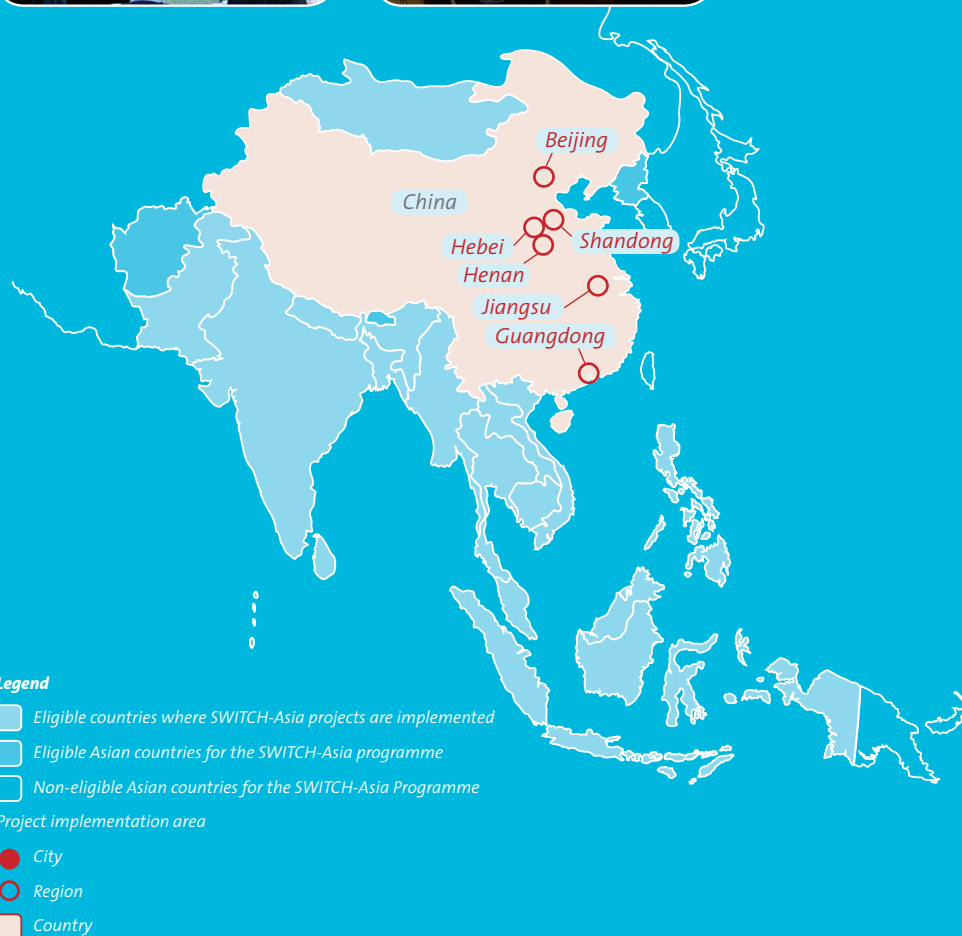




PROJECT PROGRESS SHEET

CHINA HIGHER EFFICIENCY POWER AND DISTRIBUTION TRANSFORMERS PROMOTION PROJECT



The boundaries shown on this map do not imply on the part of the European Union any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.



**BRIEF PROJECT
DESCRIPTION**

The SWITCH-Asia *China Higher Efficiency Power and Distribution Transformers Promotion Project* seeks to increase the market penetration of higher efficiency transformers (S11 and above) and increase the market share of higher efficiency transformers in China. The action therefore seeks to create awareness among end-users (power transmission and distribution utilities and energy-intensive industries) on the need to change their procurement policies in favour of higher efficiency transformers, and also to increase the awareness and build capacity of SMEs on the Eco-design of transformers. In order to achieve its goals, over the next three years the higher efficiency transformer promotion project will further upgrade the national Energy Efficiency Standards, promote the Life Cycle Assessment concept for transformers and develop an education platform with market intelligence for end users. The project has been being implemented by the International Copper Association China (ICA) in collaboration with the China National Institute of Standardization (CNIS), the China Electrical Equipment Industrial Association (CEEIA), the China Electricity Council (CEC), and Action Sustainable Development (ASD-France).

In the first year of the efficient transformer project (2010), we successfully organized a kick-off conference in March of 2010 which had in attendance about 150 people from the government, power utilities, manufacturers, end users and related organizations. Under the efficient management by the coordinator of ICA, we also performed the following:

- Established project management team with partners in January of 2010;
- Developed a project website which includes information of the project implement and the latest market information which is updated daily;
- Disseminated over 500 project brochures at the kick-off conference and related audiences;
- Launched three national standards for the energy efficiency of distribution transformers, eco-design guidelines for power transformers and life cycling assessment for higher efficiency transformer procurements. In these three standards, LCC evaluation for higher efficiency transformer procurement and Eco-design standard were included and the two draft standards were submitted to the government for final approval.
- Other activities such as the preparation of training materials, tool development, and workshops are being undertaken on an on-going basis.

PROJECT PARTNERS

International Copper Association Ltd., China (ICA China), China National Institute of Standardization (CNIS), China Electrical Equipment Industry Association (CEEIA), China Electricity Council (CEC), Action Sustainable Development (ASD)

PROJECT WEBSITE

<http://www.efficienttransformer.org>

PROJECT ABBREVIATION

Efficient Transformers

PROJECT DURATION

December 2009 - December 2012



TARGET GROUPS

- Small and Medium sized transformer manufacturers will progressively expand their product portfolio of transformers as they develop higher efficiency transformers based on LCC& Eco-design guidelines and EE standard (MEPS) to avoid unfair competition by low quality equipments which were below specifications and standards. As a result, they will meet the expected increase in demand for higher efficiency transformers and contribute to the market transformation that will be initiated by the Action.
- End-users of power transmission and distribution utilities and energy-intensive industries from 5 select provinces which are the leading energy consumers in China and have the desire to reduce their energy consumption and electricity cost through the use of higher efficiency transformers through the replacement of older and less efficient ones.
- Energy Conservation and Supervision Centers which have been established by local governments with the objectives of coordinating, facilitating and monitoring the implementation of China's central and local governments' policies on energy efficiency and conservation. Therefore they are in a strategic position to participate in the project's efforts to create awareness and build capacity among end-users on higher efficiency transformers.
- Governments including Standardization Administration of China (SAC) and National Development and Reform Council (NDRC) who are responsible for undertaking unified management, supervision and overall coordination of standardization and energy saving through higher efficiency equipment and technologies in China. The China National Institute of Standardization (CNIS) who is in charge of standard making and reports to the SAC& NDRC and is involved in the project for MPES development and higher efficiency transformer labelling program promotion.

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OUTPUTS UNTIL DECEMBER 2010 TO BE SHARED WITH WIDER AUDIENCE

Policy suggestions

The partners prepared the draft version of the standards through desktop research (collaborative work) and meetings with key stakeholders. Regarding the Guide for Determining Energy Efficiency for Distribution Transformers, it has been prepared, discussed and finalized, and has already submitted to the NDRC to get official approval.

Based on these standards described in the guide, the project has been preparing the software applying LCA. The project has conducted Eco-design and life cycle cost (LCC) analysis for higher efficiency transformers.



Materials can be downloaded from the website

- Promoting energy-saving transformer project brochures
- SWITCH-Asia project kick-off meeting data sets
- Industrial and residential power distribution design manual – calculation software
- Technical and economic evaluation program on energy efficiency of distribution transformer
- China transformers market survey

RESULTS ACHIEVED TILL JANUARY 2011

Due to excellent cooperation between partners, the project was launched in the beginning of 2010 and most activities for target groups are now on schedule.

The project established close partnerships among the policy makers, institutes, manufacturers, end users and energy management and supervision organizations. We aided in transforming the market through the entire supply chain to the energy demand side. Power and distribution transformers are necessary equipment used in power transmission and distribution lines to transport electricity to end-users (industries,

commerce, households). Large energy-intensive industries also use a significant amount of transformers within their facilities. With the current national energy saving policies and national economic development plans for power generation expansion and power grid reconstruction, the need for transformers is escalating. As transformers have an operating lifespan of at least 20 years, it is crucial that high efficiency transformers are included in the design stage, because upgrading is often impossible for economic reasons. In addition, most transformers currently in use are reaching the end of their operational

lifetime. There are therefore important windows of opportunity during the next 5 years for installing high efficiency transformers in China and progressively phasing out the utilization of low efficiency transformers. As indicated, upgrading existing inefficient transformers that are still operational with higher efficiency transformers is not economical as the energy savings generated are not enough to compensate for the investment cost, which in case of replacement will be based on the total purchase price of higher efficiency transformers. However, when it comes to replacing old transformers that reach the end of their life or for new and expansion projects, it is more economical to adopt higher efficiency transformers, because the energy savings are more than enough to cover the incremental cost (price differential between inefficient and higher efficiency transformers) and generate profits.

The project seeks to create awareness among end-users (power transmission and distribution utilities and energy-intensive industries) on the need to change their procurement policies in favour of higher efficiency transformers. It helps to establish a SCP replication mechanism that covers the entire process of transformer manufacturing and procurement by increasing the MEPS standard, Eco-design and LCC guidelines with training materials, tools and website development, wide communications, incentive policy and capacity building of energy management and service business.

The Guide for Determining Energy Efficiency for Distribution Transformers has been submitted to the NDRC Energy Bureau. It is about standards for the power sector, and it will be adopted by all power sectors. The standards can also affect the industry and commerce. When the users buy the transformers they need to consider the standards, because before the transformers is connected to the electricity grid, they need to be approved by the State Grid Corporation of China. The guideline for transformers eco-design has been submitted to Standardization Administration of China. To promote the energy conservation law enforcement officers' understanding on the market of energy-saving transformers, and energy efficiency standards and energy-saving evaluation system, the International Copper Association (China), together with Shandong Province Energy Conservation Supervision Bureau, held an energy training courses in Yantai. Mr. Zhang from International Copper Association (China) introduced the standards and policy to promote the energy-saving transformers, and technical development of the upstream and downstream of transformers industry, as well as the policy trend of the energy efficiency standards for transformers, in order to provide more comprehensive information on energy efficiency transformers. ICA is the coordinator and the project takes leading roles to promote the SCP policies for China higher efficiency power and distribution transformer promotion.

LESSONS LEARNT SO FAR

The strengths of the project are focusing on the policy making which is very helpful to affecting the behaviours of end users' procurement based on the support from China government. At the same time, upgrading the MEPS standard is being enforced which can restrict the use of the low efficient transformers and increase the mar-



ket share of higher efficiency transformers by LCC/Eco-design acceptance on the demand side of the industry with the necessary guidance and incentive policies.

The weakness is that we lack enough budgets to expand the positive effect of our program to the other provinces in China. We try to

visit more local governmental organizations and persuade them to be involved and consider the project in their future daily working plans. In addition, we underestimated the opposition from some transformer manufacturers who are facing price pressure from the constantly increasing material costs at all levels. Thus we should consider the balance between incremental cost and higher efficiency for energy saving. Also we should consider the competitive strength of the

Chinese transformer industry and labour cost to avoid unfair competition from low efficiency transformers, and constantly provide awareness of the benefits shared by the entire supply chain, society and environment.

Finally, we need to enhance our relationship with the government and seek incentive policies for the procurement of higher efficiency transformers and be involved at the DSM promotion.

OUTREACH AND SYNERGIES

To ensure the success of outreach activities (training workshops), the Action builds upon five forces:

1. The network of Energy Conservation and Supervision Centers (ECSC). The organizations are established by local governments with the objectives of coordinating, facilitation and monitoring the implementation of China's central and local governments' policies on energy efficiency and conservation. They hold a strategic position such that they create awareness and build capacity among end-users on higher efficiency transformers. The project conforms to the LCC guidelines, transformers selection tool, provide specifications & standards to ECSCs who will then disseminate them to end-users (multiplier effects).
2. The China Electricity Council (CEC) has a legal right to demand their members (factories or distribution utilities) meet certain performance criteria (safety, energy efficiency). CEC and its members are key organizations with great influence and technical capabilities to promote higher efficiency transformers.
3. China Electrical Equipment Industry Association (CEEIA) is a leader in the transformer manufacturing industry and can increase the demand for eco-design consideration within the procurement process, production and recycling, and highlight their actions and products with the standard.
4. After the end of the project life, it will establish platform and comprehensive evaluation for higher efficiency transformers with LCC/Eco-design idea for power utilities and electricity end users, the achievements including energy efficiency valuation tools and training materials can be transferred to other regions. Also, the platform between higher efficiency transformer manufacturers, end users and policy makers, even the market of higher efficiency transformers are persistent will be fortified.
5. The achievements from the project can be used in conjunction with other energy efficiency promotion projects to contribute to the national energy savings plan.



ADDITIONAL HIGHLIGHTS OF THE PROJECT

In the first year of the project, in addition to the benefits that we had planned on, we also learned from the process and obtained market intelligence. We found how to promote energy efficient transformers, work with the government, manufacturers and end users. These benefits can be shared by everyone and even by end users. Thus, the project is focusing on policy making and attracting support not only from the government, but also from the demand side which is the key driver in the use of higher efficiency transformers.

Low carbon economy and economical development pattern adjustments are the key national plans for China's sustainable development. The project provides economical and efficient evaluation through energy consumption of efficient transformer promotion and highlights the benefits obtained from the cooperation of supply chains and related organizations, knowledge sharing and technological innovation from



Project meeting



Project meeting

higher efficient transformers. It also attracts more funds& financial incentive policies in the energy service market and results in energy savings and efficient resource utilization.

