and memoranda published by WB on China between 1980 and 1994. The reports summarized in Volume I do devote some attention to the energy sector, though they focus more on market reforms, macroeconomic policy and growth management. Includes a good summary of State-Owned Enterprise reform and Township and Village Enterprise growth. Volume II contains summaries of sector reports, covering health, education, finance, agriculture, water, transport and communication as well as energy and environment. The latter reports are not specific to Shandong, but are good resources on general progress in the energy efficiency and environmental arenas in China nonetheless.

\_\_\_\_\_. **China-Xiaolangdi Multipurpose Project Stage II CNPE34081.** Washington, DC: 1999.

A project brief outlining the scope of the Xiaolangdi Multipurpose project near to the Henan-Shandong border. Xiaolangdi is a dam specified for the purposes of flood control and electricity generation on the Yellow River.

\_\_\_\_\_. **The Chinese Economy: Fighting Inflation, Deepening Reforms.** Washington, DC: World Bank, 1996. [HC427.92..C445]

Highlights the measures China undertook to stabilize inflation yet maintain growth in the early 1990's. Makes recommendations for continued stable productivity via further structural reforms in the State-Owned Enterprise, financial and public finance sectors. Includes an application of the Solow growth model to a decomposition of GDP in China between 1985 and 1994.

**Yang, F. et al. Cogeneration Development and Market Potential in China.** Berkeley: Lawrence Berkeley Laboratory, 1996.

An assessment of the extent to which cogeneration is practiced in China and estimation of its market potential. Includes an analysis of the investment and policy decisions affecting its adoption. Concludes that the following factors constitute the primary barriers to further penetration of cogeneration: a contradictory and incomplete regulatory environment, the conflict inherent in China's transition from a planned to market economy, controlled heat prices and monopolistic tendencies in the electricity sector.

\_\_\_\_\_. **A Review of China's Energy Policy.** Berkeley: Lawrence Berkeley Laboratory, 1994.

Complete history of energy policy in China since 1952. Includes a section on energy institutions and development under central planning. Offers in-depth coverage of institutional evolution, energy development and conservation policy, rural electrification progress and market reforms' impacts on the energy sector in the post-Mao period.

**Yantai SMR International Information and Staffing Consultancy Company, Ltd., [www.srintl.com](http://www.srintl.com)** (accessed 4/8/99).

Website containing general information on Shandong and some economic data.

**Zhesheng, Jiang. Prospects of Clean Coal Power Generation Technology in China.** Beijing: Ministry of Electric Power, 1995.

Provides overview of the extent of adoption of clean coal technologies in China, including pre-combustion, combustion and post-combustion applications. Identifies China's short and medium-term goals for each application.

Zhiping, Liu et al. **Industrial Sector Energy Conservation Programs in the People's Republic of China During the Seventh Five-Year Plan (1986-1990)**. Berkeley: Lawrence Berkeley Laboratory, 1994.

*A report on industrial energy conservation programs in China in the eighties. Includes results of case studies in the ferrous metals manufacturing, non-ferrous metals mining, chemicals manufacturing and building materials manufacturing subsectors. Concludes inadequate capital investment, distorted energy prices, low efficiency in rural industry and lack of managerial incentives to be the main deficiencies in the programs analyzed.*

Zou Yongxin. "Scaleup in Shandong." Independent Energy 26(6): 10-12. [Rotch Journal]

*Written by an operational engineer for Shandong Electric Power Group Company. Characterizes the key constraints faced by the network, which include an overall demand shortfall, peaking shortages and limited interregional transmission.*

Compiled by Jennifer B. Barker.

Final Draft – June 1999

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Please submit comments, corrections and suggestions to  
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The CHINA ENERGY TECHNOLOGY PROGRAM is supported by ABB via the ALLIANCE FOR GLOBAL SUSTAINABILITY. Begun in the Spring of 1999 it brings together the talents of M.I.T., the SWISS FEDERAL INSTITUTES OF TECHNOLOGY and THE UNIVERSITY OF TOKYO with Chinese researchers, government agencies and corporate partners to examine and explore environmentally responsible and cost-effective electric service strategies. More information on the CETP can be accessed at <http://www.cetp.ch/>.