

# Barrier Removal for the Widespread Commercialization of Energy-efficient CFC-free Refrigerators

## The Challenge

From 1980 to 1995, residential power use rose from 3% to 12% of the total electricity consumption in China. This growth has been driven by an explosive increase in household appliance use in which refrigerators account for approximately half of all electricity consumption in urban households. Production of household refrigerators in China has doubled since 1990, rising from 4.63 million units in 1990 to 9.28 million in 1996, making China the country with the second highest number of refrigerators in the world.

The refrigerators produced in China over the next decade will require an additional 601 billion kWh of energy during their expected lifetimes, equivalent to an annual average of 60 million tons of additional CO<sub>2</sub> emissions. The increase of production levels will require higher energy consumption and will result in correspondingly higher CO<sub>2</sub> emissions.

## The Response

Supported by Global Environment Facility (GEF), the project has improved energy efficiency and reduced GHG emissions by removing barriers to the widespread commercialization of energy-efficient refrigerators.

It successfully combined elements of “technology push” by providing a combination of training, technical resources and financial incentives to induce refrigerator manufacturers to increase the efficiency of the household refrigerators they produce; and “market pull” by preparing and developing the consumer market through a combination of standards, labeling, an information campaign, to accept and purchase in quantity the energy-efficient refrigerators produced.

UNDP’s partners on this project included the State Environmental Protection Administration, United Nations Department of Economic and Social Affairs, 16 refrigerator manufacturers and 10 compressors manufacturers. The participating manufacturers produced 70% of refrigerators and compressors in China.

## Achievements

- An increase of nearly 29% in the weighted-average efficiency of household refrigerators produced in China between 1999 and 2005, as well as impressive improvements in refrigeration compressor efficiency.
- Reduction of 11 million tonnes of CO<sub>2</sub> emissions by 2005, and will result in a total of 42 million tonnes of CO<sub>2</sub> emission reduction by 2010.
- Cumulative CO<sub>2</sub> emissions reduction over the life of the project total 170 million tonnes of CO<sub>2</sub> for refrigerators produced through 2005 and 630 million tonnes of CO<sub>2</sub> for refrigerators produced through 2010 will be reduced.
- Successful implementation of an award winning public awareness campaign on energy efficient refrigerators.

## At A Glance

Start Date: July 1999  
End Date: December 2006  
Implementing Partner(s): State Environmental Protection Administration  
Project ID: 00012108

UNDAF Goal: Outcome 3 – More efficient management of natural resources and development of environmentally-friendly behavior to ensure environmental sustainability  
MDG: Target 9, Goal – Ensure environmental sustainability

CPAP Outcome 6 – End-use energy efficiency and application of new and renewable energy technologies improved.

Website: N/A

Total Budget:	US\$	40,706,500
UNDP (GEF):	US\$	9,617,000
Government:	US\$	1,370,000
Private Sector:	US\$	29,719,500

To contribute to this initiative, or to find out more about the programme, please visit our website or contact Mr. He Ping, Programme Manager at (86-10) 8532 0800 or ping.he@undp.org

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