

IMPACT SHEET • SWITCH-ASIA PROJECT
CHINA MOTOR CHALLENGE

MITIGATING CLIMATE CHANGE BY PROMOTING HIGH-EFFICIENCY PRODUCTS FOR MOTOR SYSTEMS IN CHINA



BY PROMOTING EFFICIENT MOTOR SYSTEMS,
THE PROJECT CHINA MOTOR CHALLENGE IS REDUCING
EMISSIONS BY 1 MILLION TONS CO₂ A YEAR



THE CHALLENGE

Electric motor systems in industrial China account for about 60% of the country's total electricity consumption. Unfortunately, their actual operational efficiency is about 10-30% below international best practice, depending on the industry. As the majority of electricity in China is generated from coal, causing the average amount of CO₂ per kWh to be higher than in developed countries, electric motor systems are a significant contributor to climate change. Certain sectors are particularly intensive users of electric motors but are often unaware of the huge potential savings in energy and the quick return on investment for upgraded motor systems, particularly in small and medium-sized enterprises. The challenge, then, is to raise awareness of the true cost of the motor systems and to raise efficiency as fast as possible.

OBJECTIVE

The SWITCH-Asia project *China Motor Challenge* aims to facilitate over 400 major industrial users of electric motor systems to improve their operating efficiency of their systems and achieve a far-reaching impact in the demand for high-efficiency motor systems, while actively supporting the creation of a stimulating policy environment.

The specific objectives include:

- Reduction in energy consumption and CO₂ emissions
- Transformation of the market to rely on high efficiency electric motors, and motor system components
- Promotion of best practice in the design and application of energy-efficient motor systems
- Promotion of energy service companies and their services
- Increased exports in Chinese goods that meet international standards

ACTIVITIES / STRATEGY

The SWITCH-Asia project *China Motor Challenge* facilitates improvements in the operating efficiency of electric motor systems for major industrial users. It contributes to an increase in the demand and supply for high-efficiency motor systems through the promotion of best practice in design, production and application.



FOCUSING ON THE 'USE' PHASE

Through capacity building workshops, the 'consumers' of motor systems are not only trained about their efficient use but also about how to upgrade their existing systems. The motor systems users are provided with information about energy service companies active in their area and sector, who can supply know-how, equipment and financing to realise the upgrade. Over the three-year duration of the project around 400 major industrial users are expected to improving the operating efficiency of their electric motor systems.



CONCENTRATING ON MARKET DEVELOPMENT

Three hundred producers of motor systems are taking part in workshops dealing with international standards and how to realise and comply with these standards in their companies. This helps them to understand how to adapt their products to international requirements and how to prepare for the upcoming new Chinese energy label for electric motors. Through training and building capacity activities with the energy service companies, the project contributes to further electricity savings by industrial motor system users beyond the immediate reach of the project.

Finally, the project actively supports the improvement of a policy environment conducive to promoting industrial energy efficiency.

TARGET GROUPS

- Users of industrial motor systems, including tens of thousands of large and small industrial companies
- Energy service companies (about 300 are operating in China)
- Manufactures of electric motors and system components with a particular focus on SMEs (about 300 companies)
- Relevant policy-makers responsible for the setting of new standards, labels and supervisory mechanisms: government departments, policy-making bodies and enforcement agencies

SCALING-UP STRATEGY

The project is creating impact by promoting strategic and operational changes in the industry through the development of institutional partnerships among stakeholders in the value chain.

WORKING WITH SERVICE PROVIDERS
 Energy service companies are a new type of service company in China. They typically facilitate 'energy performance contracts'. The service company takes on all up-front costs of an energy audit and subsequent purchase of equipment. It is paid according to the energy savings achieved. This method effectively reduces the risk for the customer. The project focuses on around 80 companies active in delivering services related to energy savings through motor systems upgrades. They are trained on best practices in the design and application of energy-efficient motor systems and how to expand their business models by adding new services.

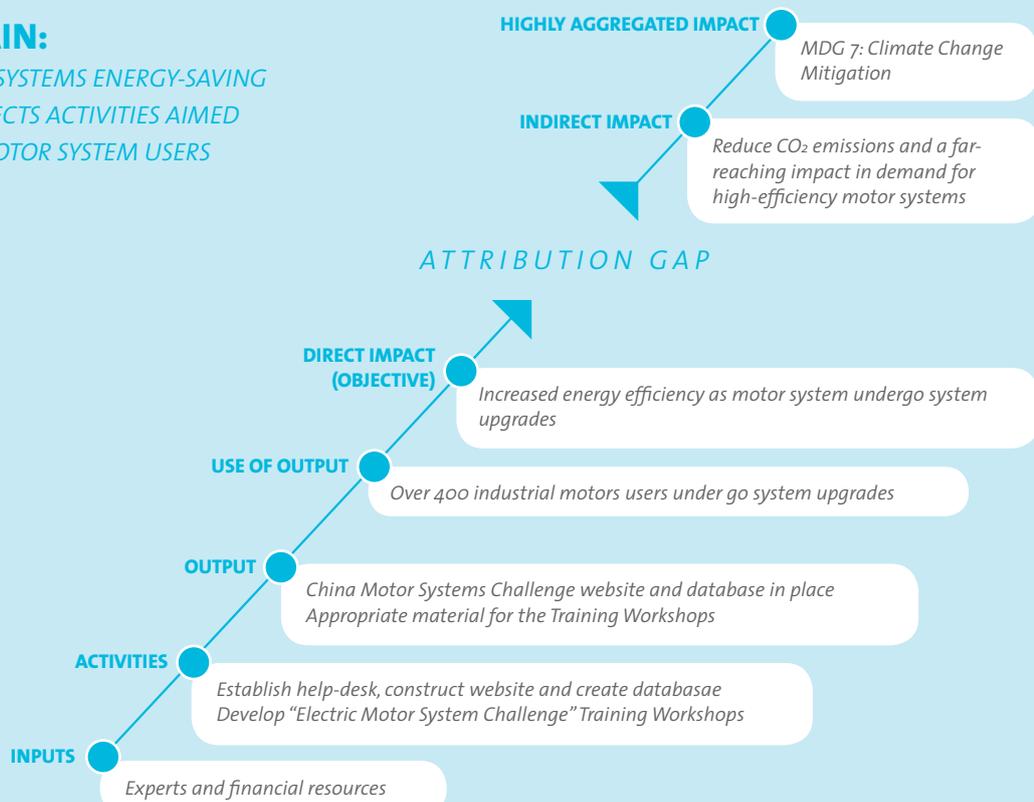
ENGAGING THE SUPPLY CHAIN
 The project establishes a 'China Motor Systems Challenge Club', an information platform connecting users and producers of motor systems, energy

service companies, and public energy administrators. Through the club best practices in the design and application of energy-efficient motor systems are promoted and shared. An annual award ceremony recognises cases where excellent energy-savings have been achieved. It also provides an opportunity for various value chain stakeholders to exchange information and network such as industrial motor users getting to know service companies and making use of their services.

UPDATING POLICIES ON SUSTAINABLE CONSUMPTION AND PRODUCTION
 China's current national energy efficiency standards for electric motors are outdated. The project developed new national standards, based on those of the EU, which will increase minimum efficiency requirements. Such policy efforts have a lasting impact on the market. The new standards will remove out-dated, low-efficiency products from the market. A new label will provide clear and simple information to users enabling them to make better informed decisions when making purchases. A supervisory mechanism will ensure that the efficiency claims on products are genuine.

IMPACT CHAIN:

ELECTRIC MOTOR SYSTEMS ENERGY-SAVING CHALLENGE PROJECTS ACTIVITIES AIMED AT INDUSTRIAL MOTOR SYSTEM USERS



RESULTS

The project *China Motor Challenge* has established a national information platform for Chinese motor system users, energy service companies, electric motor manufacturers and energy-saving administrations, in order to promote motor system upgrades.



REDUCTION OF CO₂ THROUGH MOTOR UPGRADES

More than 1,000 industrial motor system users and 300 energy service companies had taken part in the training workshops by February 2012, with most of them registering as members of the China Motor Challenge Club. Of these members, 400 upgraded their motor systems thus benefitting the environment. In addition to that, almost 300 motor producers have been made aware, through the workshops they attended, of the latest development in international standards and their related regulations.

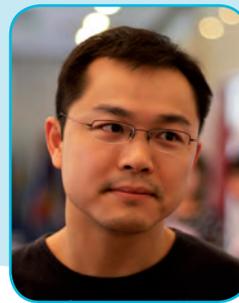


HIGHLY EFFICIENT PRODUCTS OPEN BUSINESS OPPORTUNITIES

The promotion of eco-friendly products provides clear business opportunities for companies producing high efficiency motor system products. Energy service companies benefit from a larger energy-saving service market as the benefits of motor system upgrades are promoted and changes in policy stimulate the demand for high-efficiency products. Raised awareness will stimulate more upgrades: a much larger number of industrial motor system users will continue to upgrade their systems, perhaps being made aware of the benefits by the club members who have already upgraded, the energy service companies, and the media. Some upgrades will be in companies already aware of the benefits but which just need the encouragement or assistance of a project such as *China Motor Challenge* i.e. through the energy service companies, or the awareness of their leaders or decision-makers.



The project involves switching to the consumption of high-efficiency electric motors and motor systems, with a tremendous resulting impact on energy consumption and the environment. It is highly visible, and focuses on the following eligible themes: the development and strengthening of effective marketing strategies for eco-services, strengthening organisational networks and framework conditions for sustainable consumption; encouraging procurement of eco-products; and strengthening the understanding of existing international requirements. It has a long-term impact through its contributions to policy-making, which results in an actual new standard and label, as well as other contributions to the creation of an enabling policy environment.



Zhang Xing,
project manager from CNIS



CONTINUITY OF PROJECT ACHIEVEMENTS

All project structures will remain in place after the end of the project. The lead applicant, China National Institute of Standardisation (CNIS), is in charge of developing and promoting all Chinese energy-efficiency related standards, and the management and promotion of energy-efficiency labels. CNIS will use its own funds to continue to operate the website and databases. The China Motor Systems Challenge Club with its 600 members will continue to have a website with relevant databases, reference material, and technical solutions. Working towards new standards, new labels, new market supervisory mechanisms and other policies are the daily work of CNIS and will continue in the future, funded by government sources.

The project model could also be replicated by other industries or other countries. And the project's policy work could readily be extended to other electric motor system components.

IMPACT IN NUMBERS

<p>ECONOMIC IMPACT</p> 	<ul style="list-style-type: none"> The promotion of eco-friendly products provides clear business opportunities for motor system users
<p>ENVIRONMENTAL IMPACT</p> 	<ul style="list-style-type: none"> 400 major industrial users of electric motor systems improve the operating efficiency. They upgrade an average capacity of 2,100 kW in motor systems each, which run at an average of 6,000 hours per year. <p>ENVIRONMENTAL/TECHNICAL/ECONOMIC RESULTS:</p> <ul style="list-style-type: none"> CO₂ emission reduction (1 million tons per year) Promotion of high-efficiency motor system products Promotion of best practice in the design and application of energy-efficient motor systems
<p>ENGAGEMENT OF TARGET GROUP</p> 	<ul style="list-style-type: none"> On-going China Motor Systems Challenge Club established with a current membership of 600 More than 1,000 industrial motor system users and 264 energy service companies (ESCOs) have taken part in the training workshops 3 large workshops on new standards for motor producers 214 ESCOs registered in the Electric Motors Club 3 large technical trainings for (ESCOs) on motor system upgrades 8 large workshops for motor users to communicate the benefits of upgraded motor systems 3 annual award ceremonies to give recognition to excellent cases of energy savings 11 policy workshops to support the development of the relevant standards of the energy services industry
<p>POLICY LINKAGES</p> 	<p>The policy efforts have a lasting impact on the market, through:</p> <ul style="list-style-type: none"> Updated efficiency standards removing out-dated low-efficiency products from the market New labelling providing clear and simple information to users who will be able to make a more informed buying decision A supervisory mechanism ensuring that the claims of efficiency on the products are genuine



Under technical support from the expert panel of the project, an overall energy-saving update was carried out for the whole air blower and water pump systems of the Tianjin Steel Co., Ltd in September, 2009. By October of that year, a total of 120 energy-saving pieces of equipment had been installed, tested, verified, and officially launched into operation for the electric motor system. This gave an average energy-saving ratio of 37.5%, and accounted for 80% of the total installed capacity of 141 sets. The EU-funded part of the project project was officially completed at the end of 2009 by which time a total installed capacity of 15,316 kW had been reached, and an annual energy consumption equalling 32,661 tons of standard coal had been saved.

Ms. Wang Function: Senior Engineer of Tianjin Steel Co., Ltd (Motor System User)





Legend

- Eligible countries where SWITCH-Asia projects are implemented
- Eligible Asian countries for the SWITCH-Asia programme
- Non-eligible Asian countries for the SWITCH-Asia Programme

Project implementation area

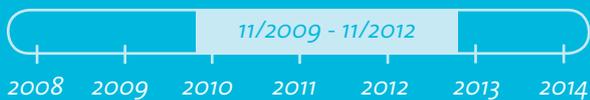
- City
- Region
- Country

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.

OBJECTIVES

The SWITCH-Asia project *China Motor Challenge* aims to facilitate over 400 major industrial users of electric motor systems to improve the operating efficiency of their systems and achieve a far-reaching impact in the demand for high-efficiency motor systems, while actively supporting the creation of a stimulating policy environment.

DURATION



PROJECT TOTAL BUDGET

EUR 1,124,946 (EU Contribution: 80%)

PROJECT CONTACT



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PROJECT CONSORTIUM



China Institute for Standardisation (CNIS)



Association of energy service companies – China Energy Conservation Association (EMCA)



UN Industrial Development Organization – Investment and Technology Promotion Office, China (UNIDO)



Institute of Systems and Robotics – University of Coimbra, Portugal