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PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$200 MILLION

AND A

PROPOSED GRANT FROM THE

GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US$13.5 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

IN SUPPORT OF THE

ENERGY EFFICIENCY FINANCING PROJECT

April 21, 2008

Transport, Energy and Mining Sector Unit
Sustainable Development Department
East Asia and Pacific Region

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CHINA

ENERGY EFFICIENCY FINANCING PROJECT

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I. STRATEGIC CONTEXT AND RATIONALE

A. Country and Sector Issues

1. China is the second largest energy user and emitter of greenhouse gases (GHGs) in the world. Energy consumption in China has increased 6.0 percent annually between 1990 and 2007 – more than three times faster than the world's average annual growth, rising from 990 million tons of coal equivalent (Mtce) in 1990 to 2,650 Mtce in 2007. Despite the high growth, China's per capita energy consumption is still less than one fifth of the average for the Organization for Economic Cooperation and Development (OECD). If left unchecked, China's energy consumption, primarily met by coal, will accelerate the country's significant contribution to the deterioration of local air quality and the increase of GHG emissions. Improving energy efficiency holds one of the keys to sustaining China's economic growth with reduced energy needs and lessened local and global environmental impacts.

2. China's energy efficiency lags far behind the world's most efficient economies, especially in manufacturing industries. Its energy-intensive manufacturing industries, accounting for about 50 percent of total final energy consumption, operate at significantly higher levels of energy intensity (energy use per unit of physical output) than international best practices. The significant potential for improving energy efficiency and reducing GHG emissions is largely untapped in these industries.

3. The Government of China (GOC) has stepped up its efforts to improve energy efficiency. In November 2004, the National Development and Reform Commission (NDRC) issued the nation's first Medium and Long Term Energy Conservation Plan (2005 to 2010 and 2020), which highlighted 10 energy conservation programs targeting the country's major energy-consuming sectors. In the nation's Eleventh Five-Year Plan (FYP) (2006-2010) for Economic and Social Development, endorsed by the People's Congress in March 2006, the GOC pledged to reduce the energy intensity of gross domestic product (GDP) by 20 percent from 2005 to 2010, which is estimated to result in avoided energy consumption of over 560 Mtce annually by 2010. The NDRC launched the "1000 Large Industrial Enterprises Energy Conservation Action Plan" in April 2006, targeting the top 1,008 largest industrial energy consumers, which account for approximately 30 percent of China's total primary energy consumption. The government efforts also include policy initiatives to foster technology development and deployment, and various fiscal incentives to improve energy efficiency.

4. The estimated energy conservation investments needed to achieve the 20 percent energy efficiency target surpass US$50 billion—most of them in the industrial sectors.[1] Although Chinese experts agree that the majority of the identified industrial energy conservation investments are financially viable, most of the concerned enterprises would rather invest in business expansion than energy conservation. The domestic banking sector has not stepped in to provide the required financing either, especially for medium and large-sized energy conservation investment projects. In 2006, the first year of the 11th FYP, the energy intensity of GDP did not decline as planned. This has increased the urgency to accelerate government efforts to promote industrial energy conservation investments.

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[1] Chen Hongwei, November 23, 2006. *Economic Daily.*

5. The existing industrial energy conservation financing mechanisms in China have mainly benefited relatively small projects. The Bank's First and Second China Energy Conservation Projects, funded by International Bank for Reconstruction and Development (IBRD) and the Global Environment Facility (GEF), have been credited for the development of China's energy services industry. The energy management companies (EMCs)[2] supported by the two projects made US$280 million worth of energy conservation investments in 2006, many of them in the industrial sector. However, few of the EMC investments exceeded US$5 million. Another ongoing project, the International Finance Corporation (IFC)/GEF China Utility-Based Energy Efficiency Project (CHUEE), also supports small-scale industrial energy conservation investments. It promotes the installation of more energy-efficient equipments with commercial bank financing backed by a guarantee facility.

6. There is a large financing gap for medium and large-sized energy conservation investments in the industrial sector, which normally cost US$5–25 million per project. Given the economic and financial attractiveness of such projects, the GOC has gradually eliminated public funds earmarked for industrial energy conservation project financing since late 1990s, expecting Chinese enterprises to invest their own resources and banks to build energy conservation lending business lines. This expectation has not materialized. There are three key barriers which have impeded the development of the lending market for medium and large-sized industrial energy conservation investments, despite its large potential. They include:

(a) ***Perceived high technical and financial risks of energy conservation investments among industrial enterprises.*** Compared with small industrial energy conservation projects, which often involve simple replacements or upgrades of equipment and have very short payback periods (one to two years), medium and large-sized projects typically are technically more complex and require longer payback periods. In addition, larger energy conservation projects generally impose business interruptions, resulting in losses of production and revenues, which in turn increase overall project cost. These characteristics lead to the perception that energy conservation projects are technically risky and financially unattractive, especially when compared with capacity expansion investments. The high risk perception among industrial enterprises is primarily caused by a lack of familiarity with the range of energy conservation technologies and processes, and energy conservation investment best practices, as well as the under-appreciation of financial benefits from energy conservation investments.

(b) ***Perceived high financial risks of industrial energy conservation lending among Chinese banks.*** Interest in developing and implementing industrial energy conservation projects has been further dampened by the lack of available debt financing for such projects. Chinese banks have considered lending for energy conservation projects to be risky, in part, for the reasons mentioned above. Additionally, compared to production expansion projects, energy conservation projects usually do not directly generate additional revenues as usually expected by lending agencies, but rather contribute to a reduction in energy expenditures. The risk perception among Chinese banks has been

[2] EMCs are the Chinese equivalent of energy service companies (ESCOs) in North America. These companies finance energy efficiency projects of the clients and share the benefits of the energy savings with the clients based on the performance of the energy efficiency project. This mechanism is also referred as performance contracting.