

TO: GEF SECRETARIAT

THE WORLD BANK GROUP

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SUBJECT/

REFERENCE: PDF Block B request - CHINA - Energy Conservation Project

MESSAGE: Please find attached a PDF Block B request for CHINA Energy Conservation Project. We would appreciate receiving any comments by Monday, November 11, 1996.

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PROPOSAL FOR PDF BLOCK B GRANT

Country:	People's Republic of China
Focal Area:	Climate Change
Project Title:	Energy Conservation Project
Project Costs:	\$195-235 million
Financing Plan (provisional):	GOC \$45 million European Commission \$5 million GEF \$35 million Domestic banks \$45-90 million IBRD \$65 million
Requesting Agency:	The World Bank
National Executing Agency:	State Economic and Trade Commission (SETC)
Block:	B
Amount of PDF Funding Requested:	\$350,000
Co-funding:	GOC \$370,000
Block B Grant:	Yes \$350,000 (April 25, 1996)
Convention Ratification:	January 5, 1993

SECTOR BACKGROUND

1. The burning of fossil fuels and other human activities are changing the balance of CO₂ and other heat-trapping gases in the atmosphere. According to scientific theory, this "greenhouse effect" has the potential to dramatically alter the earth's climate in a relatively short span of time. Energy is the largest source of greenhouse gas (GHG) emissions worldwide, and China currently accounts for 10 percent of global CO₂ emissions from energy use, behind the US (21 percent), countries of the former Soviet Union (18 percent), and Europe (21 percent). However, among countries and regions with the highest GHG emissions, only China is likely to maintain rapid rates of economic growth well into the next century and this will require a significant expansion in coal use, China's principal energy resource. Assuming the continuation of rapid economic growth in China, macroeconomic and energy modeling work from the China Greenhouse Gas Study¹ show that an aggressive program to promote energy conservation and renewable energy could limit the increase in GHG emissions between 1990 and 2020 from a threefold increase to less than twofold.

2. As detailed in the extensive analysis of energy conservation opportunities and constraints in the recent major study, *China: Issues and Options in Greenhouse Gas (GHG) Emissions Control* (Government of China/World Bank/UNDP, November 1994), very large energy savings and GHG emissions reductions can be achieved in China through implementation of "no-regrets" projects with positive life-cycle financial returns.

¹ See *China: Issues and Options in Greenhouse Gas Emissions Control, Summary Report*, joint report of the Chinese Government, UNDP, and the World Bank, December 1994, p. 33.

However, there are a number of barriers to the implementation of financially-sound energy conservation projects in China, including: (a) inadequate information among enterprises and financial institutions; (b) project, market, and implementation risk to enterprises; (c) "insignificance" to the enterprise of many high-return energy efficiency projects; (d) high transaction costs for designing and implementing projects; (e) difficulties in arranging financing; and (f) institutional constraints.

3. China's energy conservation system is among the most extensive in the world. During the 1980s, China successfully developed a comprehensive energy conservation program, including major policy directives, procedures, regulations, technical assistance programs, and project financing initiatives. The institutional framework for energy conservation in China includes a number of specialized energy conservation units at national, provincial and county/municipal levels, operating under the State Economic and Trade Commission (SETC), and provincial and local Economic Committees. The system was quite effective under the centrally planned economic system, taking advantage of the well-established framework of industrial enterprise energy input quotas and government investment funding mechanisms for investment in state-owned enterprises. With the ongoing conversion of China's economic system to a market economy, however, the established system for promoting energy conservation must be transformed to operate more effectively in the new environment. Efforts to promote energy efficiency must now be built primarily on the self-interest of enterprises, as a means to increase enterprise profits and/or to meet environmental regulations. New and different financing approaches and mechanisms are also needed. One important mechanism introduced in industrialized market economies for accelerating energy efficiency investments has yet to be introduced in China — contract energy management, whereby one enterprise undertakes energy efficiency investment in another, and is compensated through the value of the energy saved. Without the introduction of market-based mechanisms into China's energy conservation system, many of the critical gains in capacity building achieved during the last decade and a half may be lost, especially the major gains achieved in development of technical expertise in energy conservation project work.

4. The current programming plan for GEF energy efficiency projects in China by the World Bank and UNDP were discussed with the GEF Secretariat in June 1996. Among the GEF energy efficiency projects under preparation or in the pipeline for China are: Energy Efficiency in Township and Village Enterprises (UNDP), and Energy-efficient Refrigerators (UNDP), Efficient Industrial Boilers (World Bank), and Energy Conservation (World Bank). The China Energy Conservation Project is the centerpiece of the World Bank's GEF and energy efficiency activities in China as it represents a cost-effective, no-regrets, market-oriented, and sustainable solution for improving energy efficiency in China.

PROJECT OBJECTIVES AND DESCRIPTION

5. The main objective of the project is to achieve large and growing increases in energy efficiency, and associated reductions in the rate of growth in carbon dioxide emissions, by improving the provision of information on energy efficiency investments, and by introducing, demonstrating, and disseminating new project financing concepts and market-oriented institutions to promote and implement energy efficiency measures in China. The project is designed to assist in the transition of China's energy conservation activities from a system based on planned economy concepts and energy use quotas to a more market-oriented system, which can be sustained over time and grow with China's economy.

6. The project would support the strengthening of China's national efforts to provide improved access to specific information concerning successful domestic experiences in energy efficiency measures and projects, geared in particular to financial decisionmakers in enterprises. In addition, the project will also support the establishment and pilot demonstration of EMCs in China for the first time. These commercial companies will be engaged in self-sustaining energy efficiency investments through energy performance contracting (contract energy management), as developed by energy service companies (ESCOs) in a number of developed countries. GEF support is required to develop and adapt the new concepts, and demonstrate the concept viability in China. World Bank support is necessary to provide capital for the EMCs to grow, once developed.

7. **Information and Dissemination Program.** As part of its ninth five year plan (1996-2000), the Government of China has decided to establish the National Energy Conservation Center of China (NECC) to coordinate information dissemination at the national level. The project would provide assistance to NECC to more effectively provide information on cost-effective energy conservation measures, and to generally improve energy management at the enterprise level. Specifically, the project would support: (a) effective dissemination of "best practices" derived from successful energy conservation programs in China, focusing particularly on the provision of financial information to enterprise management, enterprise financial planners, and the financial community in general; (b) the enhancement of analytical capacity in existing energy conservation units to properly assess the environmental and financial benefits of energy conservation projects; (c) assistance to the Government in developing effective policies, regulations and standards for promoting energy conservation under a market system; and (d) development of technical and operational guidelines for energy conservation measures with wide applicability, using the results of case studies.

8. **Demonstration of Energy Management Companies.** Implementation of this component will be divided into two phases. Under the first phase, three demonstration EMCs will be developed, begin operation, and expand as commercial businesses in Beijing Municipality and Liaoning and Shandong Provinces. Because the concept is new in China, GEF and government support are clearly required at the outset to introduce and

demonstrate the viability of this new market mechanism in China, and to overcome the wide range of legal, accounting, institutional, technical and other obstacles and initial risks involved. After successful initial demonstration of the energy performance contracting mechanism, the three EMCs should grow along commercially sustainable lines, in part with World Bank financing. The principal business of the three EMCs will be energy performance contracting. The EMCs will undertake investment projects in other "host" enterprises. In the first set of projects, the EMCs will provide the investment financing, shoulder the technical and financial risk, and initially own the equipment installed in the host enterprises. The EMC is paid by the host enterprises from a share of the value of the energy savings actually achieved.

9. The second phase of this component, to be supported in part with GEF financing, would accelerate the dissemination of EMC concepts and the initial experience of the three demonstration EMCs in other parts of China. Support would be provided for implementation of various proposals to develop EMCs in any part of China, and associated with a variety of types of institutions. Proposals would be selected for support through an open and competitive process.

DESCRIPTION OF PDF ACTIVITIES

10. The full PDF preparation requirements for the China Energy Conservation Project were first detailed in the Block C proposal submitted to GEFOP in March 1996. A Block B PDF (\$350,000) was awarded in April 1996 and has been used to carry out **Part 1** preparation activities (detailed below). This request for a second Block B PDF (\$350,000), will complete preparation of the GEF component of the project, the activities of which are detailed below as **Part 2**.

11. **Part 1 Preparation.** The following activities have and are being carried out under the first PDF Block B grant:

- (a) A detailed review of the barriers to energy conservation in China was carried out, building on the work of the China Greenhouse Gas Study. A seminar was held at the World Bank in June 1996 to discuss barriers to energy conservation in China and the various measures that are being taken by the GEF Implementating Agencies to address these barriers.
- (b) The design and initial preparation of the Information and Dissemination Component of the China Energy Conservation Project will be completed by November 1996, with detailed outputs by Chinese and international contractors.
- (c) Design and initial preparation of the GEF-related aspects of the EMC Component of the project have been largely completed, including technical assistance to energy conservation institutions in China on:

- (i) Energy service company (ESCO) concepts -- this has been completed by international ESCO consultants and through an international assessment by project beneficiaries;
 - (ii) Initial definition of the institutional structure and framework for establishing ESCOs in China -- the three Chinese EMCs have been established and have completed initial company plans;
 - (iii) Initial definition of technologies to be disseminated under the project have been outlined by the Chinese EMCs, and the technologies for focus during the first two years of the project will be finalized by the end of November; and
 - (iv) Issues and options for contract energy management agreements between EMCs and host enterprises, including legal and tax issues, are being evaluated in China, and a Chinese Leading Group has been established for the project to assist in their resolution.
- (d) Delineation of the incremental cost approach to be used for defining GEF participation in the above two components will be completed shortly after a preparation mission to China in October-November 1996.
- (e) Draft financing plans for the project have been completed. In addition to GEF and World Bank funds, support from the EC, Government, and Chinese commercial banks is expected.

12. **Part 2 Preparation.** The following activities would be carried out under the second PDF Block B grant:

- (a) Finalize preparation of the Information and Dissemination Component;
- (b) Finalize the EMC Component, especially:
 - (i) Preparation of feasibility studies for the initial (pilot) demonstration projects of the EMCs that will be financed by the GEF/EC. The feasibility studies would focus in particular on contracting and savings verification issues;
 - (ii) Full financial plans for each of the three EMCs would be carried out;
 - (iii) EMC company structure and staffing needs would be finalized;
 - (iv) The second stage of the project, establishing other EMCs throughout China, will also be defined and delineated.
- (c) Incremental cost estimates for the project would be finalized.
- (d) Financing, procurement, and the implementation plan for the project would be finalized.
- (e) Preparation of the GEF project document.

ELIGIBILITY

13. China ratified the U.N. Framework Convention on Climate Change on January 5, 1993. The project is consistent with the GEF Operational Strategy for climate change, where one of the priorities identified is to remove the barriers to energy conservation and energy efficiency (Operational Program #5). The project will seek to overcome information barriers among enterprises for undertaking energy efficiency investments, and reduce risks, transactions costs, institutional barriers, and financing difficulties through the establishment of new financing mechanisms.

NATIONAL LEVEL SUPPORT

14. A Climate Change Coordination Group, an interagency committee of five leading governmental departments, was created in February 1990 and charged with overall policy formulation on the greenhouse gas issue. A GHG abatement strategy for China was completed in 1994-95 by the National Environmental Protection Agency (NEPA) of China, the State Planning Commission (SPC), the World Bank, and UNDP, with GEF pilot-phase support, and involved a comprehensive analysis of a full range of abatement options and their relative costs and benefits. Energy conservation was identified in the study as the top priority for cost-effective GHG abatement over the next two decades in China.

15. Building on the GHG abatement strategy, discussions were held with SETC in December 1995, at which time the project concept for the Energy Conservation Project was agreed upon. The SETC and Provincial Governments will be responsible for project preparation, assisted by other agencies, research units, and by experts selected by the SETC to form a Project Management Office (PMO). Under the guidance of the SETC, most of the detailed implementation work will be undertaken by the Provincial Economic Commissions (PECs) of participating provinces or municipalities, and by the pilot Energy Management Companies. The GEF focal point in China has requested assistance for preparation and implementation of the Energy Conservation Project.

JUSTIFICATION FOR PDF GRANT

16. Given the lack of familiarity and supporting framework for market-oriented energy conservation information programs and ESCO-type companies in China, significant up-front technical assistance and preparation activities are needed for the proposed GEF/IBRD China Energy Conservation Project. The project preparation activities outlined here are critical to the viability of the project, and will also speed implementation once the project is appraised.

ITEMS TO BE FINANCED

17. The total cost of the GEF project preparation activities is calculated at US\$1,400,000 of which the GEF is requested to finance about half. Additional World Bank funds of at least \$300,000 would be provided for pre-appraisal, appraisal, and negotiation. Full disbursement of **Part 1 Preparation** (first PDF grant) is expected by end-November 1996. **Part 2 Preparation** funds (second PDF grant) would finance:

- (a) Technical assistance for the finalization of work and TA under the Information and Dissemination Component.
- (b) International and domestic experts to provide technical assistance for the EMC component, including TA for: (a) feasibility studies for the pilot demonstration projects; (b) financial forecasts for the EMCs; (c) contract and verification procedures for the pilot projects; (d) procurement, and; (e) company structure and staffing requirement assessments.
- (c) Domestic consultants for assistance in estimating project incremental costs.

COST TABLES

PDF Activities (US\$)			
Activity	GEF	GOC	TOTAL
Final Project Preparation	325,000	269,000	594,000
Training and workshops	25,000	107,000	132,000
TOTAL	350,000	376,000	726,000

Expense Categories			
	GEF	GOC	TOTAL
International Consultants	235,000	0	235,000
Domestic Experts	75,000	184,000	259,000
Office Logistics	15,000	85,000	100,000
Training, material, workshops, and publications.	25,000	107,000	132,000
TOTAL	350,000	376,000	726,000

PDF OUTPUTS

18. The requested PDF will be used for final preparation of the proposed GEF project. Specific outputs of this PDF will be:

- (a) Final preparation of the Information and Dissemination Component of the GEF/IBRD China Energy Conservation Project;
- (b) Final preparation of the EMC Component of the project, including feasibility studies for the pilot demonstration projects and preparation of procurement documents;
- (c) A full financing plan for the project, including financing sources and mechanisms; and
- (d) Delineation of the incremental costs of the project.

EXPECTED DATE OF PDF COMPLETION

19. This PDF will finance the balance of project preparation activities (through appraisal) for the GEF component of the GEF/IBRD China Energy Conservation Project. The project is expected to be submitted to the GEF Council in May 1997, clearing the way for appraisal in mid-1997. Procurement TA will be ongoing through appraisal and negotiation.

Todd M. Johnson
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