

Asia Alternative Energy Program



China

Developing a Green Electricity Scheme for Shanghai

“Better city, better life” is the Shanghai municipality slogan in a campaign to promote its image as an environmentally conscientious and responsible city. One of the ways this busy hub decided to show its commitment to a less polluted city life is by becoming the first developing country city in the world to offer “Green Electricity.”

Green electricity is a product that consumers pay on a voluntary basis, usually at a premium, if part or all of this electricity is produced from renewable resources such as wind and solar. This way, Green Electricity consumers help overcome the incremental cost of renewable electricity generation and promote implementation of renewable electricity projects.

Genesis of the Project

In 2001, the China Renewable Energy Scale-up Project (CRESP) team proposed to introduce such a green electricity concept in China to complement work on the introduction of a legal obligation to produce, distribute or consume a certain amount of renewable electricity. In 2003, this led the Shanghai Economic Commission to request World Bank support in designing and introducing a practical green electricity scheme for the city of Shanghai.

The World Bank established the Asia Alternative Energy Program (ASTAE) in January 1992. ASTAE's goal is to incorporate access to energy, energy conservation and renewable energy options in the design of energy strategies and in lending operations for all the Bank's borrowers in the Asia region. ASTAE also supports the design and implements training in energy efficiency and renewable energy options to help formulate alternative energy policies and strengthen institutional capabilities, collaborate with donor agencies, and mobilize technical assistance funds in support of its work program. Find our reports at: www.worldbank.org/astae.

ASTAE and ESMAP joined forces to provide the requested support, and ASTAE decided to develop this project as one of its "Flagship" activities. The Shanghai Green Electricity Scheme was developed over 2004, formally launched in 2005, and was formally called and branded "Jade Electricity".

How the Scheme Will Deliver

The program will initially support wind and PV electricity only. Green electricity will be available to households, industries and commercial customers, although initially the focus will be on large non-household consumers. The approach adopted by Shanghai was to start small and to let the scheme develop and grow with increasing demand and increasing availability of renewable electricity. This means that the scheme will remain small for some time but may become very substantial over time.



To qualify as a Green Electricity user, customers must buy by yearly blocks of green electricity delivery. The size and number of blocks is set to depend on each consumer's total electricity consumption. For example households must buy blocks of 12 kWh per year with a minimum of 10 blocks; larger customers must buy blocks of 6



MWh with a number of blocks depending on their relative sizes. The incremental cost of green electricity has initially been set at 0.53 Yuan/kWh (about 6.5 US cents/kWh in 2005). To date, 14 industries and institutions signed contracts for a duration of 1-3 years amounting to a total of 6.54 GWh of “Jade Electricity” per year.

While the premium to be paid may seem considerable in value, renewable electricity represents only a small part of total electricity consumption; hence the impact on the customer electricity bill remains limited. Shanghai annual electricity consumption will soon surpass 100 TWh per year to be compared with the current green electricity consumption of 6.54 GWh per year (less than 0.01%). This nonetheless covers for the whole electricity generated by the existing 3.4 MW Feng Xian windfarm and its 10 kWp grid connected PV system, which until 2005, were the only renewable electricity resources available to the Shanghai Municipality.

In 2005 the World Bank financed the Chong Ming and Nan Hui windfarms, with a total capacity of 21 MW, which recently became operational and will generate power to be added to the green electricity purchasable. This will bring the total available generation to 53.4 GWh per year.

A Best Practice Report

In the process of developing the Shanghai scheme, a number of reports have been prepared. To ensure that such an experience in developing a green electricity scheme be available for other cities and countries, ESMAP and ASTAE decided to prepare a summary report to document this experience: *"Developing a Green Electricity Scheme for Shanghai"*.

The report consists of two parts: part one presents the best international practices and part two discusses the making of the Shanghai green electricity scheme. The report is intended to be a reference guide for developing green electricity schemes and discusses in-depth the different options and their advantages and disadvantages. Available mid-2006 as an ESMAP Report.



What Support was Provided

ASTAE took the lead in providing World Bank support to the Shanghai Economic Commission to develop and introduce a Green Electricity Scheme. World Bank support, which supplemented municipal government resources, totaled about US\$ 250,000. This was provided by ASTAE (US\$200,000) and ESMAP (US\$50,000). At a later stage also the World Wildlife Fund (WWF) and the Energy Foundation (EF) also joined to provide assistance. ASTAE and ESMAP used a proven concept in which ESMAP funded project identification, reporting and dissemination of results and ASTAE funded project preparation and implementation support.

Resources were used to provide access to international expertise and experience. International experts provided advice, both hands-on and in the form of project reports on specific issues. A policy study tour to Finland, Sweden and Germany for senior Shanghai officials provided information on issues and options of designing and introducing a green electricity scheme and helped to make an informed decision whether or not to adopt a similar this approach in Shanghai. Implementation Training in Finland, the Netherlands and Canada helped with the actual design of the scheme. ASTAE resources were also used to organize the marketing campaign, prepare promotion materials and establish and operate the Shanghai Green Electricity internet site. In addition ASTAE provided overall support through the ASTAE program based consultant and a national renewable energy policy expert.