China Energy Project Financing

A report to assist California companies to locate financing for energy projects in China, focusing on renewable energy and energy efficiency.

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Table of Contents

Introduction

This report was researched and written by Power Project Financing ("PPF") under contract to the California Energy Commission ("CEC" or the "Commission"). The purpose of the contract is to identify, evaluate and provide advice on financing options for energy projects in international markets, primarily in Mexico and China, and to perform financial assistance tasks for California-based energy companies. This work is intended to stimulate opportunities to export technologies to international markets that involve energy efficiency, cogeneration, and small power systems of less than $100 million in capital investment. The CEC's ultimate goal is to stimulate jobs and tax revenues in an industry sector in which California has a leadership position.

Specifically, the contract includes performing the following four tasks, producing the required related deliverables, and making presentations:

- Task 1 – Identify Mexico Energy Project Financing Sources
- Task 2 - Identify China Energy Project Financing Sources
- Task 3 – Develop Financial Screening Criteria for International Energy Projects
- Task 4 – Provide Technical Assistance to Evaluate/Secure International Energy Project Financing

This report relates to Task 2, to identify China energy project financing sources. In our experience, many energy projects are based on sound engineering and economics, but the developers often cannot find financing that meets the project needs. This first task involved identifying financing sources and techniques suitable for energy generation and energy savings projects in China, and includes sources within and outside China. Debt and equity sources include the World Bank, International Finance Corporation, Chinese banks and governmental sources, US banks and governmental sources, other foreign government sources, equity and venture capital investors/funds, pension and other institutional investors.

The results of this report will be presented at a Commission-sponsored and organized conference on international energy project opportunities in April 2002. In addition, PPF will use the information and contacts gathered to develop financial screening criteria for Task 3 and provide Technical Assistance to companies with potential energy projects in Task 4.

This report provides background information on China, including the energy and environmental context in China, and identifies what PPF believes to be a significant business opportunity for California companies.

Why renewables and small power projects are motivated for China

China arguably is the most important country in the world to affect the environment. It is the most populous country in the world, and one of the fastest growing economies. China's use of energy is fairly low per capita, but very high per unit of GDP. According to the US Energy Information Agency, China will, by 2020, use 16.1% of the world's energy supplies. China is

now the number two consumer of electricity in the world (behind the U.S), according to the US Energy information Agency.

Historically, coal has been the fuel of choice in China, and large central stations were planned in Beijing. Now, to protect and enhance the environment and to move towards market structures, The State is making new policies to encourage renewable energy and small clean power plants.

And, China is a potentially good market for certain US equipment and services providers. The State Power Company announced in April, 2002 that it will invest some 600 billion yuan (about US$72 billion) in the next five years in the electricity industry, with 60 percent of the investment going into construction of power grids.

California companies can have a key role to play in this market, providing advanced technologies for power production and for power use management, and providing the software and communications systems for establishing modern power markets. China now has around 300,000 MW of power plants - a huge installed base, yet not enough to meet demand. Growing and greening and optimizing China's power sector will involve tens of thousands of megawatts of fresh capacity costing tens of billions of dollars. Financing will be a critical challenge.

The following sections of this guide provide background on the power sector in China, and how renewables and energy efficiency fit into the mix. There is a short discussion of recent trends in financing power projects in China, and then listings of financing sources with contact information.

We hope that this report is useful for developers, equipment vendors, energy financing companies, and government officials. For more information on the program, please contact:

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Economic and Structural Factors Bearing on the China Power Sector

Current Economic Development

China's economy grew steadily at 7.3% in 2001. Despite a less robust export market, a gradually recovering domestic market and a steady increase in fixed assets investment gave strong support to the economic growth in 2001. It is projected that the economy may continue to grow by around 7% in 2002.[1]

Fixed-asset investment, particularly by the state sector, is one of the driving forces that has boosted the economy. In 2000, total fixed-asset investment (not including collective-owned units and individuals) amounted to RMB2,424 billion[2], an increase of 9.7% from 1999. In 2001, fixed-asset investment increased further by 12.8% to RMB2,640 billion. The Chinese government issued RMB150 billion new bonds in 2001 to finance infrastructure projects, technology upgrades and development of the central and western regions. It is expected that fiscal expansion will continue to be a major contributing factor to economic growth in 2002.

Partly due to the state-owned enterprise (SOE) reforms, urban unemployment rate rose to an official figure of 3.6% at the end of 2001. As SOE restructuring continues, unemployment is expected to rise further. The Chinese government takes various measures like providing training to displaced workers and promoting development of the private sector to ease the unemployment pressure. Urban unemployment rate is targeted to maintain below 5% in the 10th Five-year Plan period. The transition from state-run companies to private enterprise is going to rough, financially (due to bad loans) and with regard to employment (due to overstaffing).

China's non-state sector expanded rapidly and experienced healthy development in recent years. The status and economic contribution of private enterprises received official recognition in the 9th National People's Congress held in March 1999. At the end of 2000, there were more than 1.7 million private-owned enterprises, employing a total of more than 24 million workers. Private sector's contribution to the national GDP is estimated to reach 61% at the end of 2000.

Following the interest rate reduction in the U.S. in 2001, the People's Bank of China (PBOC) - the central bank of the Chinese Mainland - reduced deposit rates of foreign currencies by eight times since December 2000.

China is adopting a unified exchange rate policy and Renminbi has been moving steadily within a narrow band of RMB8.3 for one US dollar. From November 1996, the Renminbi is allowed to be fully convertible under current accounts. China's foreign exchange reserves reached US$217.4 billion by the end of January 2001, the second largest after Japan in the world. The

[1] This and other economic discussion from http://stone.ciec-exhibition.com.cn/new04.htm
[2] $1 Us equals about 8.3 RMB.

country's foreign debts amounted to US$145.7 billion at end of 2000 (down 4.0% from end-1999), of which 91% was medium or long-term debts and 9% was short-term debts.

The number of overseas tourists visited China in 2001 reached 89 million (up 6.7% from 2000). Hong Kong, Taiwan, Japan and the US were the major sources of overseas tourists. The total foreign exchange earnings from overseas tourists grew by 9.7% in 2001 to US$17.8 billion. According to the World Tourism Organization, China was the 5th most popular tourist-destination (behind France, Spain, the US and Italy) in the world in 2000 and will become the most popular tourist destination by the year 2020.

Foreign Trade and Investment

In 2000, China's external trade surged by 31.5% to US$474.3 billion, ranked the seventh in the global economy. Both exports and imports rose sharply by 27.8% and 35.8% to US$249.2 billion and US$225.1 billion respectively. In 2001, growth in exports and imports slowed to 6.8% and 8.2% due to slack economic growth in the U.S. and E.U. Decline in exports growth was particularly apparent in Guangdong which grew only by 2.4% in 2001. However, growth in exports from Shanghai and Jiangsu both remained relatively stronger at 9% and 11.4% respectively. On entering 2002, exports and imports grew strongly by 29.2% and 21.9% respectively due to the Chinese New Year seasonal factor.

For the last several years, China's top ten trading partners were Japan, the US, the EU, Hong Kong, the ASEAN, South Korea, Taiwan region, Australia, Russia and Canada. China's trade with these ten economies together amounted to US$437.7 billion, i.e. 86% of China's total external trade in 2001.

Foreign direct investment (FDI) continued to increase in 2001. The number of newly approved foreign-invested projects increased by 16% to 26,139, while contracted and utilized foreign direct investment increased by 10.4% and 14.9% to US$69.2 billion and US$46.8 billion respectively. The leading sources of investment included Hong Kong, Japan, the U.S., Taiwan, Singapore and South Korea. China has been the largest recipient of foreign direct investment within all developing countries for the seven consecutive years since 1993.

WTO Accession

After 15 years of negotiations, China officially became a member of WTO in December 2001.

Under China's WTO accession agreement, China has made very substantial market access commitments covering the agricultural, industrial and services sectors:

- Phase-out of non-tariff barriers on imports - Import license requirements will be eliminated within five years of accession, and all quotas will be phased out within five years of accession.

- Tariff cuts - average import tariffs for industrial products will be lowered from currently 14.8% to 8.9% by 2005, and average tariff for agricultural products will be cut to 15% by 2004.
- Conditions on foreign investment - The WTO Agreement on Trade-related Investment Measures (TRIMs) will be implemented; requirements on trade and foreign-exchange balance, local content, and export performance will be ceased or eliminated.
- Trading rights - China agreed to provide trading rights to foreign companies, to be progressively phased in over three years. Majority ownership in wholesale joint ventures will be allowed within 2 years of accession with no geographic or quantitative restriction by then. There will be no geographic, quantitative, equity/form of establishment restriction in retailing within 3 years of accession.
- Other services - China has also agreed to relax foreign investment restrictions on many important services industries, including distribution services, telecommunications, financial services, professional services.

The U.S. Congress passed a bill to grant Permanent Normal Trade Relations (PNTR) status to China. That means the U.S. will no longer renew China's NTR status on an annual basis.

Economic Summary: China has excellent conditions of growth and earning, savings, and financial condition. The SOE's are the main economic problem. But, China is almost certain to surpass Japan as the economic powerhouse in the east.

China Power and Energy Sector

Geography plays an important role in the power sector policy in China. Gas reserves are in the west and coal reserves are in the central and northeast. Load centers are on the coast on the East and in the south. Coal powers 80% of electricity in China, so the rail systems are congested and air pollution is a problem especially in the case of small combustion units.

Overshadowing the industry at 2002 is the development of gas reserves in the West (in Xinjiang province), and a pipeline infrastructure that is replacing coal and rail, with gas and pipelines for industrial and home use around Beijing and Shanghai.

New gas pipelines could radically change the energy map of China, and would help clean the environment and allow wide-spread use of modern gas-turbine technologies (such as GE and Westinghouse). China does have the capability to make gas-turbines, but not the most recent energy-efficient models, those using advanced composite materials for turbine blades.

Also regarding the lightly populated western provinces (Xinjiang, Xizang, Gansu, and Qinghai), the role of renewable energy in villages is important to reach rural communities for reasons of least-cost and social development. Wireless communication and off-grid power can help bring economic development to these areas, stanching the flow of villagers to the big cities looking for a better life.

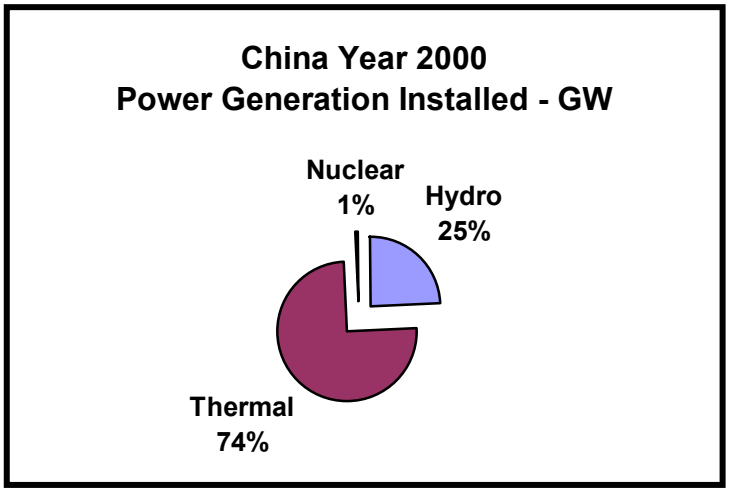
Power statistics, comparisons, generation mix

In April, 2000, the People's Daily Newspaper reported that China made a major breakthrough in expanding its total installed power generating capacity to more than 300,000 MW. This is according to Gao Yan, president of the China State Power Corporation (CSPC). By the end of 2000, China's installed generating capacity had exceeded 319 million kW, and total electricity output last year reached 1.37 trillion kW/h, both ranking second in the world behind the U.S.

Total installed power generating capacity will reach 390 million kW by the year 2005, according to the 10th five-year (2001-2005) plan for the power industry the State Economic and Trade Commission. The plan calls for active development of hydropower, most notably the huge, 19 GW Three Gorges Project. Also the plan calls for thermal power plants to be built "in a rational way," i.e., strictly controlled.

The research and manufacturing of power equipment, environment protection and electrification in rural areas are also listed in the 10th five-year plan as key areas for development in the plan. An important component is also the 4,200 km gas pipeline that will link gas sources in the West (and in Russia) with industrial users and population all the way through to Beijing and Shanghai.

According to Zhou Jia Ping, Director of General Engineer Office of Chongqing Energy Conservation Technical Service Center, China's electric power industry continuously maintains a high growth rate.[3] His estimate of power sources is based on an end-of-the-year-2000 figure of 315 GW installed, broken down as follows:



This relates to total of hydropower of 77 GW, thermal 235 GW, and nuclear power of 2GW. Thermal generation is about 80% coal. Renewable energy, at present, is approximately only 400 MW, including identified wind generation capacity of 345 MW.

[3] Report: China's New and Renewable Energy Situation, 2001, http://www.eva.ac.at/(en)/projekte/china_res.htm

The recent economic slower growth in China happened to help the new environmental guidelines. China's electric power industry experienced a serious oversupply problem in 1998-99, according to the US Energy Information Agency.[4] This was due in part to slower Chinese economic growth, and in part to demand reductions from closures of inefficient state-owned industrial units, which were major consumers of electricity. The Chinese government responded to the short term oversupply in part by implementing a drive to close down small thermal power plants and by imposing a moratorium (with a few exceptions) on approval of new power plant construction, which is due to run through January 1, 2002. Most of the small power plants closed were diesel or coal-fired plants which were opened by provincial or municipal governments as demand grew in the 1980's, and were relatively inefficient and polluting.

Even with the moratorium on new construction approvals, many power plants are coming online, having been approved prior to the moratorium. When the moratorium took effect, there was a total of 70 GW of new capacity under construction or with final approval, so there will still be a significant capacity increase in the near future. The largest project under construction, by far, is the Three Gorges Dam, which, when fully completed in 2009, will include 26 separate 700 MW generators, for a total of 18.2 GW.

Another large hydropower project involves a series of dams on the upper portion of the Yellow River. Shaanxi, Qinghai, and Gansu provinces have joined to create the Yellow River Hydroelectric Development Corporation, with plans for the eventual construction of 25 generating stations with a combined installed capacity of 15.8 GW. Seven of these stations are either under construction or currently in operation.

Several nuclear projects are under construction, with Russian, French, and Canadian firms involved in several projects. The United States, in October 1997, announced approval for the sale of U.S. nuclear power reactors to China, in exchange for a Chinese commitment not to supply nuclear technology to Iran. Several additional projects are reportedly under consideration in China's Guangdong, Zhejiang, and Shandong provinces. One project under consideration would add two additional reactors to the Daya Bay nuclear power plant in Guangdong, adding 2 GW to its installed capacity. Another would see the construction of a 6 GW nuclear power complex at Yanjiang in Guangdong. Currently, China has only 2 GW of nuclear generating capacity, with another 600 MW under construction. Nuclear power currently represents just over 1% of China's annual electricity output.

Another key issue for China's power industry is the distribution of generation among power plants. China's stated intention eventually is to create a unified national power grid, and to have a modern power market in which plants sell power to the grid at market-determined rates. In the short term, though, traditional arrangements still hold sway, and state-owned power plants that have government connections tend to have a higher priority than independent private plants. Additionally, some private plants with "take-or-pay" contracts, which provide for guaranteed

[4] China Country Analysis Brief, June 2002, US Energy Information Agency

minimum sales amounts, have had trouble getting the provincial authorities running the local grids to honor those terms.

In the short term, oversupply and uncertainty are likely to reduce foreign investment in China's power sector. In the longer term, though, growth in electricity consumption is projected at 5.5% per year through 2020. The largest gainer in terms of fuel share in the future is expected to be natural gas, due largely to environmental concerns in China's rapidly industrializing coastal provinces.

If a truly competitive market for electric power develops as planned, the Chinese market may once again become attractive to foreign investment. At present, foreign direct investment is allowed only in power generation, but loan financing has been obtained for some power transmission projects.

Energy and environmental policies

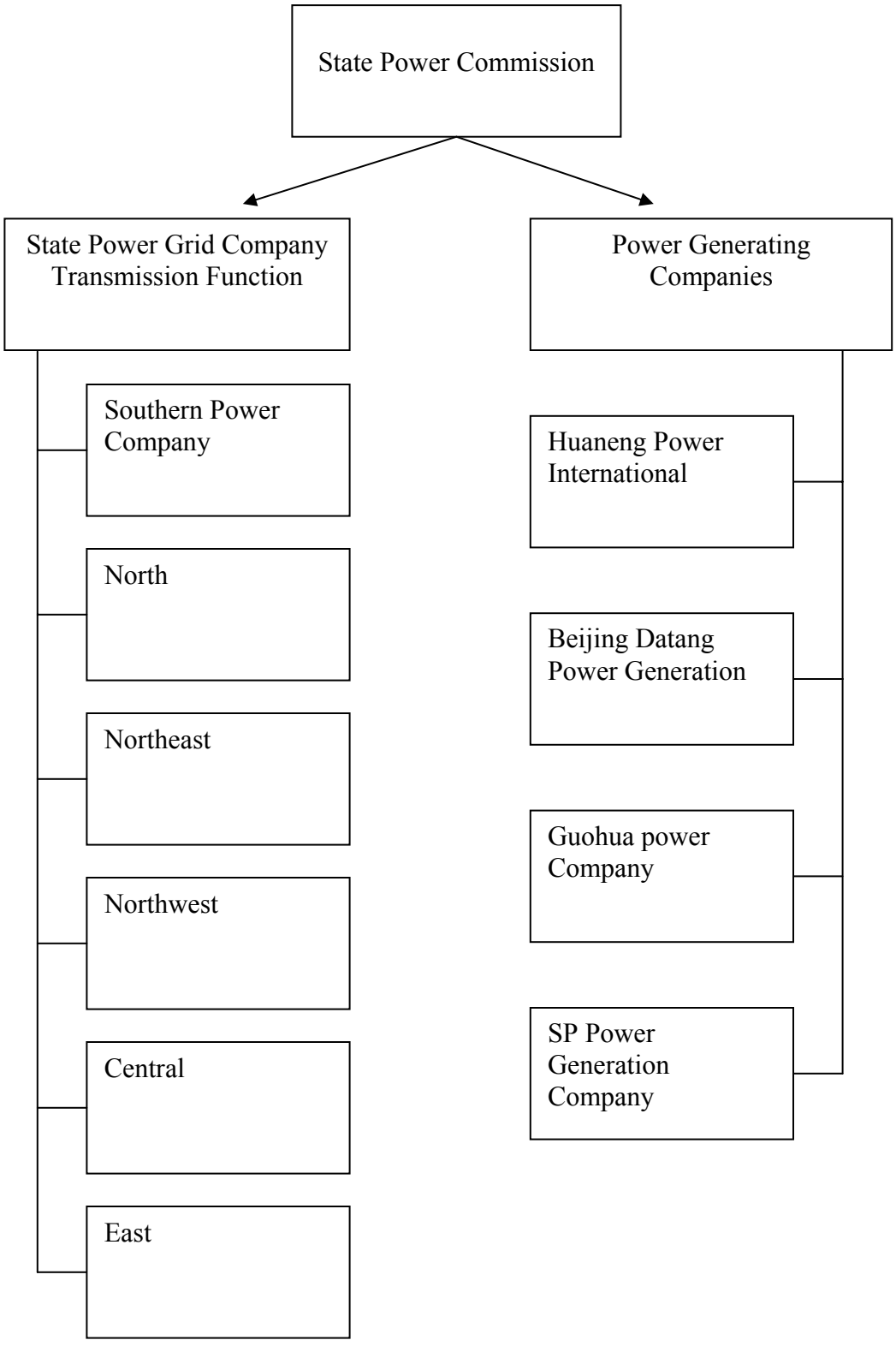
China suffers from major energy-related environmental problems. According to a report by the World Health Organization (WHO), seven of the world's ten most polluted cities are in China. The country's heavy use of unwashed coal leads to large emissions of sulfur dioxide and particulate matter. Asian Development Bank asserts that China has nine of the 10 Asian cities with the worst air pollution and half of the world's 10 most contaminated cities.

Chinese policy-makers appear serious about cleaning the environment. The China 2000 International Environment, Renewables and Energy Efficiency Exhibition and Conference was sponsored by the State Economic and Trade Commission, the Ministry of Science and Technology, the State Environmental Protection Administration, the State Power Corporation and the China Aviation Industry Corporation.

Key programs include deployment of energy efficient and renewable energy technologies to reduce reliance on coal and the provision of energy to the estimated 60 million habitants who live in remote, rural areas and islands which lack access to an electricity grid. Early in 2002, the Politburo approved a restructuring plan for the power sector, which breaks up the industry into separate sectors of generation and transmission, as shown in the diagram below:[5]

[5] Power Industry Reform Switched On 04/23/2002, China Daily

New (March, 2002) State-Approved Power Industry Structure



Financing Overview

Role of Utilities, IPPs, BOT and BOO projects

China was a leader in international IPP financing, dating back to Gordon Wu's Hopewell Company's projects in 1984 and 1985, Shiajo B and C. Since then there has been much effort and relatively few international projects to show for it. Many of the large international IPP investors have completed projects in China and then stopped further development efforts: Sithe, AES, Intergen, EdF, Enron, AEP, Coastal, and PSEG, to name a few. All have publicly announced that China was not a priority, or was off-limits.

Two imbroglios this year about foreign-financed projects probably have perhaps put the nail in the coffin for future large-scale conventional foreign investment. These projects are Meizhou Wan and Houshi. Both projects have conventional Power Purchase Agreements with the usual pass-through formulation that foreign investors need. The power purchaser, Fujian Power Company, said that it would not honor the PPAs because the power price is too high and that there is cheaper surplus capacity elsewhere.[6] Especially noteworthy is that the Asian Development Bank is a co-sponsor of Meizhou Wan. Conventional wisdom has been that the involvement of a multi-lateral donor-lender such as the ADB (or the World Bank or IFC) is insurance against exactly this type of contract frustration.

Renewables / Small project prospects in China

State and provincial government policies

The 10th Five-year plan is a key document in laying out policies that promote renewable energy and energy efficiency.[7] It is proposed to make a 5.5% portfolio standard for renewable energy, which means about 15,000 MW of projects.

In 1999, State Planning Commission, through the State Council, approved regulations to support the development of renewable energy and to accelerate the local production of the power equipment. The details are as follows:

1. Renewable energy mainly includes wind power, PV, biomass power, geothermal power and ocean energy. The State Planning Commission and Ministry of Science and Technology will actively support the projects concerning renewable energy for power when arranging construction and scientific projects financed by the state government.
2. Projects of renewable energy for power have a priority in getting loans for capital construction. State Development Bank is supposed to grant loans to such projects. While the commercial banks are also encouraged to take part in the business. State Planning

[6] Power JVs Fail to Deliver on Promises" China Economic Review, May 2002

7 The 10th Five-Year Plan for Energy Conservation and Resources Comprehensive Utilization, http://www.chinacp.com/eng/cppolicystrategy/10th_5_energy.htm

Commission will aid the developers of those projects approved by the State, and with a capacity of above 3000KW to get bank loans.

The developer of a project should follow these steps:

- The developer of such projects should get a letter of intent to get a loan from a bank when preparing project proposal, and a letter of commitment when doing the feasibility study.
- The equity of the project on renewable energy for power should not be lower than the 35% of the total investment of the whole project.
- The developer should pay the loan interests to the bank first and apply to the financial department for interest deducted later. This will be on a yearly basis. The procedures are as follows:
- The project developer first fills in a certain application form (duplicate) attached with interest paying list and loan contract.
- All the application material, after examined and approved by the bank, should be sent to the State Planning Commission, the Ministry of Finance and the related bank respectively.

The State Planning Commission and the relative bank will give a priority to those projects, which purchase Chinese-made equipment, to get interest deducted loans. For electric power projects using renewable energy, the electric grid management department should purchase all the power and allow a nearest grid connection. The legal representative of the project should get PPA from the utilities and get a Letter of Intent for grid connection when preparing project proposal and a letter of commitment when conducting feasibility study.

When the projects are still within the loan payback period, the pricing should follow the principle --- repayment and related interest plus reasonable profit. The part that exceeds the grid average power price will be shared within the electric grid. The investment profit rate of the projects using imported equipment should not exceed 3% plus the interest rate on the loan. Due to the local production encouragement policy, the investment profit rate of the projects using Chinese-built equipment should not be lower to 5% plus the interest rate. The power price of projects using Chinese-made equipment should be equal to the power price of the projects using imported equipment and connected to the same grid.

At the stage of proposing a project, the developer should get a letter of intent for power price from the local Price Bureau. At the stage of feasibility study, the local Price Bureau will examine the power price, and report to State Planning Commission. The power price approved by the local Price Bureau and the State Planning Commission will come into effect at the project starting date. After the loan payback period, the price should be set according to the average power price of the electric grid.

The government encourages adopting lease contract or payment by installment to develop those stand-alone power systems by renewable energy. The local government stipulates specific rules according to the local factual conditions, and report to State Planning Commission for the record. The explanation of the provisions of this document is subject to the State Planning Commission.

Existing Portfolio of Renewables

As noted above, installed renewable capacity in China is tiny, relative to the market. The mix of renewable could increase dramatically if the 5.5% renewable portfolio standard called for on the 10th Five Year Plan is met.

Status of Application of Selected Key Renewables in China in 1999
(Source: Chinese Renewable Energy Industries Association)

RE Technology Application	Cumulative Installed Capacity	To end of Year
Solar PV (MW)	19	2000
Solar Water Heaters (10^6 m^2)	15	1999
Grid-Connected Wind (MW)	345	2000
Small Wind (MW)	26	1999
Geothermal Power (MW)	30	1999
Biogas Livestock Farms (10^8 m^3)	0.6	1998
Biogas Industrial Wastewater (10^8 m^3)	3.2	1998

Overall estimates for new Chinese wind power capacity between now and 2010 vary from 1,000 megawatts to over 5,000 megawatts.[8]

[8] China Funded for Wind Power Development, http://www.sustdev.org/energy/Industry%20News/11.2000/30.04.shtml

Investment sources discussion

Financing can be debt, equity or a combination of the two. For the purpose of this guide, we considered that if a developer gets financing by selling his or her project to a larger developer, it is a form of equity financing. Developers seeking financing, especially developers not planning to invest cash equity often are forced to sell some or all of their projects. This is referred to as case acquisition financing.

Another financing category is bilateral government supported. This distinction is not made in the case of multilateral financing, since these entities act more like private investors. Bilateral agencies like U.S. Ex-Im Bank or OPIC (Overseas Private Investment Corporation) require U.S. involvement in a project, whereas the Inter-America Development Bank does not care where sponsors are from, or where the equipment originates.

Thus, the four categories of financing addressed in this report are debt, equity, acquisition, and government. Debt financing is the hardest to get and the lowest cost, but it requires a substantial equity contribution by the developer who must be well-capitalized with a track record of many projects.

Equity financing can be "passive" or "active," where active means the equity investor gets involved in management decisions. Passive means the investor leaves operating decisions (except big decisions) up to the active investor. In the case of energy projects in China, as compared with those in the U.S., passive equity investors would almost certainly require the developer to invest substantial cash, and not just provide development services in exchange for equity.

Acquisition financing is when an active developer takes over a project and commits to finance it, whether on its own balance sheet or with project financing.

Public Offering

China has two significant stock markets that offer an exit strategy, historically for large companies. For renewable energy and small power projects, or portfolios of such investments, it is not clear that they would offer enough upside potential or liquidity to justify a public offering. The mainstream power generation and distribution do, however, have several stock markets that they can use to create secondary liquidity.

Commercial Banks and Non-bank Financing Institutions - Chinese

Internal financing in China will be a significant source of financing. However it will be difficult to get local Chinese entities to fund importing equipment and services that could be procured locally. Only the latest technology, which is not available in China, could be expected to be financed. Also, they must be approached by a strong local Chinese partner.

Grants / soft loans

Government-related financing is when financing (even if it is equity or debt) or credit support is coming from a government institution or from a multilateral institution. Government financing sources have special criteria (like being a U.S. exporter), or have non-commercial objectives (like social development or demonstrating an environmentally-related pilot program).

Multi-lateral financing

Multi-lateral organizations are composed of country members and are oriented to humanitarian goals. The main multi-lateral financing organization is the World Bank and its sister organizations, the International Finance Corporation and the Multi-lateral Insurance Guarantee Association). The only other multi-lateral active primarily in financing in Asia is the Asian Development Bank. Some multi-laterals (United Nations) get involved in energy and environment but not primarily in a financing role.

Bi -lateral financing

Bi-lateral organizations work one country to another, such as export credit agencies like the US Export Import Bank. Other "ECA's" are relative to a country making the loans: HERMES in Germany, COFACE in France, and US AID. For the purpose of this guide (targeting California and US companies) the export credit agencies outside the U.S. were not plumbed.

Global Environmental Fund

Jointly implemented by the World Bank, United Nations Environment Programme (UNEP) and United Nations Development Programme (UNDP), the GEF is an independent multilateral financial mechanism helping developing countries protect the global environment. Projects are administered by the aforementioned agencies with the money coming from the GEF, usually working in conjunction with one of Implementing Agencies. Also there is co-financing from specific countries depending on the project.

For example, in 2000, China received approval of a GEF grant of $12 million for a $98 million project during the November meeting of the Global Environment Facility's (GEF) governing Council. This project supports efforts by China to diversify its energy sources and reduce its dependence on coal, which accounts for nearly 72 percent of total commercial energy production and contributes significantly to the high level of carbon emissions. The GEF project will accelerate the large-scale development and commercialization of wind powered electricity connected to the public grid. It will increase by 78 megawatts the electrical capacity provided by wind power through the construction of three wind farms at Dabancheng in the Xinjiang Autonomous Region, at Fujin in Heilongjiang Province, and at Xiwaizi in Liaoning Province.

The GEF is offering an innovative mechanism for financial support. Of the $12 million contributed to the project out of GEF and half comes in the form of a grant. The other $6 million

will be an interest-free loan. This loan will be repaid if the wind farms are successful, but will be converted into a grant if they are not. This approach allows GEF to help bear the perceived risks associated with wind farms while helping to build confidence in the new technology.

According to the GEF, China's economic growth of the past two decades continues, demand for energy is expected to increase at a rate of four to five percent annually through 2015. At this rate, China could be the world's largest energy consumer and greenhouse gas emitter by the year 2025, Chinese government officials predict. "Heavy dependence on coal not only pollutes the atmosphere, it also has health and mortality consequences," noted GEF chairman and CEO Mohamed El-Ashry. "This project is a win-win for power generation and human health."

Success in these three provinces is expected to lead to replication in other parts of the country. Parts of China have a rich wind resource base and some wind farm sites boast world class resources. However, present installed capacity is only about 265 megawatts, which is a fraction of one percent of the known wind power potential.

Asian Development Bank

ADB is a multi-lateral development bank based in Philippines, serving Asia from Turkey to Indonesia. They finance all kinds of infrastructure and financial development.

Wind power is a priority for the Bank. In 1998, ADB began a series of loans to wind power projects, starting with a US$58 million loan. The Wind Power Development Project will construct the three aforementioned grid-connected wind farms with a generating capacity totaling 78 megawatts (MW).

ADB says that development of wind-based power in China has yet to be carried out in a systematic and coordinated manner. Support is needed to facilitate a breakthrough and develop a local wind turbine industry at lower manufacturing costs. This approach will be strengthened by the Government's Partnership for Renewable Energy Development that will promote increased use of renewable energy including wind-based power generation and is expected to be operational later next year. This project will help meet the Government's objective to gradually increase the share of electricity generated from renewable energy to 5 percent.

United Nations

The United Nations has two organizations that provide financing related to the energy sector: the UN Energy Program and the UN Development Program. UNEP is more concerned with research and policy matters, while UNDP finances actual projects, usually at a demonstration pilot level. They both can access GEF funds and collaborate when appropriate.

AID Agencies

AID agencies sometimes finance for demonstration projects and pilot projects demonstrating new deployment of clean technologies. As an example, USAID finances a China-oriented

renewable energy program of National Renewable Energy Laboratories. NREL has been assisting China in renewable energy development since 1995 through activities in resource assessment, training, pilot projects, and market development.

NREL helps U.S. renewable energy companies to develop markets for their technologies and services in China. These activities have been defined within seven specific Annexes of the Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Development and Utilization, part of a bilateral agreement between the U.S. and China.

Special mention is deserved for Jeff Logan and Debra Lew of NREL, who publish many useful statistics and other information pertinent to the energy situation in China.

Listings of financing sources (following pages)

Asian Development Bank

(as of September 30, 2002)

SERVICES PROVIDED

ADB is a multilateral development finance institution dedicated to reducing poverty in Asia and the Pacific. In the power sector, the bank advocates sector restructuring in the medium-term involving unbundling of the mix of generation, transmission and distribution to enable greater private sector participation, introduce elements of competition and to minimize monopolies.

TYPES OF PROJECTS

The main project of ADB with respect to renewables, is financing three wind farms totaling 78 MW, in three provinces: Xinjiang Autonomous Region, Heilongjiang and Liaoning. The bank also financed $6 million of technical assistance, for (a) assisting in the project implementation, (b) benchmarking of tariffs for wind power generation, (c) commercializing the wind-farm companies, (d) facilitating implementation of National Policy for Renewable Energy Use at Provincial Level, (e) increasing wind measurement data, (f) capacity building and training, and (g) publicizing this project.

MINIMUM PROJECT SIZE

Technical assistance, in the range of $100,000 to $5 million.

MAXIMUM PROJECT SIZE

Can be large, up to $100 million.

TYPES OF FINANCING

Loans, grants flowed through Chinese institutions, and co-financing with other multi-laterals.

FINANCING TERMS

Soft loans on concessionary terms, such as long maturity and low interest rates.

MINIMUM FINANCING QUALIFICATIONS

Projects have a long gestation time. Sponsors must work closely with Chinese officials.

CONTACT

Edu H. Hassing (for the wind project)
E-mail: ehassing@adb.org
6 ADB Avenue, Mandaluyong City
0401 Metro Manila, Philippines
Tel: + 632 632 4444
Fax: + 632 636 2444

Alliant Energy ISCO

(as of March 26, 2002)

SERVICES PROVIDED

Alliant is one of the few U.S. utilities that has been successful in China and continues to invest there. They offer technical advice, engineering, power and gas supply, financing, equipment specification, and renewables generation development services. Alliant Energy is part of Alliant Energy, a diversified utility company including a regulated distribution utility, an unregulated independent power production company, and a significant international power development company.

TYPES OF PROJECTS

Alliant Energy has invested in several power projects in China, mainly behind-the-fence industrial cogeneration. They also offer a wide variety of on-site Energy services, including Energy infrastructure and mechanical systems; central plant construction and operations; demand-side management programs; and on-site generation.

MINIMUM PROJECT SIZE

About $5,000,000 and/or 5 MWs of power generation, or Energy savings contracts.

MAXIMUM PROJECT SIZE

Unlimited

TYPES OF FINANCING

Alliant Energy is an Energy service provider who, for special occasions, can provide financing. They can acquire projects from the initial developer and carry on as lead developer. Alliant Energy does not provide passive financing for others' projects.

FINANCING TERMS

Alliant Energy would seek to get involved in projects having a payback in the range of 3-4 years.

MINIMUM FINANCING QUALIFICATIONS

There has to be strong industrial or commercial host, with a good balance sheet, and significant hard currency cash inflow.

CONTACT

Joel Schmidt
Director of Infrastructure
Alliant Energy ISCO
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Cedar Rapids, IA 52406-0351
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China Banks and Financing Institutions

(as of October 1, 2002)

SERVICES PROVIDED

Chinese financial institutions may get involved in channeling multi-lateral funds or in financing the Chinese part of joint ventures, but they are unlikely to be facilitators of renewable energy projects for foreign developers or equipment suppliers. The "big 4" Chinese banks are Bank of China, Bank of Agriculture, Bank of Industry and Commerce, and Bank of Construction. These four banks are working off a portfolio of bad loans to inefficient state owned enterprises. There are also Chinese non-bank financial institutions, which also have asset quality problems.

Still they are the conduit for multi-lateral programs, and they may play a role in the Chinese portion of the financing. Some names and contact information is listed below. It would be expected to have a Chinese entity be the approaching party to any of these banks.

AGRICULTURE BANK OF CHINA
Chen Jianjie, Director of Foreign Affairs Office
40 Fucheng Road, Yulong Hotel 3/F #3008
Beijing, China 100046
Tel: (86-10) 6841-5588 x23007-23009/2301
Fax: (86-10) 6841-3128

BANK OF CHINA (Headquarters)
410 Fuchengmennei Dajie
Wang Xuebing, President
Beijing, China 100818
Tel: (86-10) 6601-1829; 6601-6688 (SB)
Fax: (86-10)

CITIC INDUSTRIAL BANK
Dou Jianzhong, President
Capital Mansion, 6 Xinyuan Nanli
Beijing, China 100027
Tel: (86-10) 6466-0344
Fax: (86-10) 6466-1059

EVERBRIGHT BANK OF CHINA
Jiang Bo, General Manager of Int'l Department
Everbright Building
No. 6 Fuxingmenwai Dajie
Beijing 100045
Tel: (86-10) 6857-1302; 6857-1303; 6857-1304; 6851-5577(SB)
Fax: (86-10) 6857-1301; 6857-1260; 6857-1290

China Banks and Financing Institutions (Continued)

EXPORT IMPORT BANK OF CHINA
Jinlang Hotel, Floors 5-6, 75 Chongnei Street, Beijing 100005
Tel: (86-10) 6513-2288 Ext. 531, 533, 535, 537, 541
Fax: (86-10) 6613-6809

FUJIAN INDUSTRIAL BANK
1 Hualin Huanbaolu, Fuzhou 350003, Fujian
Tel: (86-591) 784-2470

GUANGDONG DEVELOPMENT BANK
1 Qiyi Road, Guangdong Trade Centre, Guangzhou 510120
Guangdong
Tel: (86-20) 332-1398; 333-8293 Ext. 1872

HAIFA BANK OF CHINA
Funan Building, 14 Binhai Dadao, Haikou City, Hainan
Tel: (86-898) 23-3947

INDUSTRIAL & COMMERCIAL BANK OF CHINA (Headquarters)
15 Cuiwei Road, Beijing 100036
Tel: (86-10) 6821-7273
Fax: (86-10) 6821-7920

PEOPLE'S BANK OF CHINA
32 Cheng Fang Street, West City District, Beijing 100800 China
Tel: (86-10) 6601-6705/07
Fax: (86-10) 6601-6703
Contact: Mr. Zhang Zhixiang, Director of International Dept.

CHINA CONSTRUCTION BANK (Headquarters)
C 12 Fuxing Road, Beijing, China 100810
Tel: (86-10) 6851-4488 x 4111/327-2505
Fax: (86-10) 6851-5301
Contact: Tao Li, Director of Foreign Affairs Office

SHANGHAI PUDONG DEVELOPMENT BANK
50 Ningbo Road, Shanghai 200002
Tel: (86-21) 329-6188
Fax: (86-10) 323-2036

SHENZHEN DEVELOPMENT BANK
HubeiBaofeng Building, 45 Baoan Nanlu, Shenzhen 518028, Guangdong
Tel: (86-755) 224-7128; 556-2114

Greater China Environment Fund

(as of March 26, 2002)

SERVICES PROVIDED

GCEF is a to-be-funded venture capital investment company targeting clean energy, clean water, energy efficiency and related industries. The first round of funding is $25 million, of which more than 50% has been committed by institutional investors and by NGO's.

TYPES OF PROJECTS

GCEF hopes to finance both projects and companies in expansion-stage enterprises including waste remediation, energy-efficient building materials, promising energy technologies, biogas-to-energy technologies, and wastewater treatment projects and companies.

MINIMUM PROJECT SIZE

$500,000.

MAXIMUM PROJECT SIZE

$2 million.

TYPES OF FINANCING

The main investments will be in private common stock. A somewhat more limited amount of money will be invested in projects, due to lack of liquidity. These investments will target market yields.

FINANCING TERMS

The entire portfolio is meant to have a respectable venture capital-level return.

MINIMUM FINANCING QUALIFICATIONS

Typical for venture capital or project finance, depending on the financing sought.

CONTACT

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Beijing, China
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Covanta Energy Company

(as of March 26, 2002)

SERVICES PROVIDED

Covanta Energy Corporation has been active in China, but recent financial difficulties in the U.S. put China are putting future China projects on hold for now. Covanta is an internationally recognized developer, owner and operator of power generation projects and provider of related infrastructure services. The Company's independent power business develops, structures, owns, operates and maintains projects that generate power for sale to utilities and industrial users worldwide.

TYPES OF PROJECTS

Covanta has several projects in China, coal-fired and gas-fired cogeneration projects. Outside China they have biomass, landfill gas, waste-to-energy, hydroelectric, and geothermal.

MINIMUM PROJECT SIZE

About $40 million and/or 40 MWs of power generation, depending on the technology, renewables can be smaller projects than conventional cogeneration. No upper limit.

TYPES OF FINANCING

Covanta is a developer and equity investor that would seek active owner's role in a project. They can acquire projects from the initial developer and carry on as lead developer. Covanta does not provide passive financing for others' projects.

FINANCING TERMS

Covanta would seek to get involved in projects having an appropriately healthy equity IRR after-tax, depending on many risk factors.

MINIMUM FINANCING QUALIFICATIONS

There has to be strong industrial or commercial host, or power off-taker, with a good balance sheet, and significant hard currency cash inflow.

CONTACT
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e-mail: cbaker@covantaenergy.com

E+Co

SERVICES PROVIDED

E+Co provides business development services and modest loans or equity investments to demonstrate that local clean energy enterprises represent a market-based solution to the twin problems of meeting the unmet demand for energy services and protecting the environment. E+Co's strategy is to support viable energy enterprises that ensure the delivery of affordable and reliable energy services, whether in a rural off-grid setting, or in grid connected, urban communities. Also, E+Co provides enterprise development services to assist the entrepreneur to develop or refine the proposed business approach and to ensure the right issues are being addressed from the human, financial and technical capacity points of view.

TYPES OF PROJECTS

E+Co. has done projects of energy efficiency, small hydroelectric, biomass, solar photovoltaic, wind, and geothermal. For China, projects will be small, rural energy projects in villages in the Western provinces.

MINIMUM PROJECT SIZE

About $25,000 is the minimum practical level of investment.

MAXIMUM PROJECT SIZE

E+Co invests up to $250,000 per project. Currently the largest E+Co project is a series of biomass based power plants that total 88 MW.

TYPES OF FINANCING

E+Co provides early stage investment ($25,000 - $250,000) in the form of debt or equity., reflecting near market terms and conditions, with the exception that E+Co will tolerate a relatively high level of risk without seeking typical venture capital returns.

FINANCING TERMS

E+Co. would seek to get involved in projects having a payback in the range of 3 –5 years. The return is near commercial but with more risk assumed.

MINIMUM FINANCING QUALIFICATIONS

The project has to make sense on a risk/reward basis. There has to be strong local support. Ideally, hard-currency cash flow is sought, but it is recognized this will be difficult in the target areas.

CONTACT: Jeffery Dickinson
Asia Regional Manager
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Email: eco@energyhouse.com

Environmental Enterprises Assistance Fund

(as of September 27, 2002)

SERVICES PROVIDED

Environmental Enterprises implements sustainable development by investing in smaller, private sector businesses in emerging markets. Established as a non-profit organization in 1990, EEAF brings hands-on venture capital experience to the sustainable development movement. It manages and co-manages approximately $85 million in investment capital and has financed entrepreneurs in 11 countries. By making these long-term debt and equity investments, EEAF addresses a gap in developing country capital markets and creates replicable models for entrepreneurs and local investors.

TYPES OF PROJECTS

EEAF invests in companies and projects engaged in agriculture, forestry, aquaculture, tourism, renewable energy, energy efficiency, pollution abatement and recycling. Investment stage: Later stage is preferred, but start-up investing will be considered.

MINIMUM PROJECT SIZE

$100,000.

MAXIMUM PROJECT SIZE

For the new fund, up to about $5 million and/or 5 MW of generation, but this is not a hard and fast rule.

TYPES OF FINANCING

$100,000 to $2 million in either debt, equity or a combination. EEAF will syndicate for investments in excess of these amounts.

FINANCING TERMS

EEAF provides commercial-style financing, not grants or subsidized financing. For China, EEAF has three funds for which it acts as co-manager: Solar Development Capital ($28.75 million private equity fund to invest globally in solar photovoltaic (PV and PV-related businesses), and Terra ($15 million for biodiversity), and REEF ($65 million for renewable energy). Solar Development Corp. has its own website at www.solardevelopment.org. The funds have a projected life of 10 years and are capitalized by institutional investors and multi-lateral development banks. EEAF has provided a variety of financing structures on a case-by-case basis – there is no set formula for investing.

MINIMUM FINANCING QUALIFICATIONS

Management requirements: Entrepreneurs must have their own capital at risk, a proven track record, and near term profitability. To be considered for a loan or equity investment, sponsors should submit a brief introductory letter describing your company and the proposed financing plan. For projects of interest, business plans and other materials may be requested.

CONTACT

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Environmental Enterprises Assistance Fund
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Energy Foundation

(as of March 26, 2002)

SERVICES PROVIDED

Energy Foundation is a San Francisco-based non-profit organization. Its Renewable Energy Program supports policy-related efforts to accelerate the commercialization of renewable energy in China. The program is especially interested in utility-scale, grid-connected renewable energy through scenario-building and regulatory work.

TYPES OF PROJECTS

Energy Foundation can fund efforts at a policy level and not specific projects. For example, a wind developer could work with an appropriate non-profit group to apply for a grant for conferences to educate Chinese State or Provincial officials about the need for suitable framework to encourage renewable energy. Proposals will be judged upon the following criteria: Ability to promote priority policy objectives, Feasibility of the project; Design of strong evaluation and monitoring of project progress against goals; Ability to deliver enforceable policy change; External peer review of project design

MINIMUM PROJECT SIZE

None

MAXIMUM PROJECT SIZE

An example of a large grant ($125,000) was made to a U.S. based non-profit to provide technical policy support and capacity building to Chinese policy-makers in renewable energy policy development and implementation.

TYPES OF FINANCING

The Energy Foundation makes grants to non-governmental non-profit charitable organizations. The foundation is not able to support for-profit organizations.

FINANCING TERMS

Pure grant

MINIMUM FINANCING QUALIFICATIONS

The foundation will evaluate grant requests primarily on their ability to: (1) deliver real commitments to energy efficiency and renewable energy in China; and (2) build capacity in organizations within China for sustainable energy policy progress. Grants are awarded based on their ability to build durable and enforceable energy efficiency and renewable energy policies and practices.

CONTACT

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The Energy Foundation
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EIF Group – REEF

(as of March 14, 2002)

SERVICES PROVIDED

The $65 million Renewable Energy and Energy Efficiency Fund (REEF) is an investment fund targeting renewable energy and energy efficiency projects in developing countries. There are three managers of the REEF, which should be approached depending on the project size and amount of money sought. EIF Group is manager of the fund for projects greater than 7 MW up to 100 MW. REEF makes investments drawing upon Global Environment Facility (GEF), co-financing where appropriate.

TYPES OF PROJECTS

Target sectors that include: wind, solar, geothermal, small hydroelectric, biomass, on or off-grid electricity generation primarily fueled by renewable energy sources, energy efficiency and conservation, and renewable energy/efficiency product manufacturing and financing.

MINIMUM PROJECT SIZE

$5,000,000

MAXIMUM PROJECT SIZE

About $100 million but with no limit on the amount of power generation.

TYPES OF FINANCING

REEF actively seeks to make minority equity and quasi-equity investments in profitable, commercially viable private companies and projects.

FINANCING TERMS

The typical term for projects in China is five years but may be longer. The desired return on investment ranges from 20 to 25%. EIF expects that it will take a minimum of three to six months to perform due diligence and fund projects. REEF's investments may take a variety of forms including common and preferred stock, partnership and limited liability company interests, and convertible or subordinated debt with equity warrants/options. REEF may also make loans to projects or project sponsors on a bridge or permanent basis. Equity transactions are typically structured so that the entrepreneur retains the majority of shares and/or management of the company.

MINIMUM FINANCING QUALIFICATIONS

Project financing eligibility is based on the size of the respective project, sponsorship experience and financial strength. Proven management, technical expertise and track record are preferred. The Group typically requires a seat on the board but does not micromanage the recipient. The Group will consider startup companies.

CONTACT

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EIF Group
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e-mail: klocklin@eifgroup.com

European Commission

(as of March 22, 2002)

SERVICES PROVIDED

SYNERGY is a co-operation programme managed by the Directorate General for Energy and Transport (DG TREN) of the European Commission. It finances co-operation activities with non EU countries in the field of the formulation and implementation of energy policy to the mutual benefit of all parties concerned. Synergy provides grants for energy policy activities, workshops. Synergy can fund the following activities: Advice and training in energy policy; Analysis and forecasting in energy matters; Closer dialogue and exchanges of information on energy policy through conferences and seminars; Support to regional transboundary cooperation; Improving the framework for industrial energy cooperation; No funding is granted to investment, research, development or demonstration projects.

TYPES OF PROJECTS
Example activities in China include: Training of Chinese engineers and decision makers on energy management and energy efficiency; China - EU energy co-operation Conferences; Contribution to the restructuring of the Chinese coal sector

MINIMUM PROJECT SIZE
The amount of financing provided by the European Commission per project should not be less than EUR 250.000, and in general the co-financing should not exceed 50%.

MAXIMUM PROJECT SIZE
The total Synergy budget for 2002 is the same as for 2001, 3.4 million euros. In 2001, a total of eight project proposals were selected to be co-financed by the European Commission (representing an amount of 416,000 euros per project). Therefore, a similar outcome is expected from the call for 2002 co-financed proposals.

TYPES OF FINANCING / FINANCING TERMS

Pure grant

MINIMUM FINANCING QUALIFICATIONS
Proposed projects should reflect one or both of the following priority objectives: (a) Enhancement of security of supply for the Community and candidate countries, (b) contributions to the implementation of the Kyoto Protocol. The projects should involve a minimum of two participants in at least two EU Member States (EC participants) and one participant in a third country (total minimum of three).

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EC DG Transport and Energy
SYNERGY Programme
European Commission
Directorate General for Energy and Transport
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B-1040 Brussels, Belgium
Fax: 32-2-2959816
E-mail: synergy@cec.eu.int

Fortis Bank

(as of March 31, 2002)

SERVICES PROVIDED

Fortis Bank S.A./N.V. is part of the Fortis Group, a Dutch/Belgium based global banking and insurance service provider. The energy finance group provides project financing and advisory services to the industry world-wide and has a dedicated renewable energy team which is the world's leading arranger of project financing for the wind energy market. They are one of the largest lenders to the wind industry in the world. Fortis acquired MeesPierson in 2000, increasing its resources and capabilities in renewable energy financing.

TYPES OF PROJECTS

Fortis finances large projects that use proven technologies.

MINIMUM PROJECT SIZE

About $30 million total project size, with typically 60-70% debt finance arranged by Fortis.

MAXIMUM PROJECT SIZE

None

TYPES OF FINANCING

Commercial loan financing only.

FINANCING TERMS

Financing terms are set on a case by case basis, depending on the project, country and the credit risk. As a bank lending in China, Fortis would be limited by the sovereign credit risk ceiling. Loan maturity would be in the 8-10-year range with rates based off of a spread off LIBOR. Fees and loan decision process are typical for a commercial bank with a strong understanding of renewable energy.

MINIMUM FINANCING QUALIFICATIONS

There must be a strong sponsor also acting as equity investor. The equity component should be in-place prior to soliciting debt funds from Fortis. There must be a revenue stream in dollars to fund the dollar-denominated debt service component. Large energy projects only would be considered.

REPRESENTATIVE PROJECTS

Previous projects financed include the 125MW Lake Benton project for Enron Wind, purchased by GE Capital.

CONTACT

Mr. Charles Wilson
Fortis Bank S.A./N.V.
Camomile Court
23 Camomile Street
London EC3A 7PP England
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Fax: 44-20 7444 8810
Email: charlie.wilson@fortisbank.com

Clean Power & Environmental Technology Fund

(as of September 30, 2002)

SERVICES PROVIDED

The Clean Power & Environmental Technology Fund is a proposed £30 million fund of Enviro Finance Ltd., a UK-based advisory firm specializing in clean power and environmentally efficient technologies. They are seeking to raise a focused venture fund for investment in early and mid stage clean power and environmental technologies.

TYPES OF PROJECTS

Energy technologies falling within the remit of the Fund include hydro; solar; hydrogen; wind; tidal; other generating systems (e.g. waste), and ancillary energy technology (e.g. power control systems).

MINIMUM / MAXIMUM PROJECT SIZE

The average project investment will be £1- 5 million over the life of the project, with the goal of investing in approximately 5 projects per year.

TYPES OF FINANCING

Projects will be primarily early and mid- stage, with the Fund committed to participating in the funding of the project at each stage from development to pre IPO or trade sale.

FINANCING TERMS

Typical venture capital returns will be sought.

MINIMUM FINANCING QUALIFICATIONS

The management team must be strong, experienced, not necessarily well-capitalized.

REPRESENTATIVE PROJECTS

China financing done by Enviro Finance was a high tech company. No energy deals to date.

CONTACT

In China
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No. 2, Dong San Huan Nan Lu
Chaoyang District, Beijing 100022 China
Tel [+86] 10 65663556
Fax [+86] 10-65663557
email: victor@temima.com

In the UK
Mr. Simon Littlewood
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London SE1 2YE, UK
Tel +44 (0) 20 7407 8494
Fax +44 (0) 20 7407 9020
email: simon@temima.com

International Finance Corporation

(as of September 24, 2001)

SERVICES PROVIDED

The IFC Power Department does debt, equity and combination financing only. However, as a member of the World Bank Group, the Power Department makes appropriate referrals to other parts of the organization for advice and technical assistance.

TYPES OF PROJECTS

Energy retrofits for commercial and industrial facilities, industrial cogeneration, and small power plants. IFC will also finance power distribution systems and alternative sources such as wind, biomass and solar. Although primarily a financier of private sector projects, IFC may provide financing for a company with some government ownership.

MINIMUM PROJECT SIZE

$30 million, no minimum on the amount of power generated. IFC will cover up to 25% of the project costs for new project and up to 50% for expansion projects, provided its investments do not exceed 25% of the total project capitalization. IFC will also join bank syndications to provide 70/30 debt/equity.

MAXIMUM PROJECT SIZE

No limits

TYPES OF FINANCING

The total capital pool available for power projects ranges from $350 to $400 million annually with more than half of the funds spent on power generation. In addition to this capital, IFC can arrange additional funds from co-lenders through its syndicated loan program. IFC offers debt, equity and combined debt & equity financing. IFC will participate with subordinated loans, interest rate swaps, and local currency financing in China. The maximum equity ownership IFC will assume on a project is 10%.

FINANCING TERMS

The maximum term in China is up to 17 8-10 years. The interest rate is risk-based. For loans, the spread is equal to the short term LIBOR rate swapped into the equivalent term in years plus a margin. There are front-end commitment, processing and lender fees. The desired rate of return on equity is 18-22%. IFC desires a debt service coverage ratio ranging from 1.3 to 1.5.

MINIMUM FINANCING QUALIFICATIONS

Project financing eligibility is based on the size of the respective project, sponsor experience and financial strength. Collectively, the local and foreign sponsors must account for at least 15-20% of project equity. The Engineering, Procurement and Construction (EPC) contractor must have a demonstrated track record. In general, IFC finances conventional technologies but will consider alternative technologies.

CONTACT

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NUON NV

(as of September 30, 2002)

SERVICES PROVIDED

Internationally Nuon is looking primarily for investment opportunities in windfarms and hydropower plants. Nuon prefers to co-operate with local partners who can contribute their knowledge of the country specific situation to our extensive experience in structuring and realization of renewable energy projects.

TYPES OF PROJECTS

Nuon is a 55 % shareholder of a wind farm on the island of Nan'ao, close to the south Chinese town of Shantou in the province of Guangdong. In this country we are proud to have our own Nuon china Office. The farm consists of 40 wind turbines with a joint capacity of 24 MW. Each turbine has an installed capacity of 600 kW. Extension of the wind farm is being studied presently.

MINIMUM PROJECT SIZE

Projects have to be of a reasonable size to make it worthwhile to consider investment. For windfarms this means a minimum size of 20 MW. For hydropower plants the minimum would be 10 MW. The combination of smaller hydro projects in the same area under similar conditions as one investment opportunity can provide some flexibility to those criteria.

MAXIMUM PROJECT SIZE

None

TYPES OF FINANCING

Equity investment, as a partner, not lending.

FINANCING TERMS

Returns should be commensurate with equity risk. Nuon is especially rewarding projects that reduce greenhouse gas emissions.

MINIMUM FINANCING QUALIFICATIONS

The local sponsor should be experienced and have a financial investment in the project.

CONTACT

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Arnhem, Netherlands 6812 AH
Telephone: +31 (26) 8442143
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Triodos Bank

(as of September 30, 2002)

SERVICES PROVIDED

For emerging market countries including China, Triodos runs a Solar Development Group (SDG), which provides business development support and investment capital to companies with high growth and profit potential that provide solar photovoltaic (PV) and other energy sources to off-grid rural areas in developing countries This is a commercial private equity fund with USD 29 million from private and institutional investors.

TYPES OF PROJECTS

Solar power, off-grid, rural, micro-finance

MINIMUM AND MAXIMUM PROJECT SIZE

Investment capital can be from USD 100,000 to USD 2,000,000

TYPES OF FINANCING

Solar Development Capital makes debt and equity investments structured according to the financial need and cash flow capabilities of the company. In most cases, the entrepreneur retains majority ownership. Solar Development Capital shares risks of the companies in which it makes equity investments, but also intends to share in their success.

FINANCING TERMS

The fund seeks commercial rates of return, based on future profits and dividends generated by the companies in which it invests. Solar Development Capital may also provide loans at market rates, especially to (micro)finance institutions offering credit or lease programs for solar home systems or other rural electric services. Solar Development Capital encourages joint co-investment with other parties and will typically wish to exit from its investments after a 5-7 year period.

MINIMUM FINANCING QUALIFICATIONS

Investments are made in private companies, involved in rural areas, off-grid power.

CONTACT
If J.F. (Hans) Schut
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Triodos Bank
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Fax: +31 30 693 6566
E-Mail: hansschut@triodos.nl

United Nations Development Programme – GEF Unit

(as of April 1, 2002)

SERVICES PROVIDED

UNDP administers GEF funds, concentrating on capacity building, technical assistance, and a limited number of demonstration projects.

TYPES OF PROJECTS

1. China Energy Efficient CFC-Free Refrigerators. To promote the adoption of energy-efficient designs and technologies in the refrigerator industry in China. $243K.
2. Development of Coalbed Methane Resources in China. To explore alternative energy resources and reduce air pollution caused by massive use of coal. The objectives will be achieved through: improved mine safety and productivity; decreased methane-based atmospheric environmental impacts associated with underground coal mining; and production of high-quality methane fuel to be used as a replacement of coal in power generation, industry and the domestic sector. $10 million.
3. Energy Conservation and Pollution Control in Township and Village Enterprise Industries. To raise the energy efficiency of the rural industrial sector in China by selecting several key Township and Village Enterprises to carry out demonstration projects. Four subsectors targeted: brickmaking, coking, metal casting and cement. $1 million.
4. Promoting Methane Recovery and Utilization from Mixed Municipal Waste. To promote wide spread adoption of landfill gas recovery technology in China based on the technical and organizational experience gained from the three pilot landfills. $5 million.
5. Commercialization of Renewable Energy. To open up new fields of renewable energy for investment in China. To improve the local policy environment for renewable energy and initiate activities to demonstrate or strengthen the capabilities in several renewable energy technology fields.

MINIMUM PROJECT SIZE

None

MAXIMUM PROJECT SIZE

Several million dollars.

TYPES OF FINANCING

Pure grant

FINANCING TERMS

None, no repayment from Government of China to UNDP.

MINIMUM FINANCING QUALIFICATIONS

Government of China has to request funds, first getting cooperation of the local UNDP office in Beijing.

CONTACT

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United Nations Development Programme – ESD Unit

(as of April 1, 2001)

SERVICES PROVIDED

UNDP Energy Sustainable for Development administers funds from donors, and represents a continuations and centralizing of UN energy and environment programs from the 1980's and 1990's. and concentrates on capacity building, technical assistance, and limited demonstration projects. As with GEF-based programs, foreign developers in China should start discussion with the local UN office in Beijing.

TYPES OF PROJECTS

An example project is the modernized Biomass Energy in China: Jilin, to implement widespread use of gasified biomass for combined heat and power (CHP) generation in rural areas in China and other developing countries. This project will launch a major, sustainable energy village/township CHP demonstration project based on the modernized use of biomass in Jilin Province, China, with replication potential to rural areas in other developing countries. Objectives are to not only to make this initial project a success, but also to establish the local capability to develop, finance and operate similar projects, and to solve technical problems. The Project Budget is US$1,240,000.

MINIMUM PROJECT SIZE

None

MAXIMUM PROJECT SIZE

Several million dollars.

TYPES OF FINANCING

Pure grant

FINANCING TERMS

None, no repayment from Government of China to UNDP. In the case where the funds going to a sino-foreign joint-venture project, the funds may represent a debt or equity investment in the JV, and there might be a negotiated repayment between the developer and the project.

MINIMUM FINANCING QUALIFICATIONS

Government of China has to request funds, first getting cooperation of the local UNDP office in Beijing.

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U.S. Commerce Department

(as of April 2, 2002)

SERVICES PROVIDED

The Commerce Department runs trade missions and facilitates match-making between US companies seeking to enter a market to help find local partners. It also administers the Commercial Cooperation Working Group (CCWG), one of four working groups in the Vice Presidential United States - China Forum on Environment and Development. It is the only working group that has direct private sector participation. Another working group dealt with clean coal technologies, energy efficiency, hydropower, renewable energy sources, petroleum (natural gas and oil) and nuclear power generation.

Another useful resource is the Advocacy Center, which can mobilize U.S. Government support for transactions and help in dispute resolution. The Advocacy Center puts the resources and authority of the U.S. government to help resolve problems like these:

- Contracts pursued by foreign firms that receive assistance from their home governments to pressure a customer into a buying decision;
- Unfair treatment by government decision-makers, preventing you from a chance to compete;
- Tenders tied up in bureaucratic red tape, resulting in lost opportunities and unfair advantage to a competitor.

TYPES OF PROJECTS

Commerce department is not directly a financing source for projects, but they can link to financing sources and partners by identifying US strategic industry players targeting renewable energy in China, and by facilitating senior-level meetings with Chinese officials.

MINIMUM PROJECT SIZE

N/A

MAXIMUM PROJECT SIZE

N/A

TYPES OF FINANCING

N/A

FINANCING TERMS

N/A

MINIMUM FINANCING QUALIFICATIONS

N/A

CONTACT

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U.S. Trade and Development Agency

(March 31, 2002)

SERVICES PROVIDED

The U.S. Trade and Development Agency assists in the creation of jobs for Americans by helping U.S. companies pursue overseas business opportunities. Through the funding of feasibility studies, orientation visits, training grants, conferences, and technical assistance, TDA enables American businesses to become involved in the planning stages of infrastructure and industrial projects in middle-income and developing countries.

TYPES OF PROJECTS

TDA funds large, capital-intensive projects such as power plants, refineries, telecommunications, and other infrastructure. In energy, TDA as helped with feasibility studies for cogeneration power plants, wind projects, biomass, hydroelectric, and solar thermal projects.

MINIMUM PROJECT SIZE

About $20,000,000. TDA looks for a 100:1 ratio of its funding to the potential US exports.

MAXIMUM PROJECT SIZE

None

TYPES OF FINANCING

For projects, TDA provides financing for feasibility analysis. Such funding is provided after a suitable level of pre-feasibility is established, either through the sponsor's own studies and or through a TDA-sponsored Definitional Mission. Generally, TDA requires the involvement of a substantial company as sponsor or at least as significant participant in a project. Feasibility study funding can range from around $100,000 to around $600,000.

FINANCING TERMS

Feasibility study funding is provided on a cost share basis if it is provided directly to U.S.-based project sponsor. If it is provided to the host country, then it is made on a grant basis, and can finance 100% of the cost of the study. In the grant case, the host country must bid out the study to qualified technical advisor in an open, competitive basis.

MINIMUM FINANCING QUALIFICATIONS

TDA publishes a 14-point qualification checklist on its website, including the usual parameters: economic, technical, legal, financial, and other criteria. There is also a screen to test for no negative impact on U.S. labor.

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U.S. Export Import Bank

(as of November 7, 2001)

SERVICES PROVIDED

Ex-Im Bank provides guarantees of working capital loans for U.S. exporters, guarantees the repayment of loans or makes loans to foreign purchasers of U.S. goods and services. Ex-Im Bank also provides credit insurance that protects U.S. exporters against the risks of non-payment by foreign buyers for political or commercial reasons. Ex-Im Bank does not compete with commercial lenders, but assumes the risks they cannot accept. Also, Ex-Im Bank offers limited recourse project finance support to assist U.S. exporters competing in international growth industries.

TYPES OF PROJECTS

In project financing in China, Ex-Im Bank has focused mostly on large projects in the $500 million to $1 billion range. However, they have also recently financed a series of small projects, three $2.6 million power projects in Bangladesh. Also Ex-Im Bank can finance a project with used equipment.

MINIMUM AND MAXIMUM PROJECT SIZE

There are no minimum or maximum size limitations. For small project finance transactions, Ex-Im Bank may consider, on a case-by-case basis, piggy-backing its project evaluation off of the due diligence of another senior lender. The other lender should be a well-known multilateral or bilateral agency or commercial bank, and have a sizable stake in the project.

TYPES OF FINANCING

Ex-Im Bank has a wide range of programs, all relating to loans or guarantees. No equity financing.

FINANCING TERMS

The Ex-Im Bank website has comprehensive and detailed elaboration of financing terms. In general, Ex-Im would provide financing at the best terms available from commercial sources adjusted for taking one level more of country risk not available commercially.

MINIMUM FINANCING QUALIFICATIONS

Ex-Im Bank support is available only for goods and services originating from the U.S. and the transaction must not affect the U.S. economy adversely. One of its major goals is to increase the export of environmental goods and services. The total level of support for a supply contract will be the lesser of: 85% of the value of all eligible goods and services in the U.S. supply contract; or 100% of the U.S. content in all eligible goods and services in the U.S. supply contract. The goods and services in a U.S. supply contract must be shipped from the United States to a foreign buyer.

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World Bank – ESMAP

(as of April 1, 2002)

SERVICES PROVIDED

The Energy Sector Management Assistance Programme (ESMAP) is a global technical assistance programme sponsored by a group of donors, the World Bank and the United Nations Development Programme (UNDP) and managed by the World Bank. ESMAP focuses on the role of energy in poverty reduction and economic growth while preserving the environment in developing countries and economies in transition. ESMAP seeks to fund studies and demonstration projects of innovative approaches and mechanisms for energy service delivery to underserved populations. The emphasis is on issues not yet mainstreamed in bilateral or multilateral development institutions, or in the private sector.

TYPES OF PROJECTS

Free technical assistance, specific studies, advisory services, pilot projects, knowledge generation and dissemination, trainings, workshops and seminars, conferences and roundtables, publications. Recent china activities have been studies in clean coal technology, "Reduction of Pollution by the Development of a Gas Market in Guangdong," and sulfur emission mitigation policies.

MINIMUM PROJECT SIZE

None

MAXIMUM PROJECT SIZE

A typical activity lasts three years and costs 250,000 US dollars in ESMAP funding on average.

TYPES OF FINANCING

Financing is for direct costs of providing technical assistance or in-kind technical assistance carried out by World Bank experts.

FINANCING TERMS

Pure grant.

MINIMUM FINANCING QUALIFICATIONS

Proposals should focus on capacity building: not just making one renewable energy project, but creating the factors to enable and encourage additional projects. Also, studies should transfer useful knowledge to local practitioners: power companies, regulators, villages, renewable energy equipment suppliers, local financing institutions.

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World Bank – China Renewable Energy Scale-up Fund and Renewable Energy Development Program

(as of March 31, 2002)

SERVICES PROVIDED

The CRESP and REDP mainly aim to influence policy and secondarily to fund some demonstration renewable energy projects. (REDP relates to World Bank's Asia Alternative Energy Program, ASTAE). The goal is enable commercial renewable electricity suppliers to provide energy to the electricity market efficiently, cost-effectively and on a large scale.

TYPES OF PROJECTS

The programs are meant to play a catalytic and demonstration role for a few projects such as - new small hydro, rehabilitated small hydro, new wind power, new biomass /cogen, investment in renewable energy equipment production facilities, distribution of technology. The main goal of both programs is capacity-building: enhancing local abilities in financing, legal and regulator expertise and other institutional strengthening. Any projects would be of a demonstration nature, and have to be replicable. Some example projects were financing three energy services companies, financing wind assessment, providing a fund for working capital for energy efficiency improvements.

MINIMUM PROJECT SIZE

None

MAXIMUM PROJECT SIZE

None

TYPES OF FINANCING

Financing is extended to the Chinese government, who on-lend through appropriate ministries to Chinese institutions for investment. There is expected to be a large amount of private sector investing and co-financing of other donors. The goal is unsubsidized renewable energy available at reasonable cost in a market-driven energy environment.

FINANCING TERMS

Financing is country driven: Chinese line ministry (e.g. State Development Planning Commission, State Economic and Trade Commission or similar body) would go to the Ministry of Finance.
Ministry of Finance would speak to the World Bank China Country Director in Beijing, to determine whether it would be something the Bank was prepared to support.

MINIMUM FINANCING QUALIFICATIONS

The main requirement is that the Chinese government has to support the project and request the funds.

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