



Project Data Sheet

Project 42058-012

Project Name	Utilization of Foreign Capital to Promote Energy Conservation and Energy-Efficient Power Generation Scheduling		
Project Number	42058-012		
Country / Economy	China, People's Republic of		
Project Status	Closed		
Project Type / Modality of Assistance	Technical Assistance		
Source of Funding / Amount	TA 7202-PRC: Utilization of Foreign Capital to Promote Energy Conservation and Energy-Efficient Power Generation Scheduling		
	Technical Assistance Special Fund		US\$ 600,000.00
	Climate Change Fund		US\$ 900,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth		
Drivers of Change	Governance and capacity development		
Sector / Subsector	Energy / Energy efficiency and conservation		
Gender	No gender elements		
Description	Impact will be resource conservation and environment improvement in the People's Republic of China The expected outcome of the TA will be a reduction in carbon dioxide emissions in the People's Republic of China. The outputs will be a priority list of energy efficiency and renewable energy project proposals for external assistance, and adoption of the environment friendly generation scheduling by regional power grids.		

Energy Sector Development and Energy Efficiency: The People's Republic of China (PRC) possesses Asia's largest and fastest growing energy sector. While energy fuels economic growth and poverty reduction, inefficient energy uses induce accelerated resource depletion and impose severe environmental damage. It would be the poor who will suffer first and most. There exist daunting challenges to ensure that the ongoing energy growth trajectory be both environmentally sustainable and economically desirable. With a strong political commitment toward improving energy conservation and addressing negative impact of global climate change, the PRC Government has articulated a clear vision as reflected in its target of quadrupling the per-capita gross domestic product (GDP) while only doubling the energy uses during the period 2000-2020. This requires that the energy elasticity of GDP growth be maintained around 0.3 over the next 12 years. To meet this serious challenge, the PRC has put energy efficiency (EE) improvement as its highest priority for the energy sector. The National Development and Reform Commission (NDRC) issued a Medium- and Long-Term Energy Conservation Plan in January 2005. The 11th Five-Year Development Plan requires a mandatory 20% energy intensity reduction by 2010, which has been allocated to the provincial and municipal levels. Ten key areas for energy savings have been identified, and 1,000 enterprises with intensive energy uses are now under tight supervision for EE enhancement. Meanwhile, a series of incentives, including tax privileges, have been adopted to stimulate energy conservation activities. Structural adjustment, technological upgrading, improved demand-side management, and decommissioning of inefficient facilities (e.g., small and old thermal power plants) have been actively pursued.

Electricity Generation in the PRC: The PRC has been rapidly expanding its electricity generation capacities to support fast economic growth and massive urbanization. During the 10th Five-Year Plan period (2001-2005), the PRC's annual GDP growth averaged about 10%, while the annual power generation growth averaged about 13%. By the end of 2007, the total installed generating capacity in the PRC reached 718 gigawatt (GW), of which 556 GW (77.4%) was coal-fired. The high use of coal for electricity generation (about 1.4 billion ton in 2007), which is the highest in the world, leads to severe pollution and vast greenhouse gas (GHG) emissions, accounting for about 40% of the country's carbon dioxide (CO₂) emission, 55% of sulfur dioxide (SO₂) emission, 80% of nitrogen oxide emission, and 23% of particulate emission. Because of a large stock of smaller and older designed power plants, coal-fired electricity generation in the PRC has a relative low efficiency; average coal consumption for each kilowatt-hour of electricity generated, which was 356 grams (g) of standard coal equivalent in 2007 and is about 60 g higher than that in industrialized countries. Since the newly installed coal-based generation units (CGUs) generally have a capacity of 300 megawatt or more and have better control systems, their design efficiency is comparable to international practice. Their utilization has to be maximized to reduce coal consumption and pollution emissions. Currently, approximately 30% of CGUs are of smaller capacity, and the Government has decided to shut down the very old plants with aggregate capacity of 50 GW by 2010.

Needs to Optimize Power Generation Scheduling and Dispatch System in PRC: The current power generation scheduling and dispatch system (GS&DS) in the PRC allows about the same utilization hours to large-efficient and small-inefficient CGUs, resulting in energy waste and excessive emissions. Furthermore, the average annual utilization of CGUs was only 5,344 hours (61%) in 2007, which is considerably lower than the 90% availability of new CGUs, implying large potentials for utilization improvement. NDRC has taken an initiative to develop and implement a new energy-efficient and environmentally friendly GS&DS that maximizes the use of renewable energy (RE) and ranks CGUs according to their marginal fuel uses, in order to significantly reduce coal consumption and GHG emissions. The guideline for pilot implementation of the new GS&DS was approved by the State Council in August 2007. Five provinces, namely, Guangdong, Guizhou, Henan, Jiangsu, and Sichuan, started testing the new GS&DS in end of 2007.

There are urgent needs to remove market distortions and to intensify sector reforms, since current energy pricing and management schemes do not appropriately reflect resource scarcity and environmental externalities. International practices show that a properly designed electricity market, coupled with penalties for pollution and taxes on fossil fuels, sends right signals for investing in energy conservation and emission abatement technologies. However, basic environmental monitoring and evaluation systems (e.g., SO₂ emissions trading system) are still at a pilot stage in the PRC and will require considerable investment and time before they can yield sufficient results. In the absence of such complementary measures, a competitive electricity market based on just price bidding generally gives the old and nearly fully-depreciated CGUs cost advantages and further aggravate environmental problems.

Consistency with ADB's Strategies: Asian Development Bank's (ADB's) operational strategy aims at inclusive economic growth in an efficient, equitable, and sustainable manner. In its Long-Term Strategic Framework II (2008-2020), ADB has identified energy as a core operational sector and achieving environmental sustainability as a strategic priority. ADB has also introduced new initiatives (e.g., the Energy Efficiency Initiative [EEI] and the Carbon Market Initiative [CMI]), and adopted new and more client-oriented operational modalities (e.g., multitranche financing facility and non-sovereign operations) to reinforce its assistance to its developing member countries to acquire low-carbon technologies and to implement EE projects. ADB's Country Partnership Strategy for the PRC has also emphasized on balanced and sustainable growth with more efficient uses of resources and more stringent protection of environment. The PRC's 11th Five-Year Development Plan specifically requires financial assistance from international financial institutions (IFI) to be used for resource conservation, environmental protection and infrastructure development. The provincial governments in the provinces to be selected for pilot implementation have satisfactory track records of project implementation, but they lack the capacity to initiate innovative EE projects for IFI financing and to significantly improve development impacts through adjusting and optimizing project designs. Their institutional capacity needs to be further strengthened so that more EE projects can be planned and implemented to achieve the goals of the Government on sustainable socioeconomic growth, environmental protection, and mitigation of global warming and climate change. Apparently, there exists strong and clear consistency between the PRC and ADB priorities and strategies in the energy sector. The proposed technical assistance (TA) will delineate concrete measures to further strengthen this strategic linkage and contribute toward sustainable poverty alleviation.

Impact	<p>The impact of Part A will be energy conservation and pollution reduction in the PRC's energy-intensive industries.</p> <p>The impact of Part B will be improvement of resource conservation and emission reduction in PRC's power sector.</p>
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Project Outcome

Description of Outcome	<p>The outcome of Part A will be enhanced institutional capacity on planning, financing, and implementing energy efficiency projects.</p> <p>The outcome of Part B will be a new energy-efficient and environment-friendly power generation scheduling and dispatch system (GS&DS) that has been well designed and piloted in selected power grids.</p>
Progress Toward Outcome	<p>Part A: Major activities were completed by September 2011 without any change in scope and institutional arrangement. Field survey were conducted in Kunming, Lanzhou, Guangzhou, Taiyuan, and Jinan to review suitable approaches and policy study to promote development of Energy Service Company (ESCO) in industrial parks, SMEs, large industrial enterprises, and manufacturers of Energy Conservation and Pollution Reduction equipment.</p> <p>Part B: Major activities were successfully completed by December 2011 without any change in scope and institutional arrangement. Field survey were conducted in five pilot provinces: Guizhou, Guangdong, Jiangsu, Sichuan and Henan. Workshops and seminars have been conducted to discuss the TA findings.</p>

Implementation Progress

Description of Project Outputs	<p>Part A: The following are expected to be delivered: (i) practical policy recommendations (in the form of Policy Briefs) are formulated to support the Government's EE strategies; (ii) innovative financing and implementation mechanisms and risk evaluation and management instruments for EE projects are structured; (iii) supports are provided to institutions and agencies in the energy conservation market, including domestic ESCOs, banks interested in financing EE projects, and other relevant entities providing legal, technological and financial services for energy conservation; (iv) training programs and other capacity building supports (including a study-tour to learn and share international experience) are provided at the national and provincial levels; and (v) three initial project concepts on EE improvement are developed.</p> <p>Part B: The following are expected to be delivered: (i) draft guidelines and operational manuals for the new GS&DS; (ii) analysis of the effects of the new GS&DS on the ongoing electricity reform and establishment of a competitive electricity market; (iii) efficiency analysis of coal-fired power generation and recommendations to promote low-carbon power generation; (iv) policy recommendations for wholesale electricity tariff reform in the grids piloting the new GS&DS; and (v) capacity development and information sharing among national and provincial officials.</p>
Status of Implementation Progress (Outputs, Activities, and Issues)	<p>Part A: The TA addressed all original output targets in DMF. The final report recommends wide range of energy efficiency policy and financing mechanism to attain energy efficiency target under the 12th Five Year Plan (2011-2015).</p> <p>Part B: The TA achieved its designed targets. The new GS & DS has achieved remarkable results in pilot provinces. The final report summarized lessons learned in pilot provinces, and provided many constructive policy suggestions on the ongoing electricity reform and also promotion of low carbon electricity generation in the PRC.</p>
Geographical Location	

Summary of Environmental and Social Aspects

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

Stakeholder Communication, Participation, and Consultation

During Project Design	General consultations were conducted with the National Development and Reform Commission, the Ministry of Finance, the National Energy Administration, and other relevant governmental and research institutions on the scope, outcome, and implementation mechanism of the TA.
During Project Implementation	Meetings among the executing agencies, implementing agencies, ADB, and consultants were held periodically to provide guidance to the consultants. Workshops and seminars were conducted to collect comments on consultants' reports and also disseminate main findings of the TA.

Business Opportunities

Consulting Services	The TA will be carried out by a team of consultants with excellent knowledge and professional networks on energy efficiency and emission reduction in the PRC, as well as expertise and experience in (i) institutional, economic, technical, financial, and environmental analyses; (ii) impact evaluation and monitoring; and (iii) enhancement of local institutional capacities.
Responsible ADB Officer	Yang, Hongliang
Responsible ADB Department	East Asia Department
Responsible ADB Division	Energy Division, EARD
Executing Agencies	<i>National Development and Reform Commission Fang, Wei, Project Officer No. 38 South Yuetan St. Beijing 100824 China National Development and Reform Commission For Part A: Baoshan FENG fengbs@ndrc.gov.cn No. 8 South Yuetan St., Beijing 100824 P.R.C. National Energy Administration Mr. Zhao Yinong zhaoyinong@sina.com 38 Yuetan Nanjie, Beijing, 100824 National Energy Administration Part B: Mr. Zhao Yi Nong zhaoyinong@sina.com 38 Yuetan Nanjie, Beijing 100824, PRC</i>

Timetable

Concept Clearance	25 Sep 2008
Fact Finding	05 Oct 2008 to 12 Oct 2008
MRM	-
Approval	11 Dec 2008

Last Review Mission -

PDS Creation Date 26 Sep 2008

Last PDS Update 14 Dec 2011

TA 7202-PRC

Milestones

Approval	Signing Date	Effectivity Date	Closing	Revised	Actual
			Original		
11 Dec 2008	13 Apr 2009	13 Apr 2009	31 Aug 2010	31 Dec 2011	18 May 2012

Financing Plan/TA Utilization							Cumulative Disbursements	
ADB	Cofinancing	Counterpart		Project Sponsor	Others	Total	Date	Amount
		Gov	Beneficiaries					
1,500,000.00	0.00	500,000.00	0.00	0.00	0.00	2,000,000.00	17 Jun 2022	1,281,171.74

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