



TOGETHER
for a sustainable future

OCCASION

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TOGETHER
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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO - China Energy Partnership



INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

UNIDO - China Energy Partnership

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FOREWORD

Energy is a fundamental prerequisite for development and economic growth. However current energy supply and consumption patterns are not environmentally sustainable. In order to decouple industrial development and economic growth from energy consumption and environmental degradation, and at the same time meet the climate change mitigation goals set by the international community, industry needs to substantially increase its energy efficiency and progressively switch from carbon-intensive to low-carbon and low- emission technologies, including renewable sources of energy. While the challenge remains daunting, there are policies, technologies, best practices and other instruments available to industry, policy-makers and the international community to support and enact such goals. The real immediate need and challenge is to globally disseminate and implement existing best available technologies and practices for industrial energy efficiency through knowledge sharing, capacity building, investments and partnerships.

UNIDO sees its role in the energy and climate change field as a catalyst for scaling up investments in clean energy solutions, strengthening policy frameworks to create an enabling environment and to secure funding for increased market penetration of renewable energy, energy efficient and low-carbon technologies that promote sustainable industrial growth. In our endeavor to facilitate sustainable energy solutions, we believe that the role of innovative partnerships is pivotal. Our partners seek to support our efforts in a range of activities – from funding mechanisms to technical expertise. The multi-faceted Energy Programme of UNIDO is presented in this brochure through its three strategic pillars: Industrial Energy Efficiency, Renewable Energy for Productive Uses, Climate Policy and Network.

This brochure presents our collaboration with the Chinese Government as an outstanding example for multi-stakeholder partnerships in all three strategic energy pillars.



A handwritten signature in blue ink, consisting of stylized Chinese characters, positioned above the printed name.

Li Yong
Director General



UNIDO Energy Programme

Sustainable energy is the golden thread that connects economic and social development with an environmental sustainability that allows the world to flourish. Sustainable energy enables and empowers inclusive development; tackling numerous aspects of life, from job creation to economic development, from security concerns to the empowerment of women. Sustainable energy lies at the heart of all countries' core interests.

Changing consumption patterns, growing population, increasing urbanization and varying energy systems present an increasing challenge to climate change while impacting both the energy and industrial sectors. UNIDO's activities in the field of energy and climate change are driven by challenges, opportunities and concerns over energy poverty, energy security, and climate change issues.

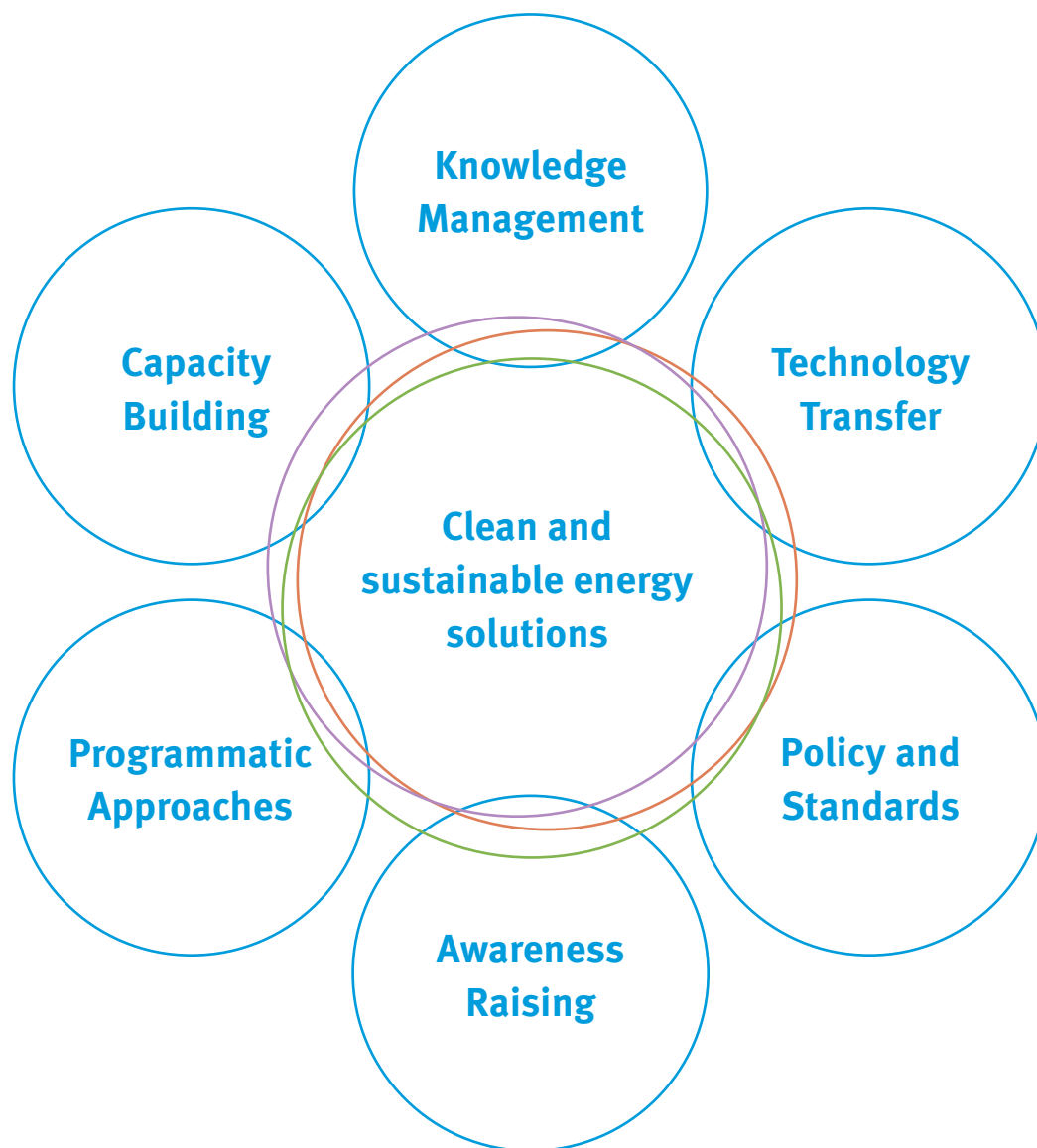
UNIDO seeks to address these concerns by promoting sustainable energy solutions in moving towards building 'climate-resilient industries'. UNIDO promotes sustainable energy solutions to assist industry in reducing their energy consumption, as well as using clean renewable energy in the most efficient manner for the enhancement of industrial competitiveness and productivity, while mainstreaming gender and increasing employment opportunities.

The core responsibility of UNIDO's Energy Programme is to assist Member States in the transition to a sustainable energy future under the overarching mandate of inclusive and sustainable industrial development (ISID), through the application of renewable energy (RE) for productive uses and the efficient use of energy and low carbon technologies by industry. In transitioning to a sustainable energy future, the challenges of addressing energy poverty and climate change become an integral part of UNIDO's activities.

UNIDO's Energy Programme is built on three strategic pillars, namely industrial energy efficiency, renewable energy for productive uses, climate policy and networks. The core building blocks of the Energy strategy are technology demonstration, knowledge management, policy and standards, awareness raising, programmatic approaches, and building capacity to provide inclusive and sustainable energy solutions. The energy strategy also focuses on mainstreaming the role of women and promoting youth employment in the design and implementation of energy projects, creating job opportunities, and fostering clean energy technological innovations to promote sustainable and inclusive industrialization.

As of June 2015, UNIDO's Energy Portfolio totals to approximately US\$ 230 million and is characterized by energy management system (EnMS) and standards, smart grids based on renewable energy and energy efficiency for industrial applications. The Energy strategy recognizes the significance of convening world energy leaders at global forums to engage them in debates for addressing global issues on sustainable energy solutions, industrial development and climate change mitigation and thereby contributing to the global Post-2015 Development Agenda on energy and climate change. In response to demands from Member States and funding mechanisms such as the Global Environment Facility (GEF), UNIDO's Energy Branch has developed several global initiatives that focus on a programmatic approach to addressing

Core Building Blocks of UNIDO's Energy Programme Providing Inclusive, Clean and Sustainable Energy Solutions



national, regional and global issues. This has led to the creation of Flagship Programmes under the Energy Programme including the Climate Technology Centre and Network (CTC), the Global Network of regional Sustainable Energy Centres (GN-SEC) and the Global Cleantech Innovation Programme (GCIP) for SMEs. These Flagship Programmes harness synergies of sharing technological knowledge, best practices and global partnerships to facilitate catalytic and sustainable industrialization.

Additionally, UNIDO's Energy Programme acts as the focal point within UNIDO for all strategic energy partnerships, networks and conventions including UN-Energy, SE4ALL and the United Nations Framework Convention on Climate Change (UNFCCC). The Energy Programme is also responsible for providing substantive support for the convening role of UNIDO on energy and climate change issues, and promoting cooperation and partnerships with relevant UN and non-UN organizations and institutions.

Pillars of UNIDO's Energy Strategy

1. Industrial Energy Efficiency Unit

UNIDO's Industrial Energy Efficiency (IEE) Unit is responsible for promoting the efficient use of energy by industry and the dissemination of industrial energy efficiency best operating practices and technologies in order to accelerate economic growth and enhance competitiveness and job creation, while addressing climate change.

The IEE Unit places particular emphasis on addressing the energy efficiency requirements of SMEs, as they represent the backbone of socioeconomic development in a country. As of June 2015, the IEE Unit's project portfolio amounts to around US\$ 105 million, with a widespread geographical coverage of over 20 countries, including 3 least developed countries.

The three core thematic areas of the UNIDO IEE programme are:

- a) policy development and standards;
- b) capacity-building and awareness-raising;
- c) technology demonstration and upscaling.

Furthermore, UNIDO's IEE programme focuses on promoting the implementation of energy management systems (EnMS) based on the International Organization for Standardization's (ISO) 50001 energy management standard, and energy system optimization; both approaches assist industry in continual and system-wide IEE improvement.

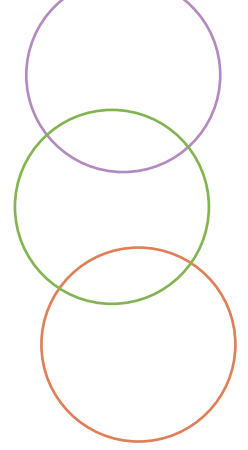
Other IEE programmes focus on improvements to the energy efficiency of energy intensive industrial equipment, energy-efficient and low-carbon transport vehicles, and related infrastructure.

2. Renewable and Rural Energy Unit

UNIDO's Renewable and Rural Energy Unit (RRE) is responsible for enhancing greater use of renewable sources of energy by industry and facilitating access to affordable and sustainable energy by the communities in rural areas to support productive activities as sources of income and employment opportunities and further contributing to the mitigation of climate change in developing countries and countries with economies in transition.

UNIDO's RRE programme focuses on mainstreaming the use of renewable energy for productive uses and industrial applications. UNIDO's ongoing RRE project portfolio as of June 2015 amounted to around US\$ 110 million, with a widespread geographical coverage including over 30 countries.

UNIDO's RRE activities place a specific emphasis on promoting business models for renewable energy based mini-grids for enhancing access to energy, and on demonstrating the social and economic viability of selected renewable energy technologies. In the field of RRE, UNIDO seeks to strengthen the capacity of counterparts and local entrepreneurs to create sustainable energy enterprises and industrial prosumers that can deliver reliable and affordable energy services based on renewable energy technologies and promote global standards on renewable energy technologies, appliances and systems, technology transfer, and local manufacturing of renewable technologies.



...❖ 3. Climate Policy and Networks Unit

UNIDO's Climate Policy and Networks (CPN) Unit responds to the increasing demand for innovative partnerships, multi-level and integrated solutions to address the energy, climate and development challenges simultaneously. The Unit is responsible for developing and implementing integrated policies, global and regional multi-stakeholder partnerships, as well as advocacy and outreach activities in the field of sustainable energy and climate change.

The CPN Unit positions UNIDO strategically in the global energy and climate change forums, and executes global and regional programmes on low carbon and climate resilient technology innovation and entrepreneurship, as well as networks and centres. The Unit focuses on promoting programmatic approaches, and coordinates work related to new and ongoing global and regional programmes, cross cutting themes, nexus and knowledge management issues. In addition, the Unit also coordinates work related to global forums such as Vienna Energy Forum, and participation in meetings of the Conference of the Parties and other relevant energy and climate conferences and events. In discharging its responsibility, in line with overall strategy of the Branch, the Unit cooperates closely with the RRE and IEE Units, as well as other relevant organizational units within UNIDO, in particular with the Environment Branch, Technology Networks and Field Offices.

Policy, Partnerships and Global Forums

UNIDO participates in global forums and establishes partnerships with groups and organizations sharing its inclusive and sustainable industrial development goals. There are three major types of partnerships concluded and maintained by UNIDO's Energy Programme: multistakeholder platforms, strategic partnerships and knowledge partnerships.

Multi-stakeholder platforms are those concluded with a large number of stakeholders from the public and private sectors. A multi-stakeholder platform aims to act as a catalyst in changing complex systems, shifting existing norms and improving structures (e.g. UN Energy, SE4ALL, and CTCN).

A strategic partnership is concluded with multilateral or bilateral donors and the private sector. In recognition of the important role played by the private sector in inclusive and sustainable industrial development, UNIDO's ties with the private sector are growing (e.g. Global Environment Facility (GEF), ECREEE, and the Cleantech Open).

Knowledge partnerships work from the ground up through projects designed to serve as examples of 'best practices' for the industry in question and as catalysts that can support successful projects and transform them into longer-term programmes (Austrian Energy Agency (AEA), the Renewable Energy and Energy Efficiency Partnership (REEEP), and The Energy and Resource Institute (TERI)).

UNIDO Energy Portfolio in China

Industrial Energy Efficiency Unit

Fuel Efficiency Strategies for the Chinese Automotive Industry

Context

The Chinese automotive industry is currently experiencing rapid growth. However, insecurities in the global petroleum supply and climate change problems linked to the emissions of CO₂ pose great challenges for the sustainable development of this sector. The Ministry of Industry and Information Technology (MIIT) elaborated a Development Plan to promote energy savings and developing “new energy” vehicles for the Chinese Automotive Industry. This Development Plan provided an outline for the automotive sector to develop fuel efficient vehicles and to investigate vehicle technologies powered by new energy sources between now and 2020. The implementation of the Development Plan required developing detailed strategies. This project focused on the development of supporting evidence and tools to assist policymakers in defining the strategy for fuel efficiency in vehicles.

Objective

The project undertook a detailed analysis comparing the fuel efficiency of Chinese manufactured vehicles and those in some of the leading countries in the automotive sector: the European Union, the United States of America and Japan. This analysis involved technical and non-technical data collection in the selected countries and in China, and resulted in a technology and policy roadmap.

Achieved outcomes

- » The technology roadmap was presented to public and private stakeholders as a tool for decision-making; allowing policy makers to define automotive sector policies, regulations, standards and financial incentives to promote fuel efficient vehicles.
- » The awareness of automotive sector stakeholders on fuel efficiency and technological options was raised, in their capacity to define efficiency measures and sectoral policy trends.

Donors and Partners

China International Center for Economic and Technical Exchanges (CICETE), Society of Automotive Engineers of China (SAE-China).



Industrial Energy Efficiency Unit

Promoting Energy Efficiency in Industrial Heat Systems and High Energy-Consuming (HEC) Equipment



Context

While significant progress has been accomplished in industrial energy efficiency during the 11th Five Year Plan Period, China still faces challenges to the achievement of sustained energy efficiency measures. Following the promulgation of the Energy Conservation laws in 2007, regulations on Energy Conservation Supervision were issued for “high energy consuming” equipment (HEC) management. While there are certain existing national codes and standards for the testing of industrial and domestic boilers, there is a need to define a system for technical testing. Under these new systems, the current specifications and regulations call for revision, and the stakeholders involved in their design and implementation need to have adequate skills.

Objective

To promote energy efficiency in HEC special equipment through the development of technical regulations, the establishment of national laboratories, the training of national experts and the demonstration of new technologies at enterprise level.

Expected outcomes

- » Policy Implementation – adopting an enhanced regulatory framework for testing standards and market promotion that will enable HEC users to adopt energy efficiency measures and government institutions to monitor compliance, including a knowledge management tool.
- » Capacity Building Activities – providing the government agencies with training to acquire the capacities required to enforce the technical regulations; training national system optimization practitioners from the public and private sectors to become technical experts and make their expertise available as a long-term technical resource to industry and the country; and ensuring that enterprises’ awareness on energy efficiency measures, new technologies and financing mechanisms has been increased.
- » Heat exchangers and technology transfer – demonstrating new efficient technologies at national level to serve as case studies for future investments.

Donors and Partners

Global Environment Facility (GEF), China Special Equipment Inspection and research Institute (CSEI), Bureau of Safety Supervision of Special Equipment (SESA) of the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ).

Industrial Energy Efficiency Unit

Vehicle technologies

Context

In July 2012, the State Council of China released the “Energy Saving and New Energy Vehicle (NEV) Development Plan (2012-2020)”, which set an aggressive target of 500,000 NEVs on the road in 2015 and 5 million in 2020. However, the market is still at start up stage and some barriers, technical, economical or institutional, exist on the way to low carbon transportation. The Ministry of Industry and Information Technology (MIIT), jointly with other government agencies, announced the incentive plan for NEVs from 2013 to 2015.

Objective

The project aims to design low carbon commercialization models for the entire supply chain of advanced-powertrain vehicles, investigate the feasibility of a low carbon transport system, demonstrate the system in a selected district, and disseminating the results to encourage the transformation of the Chinese automotive industry following a low carbon development path.

This project shall provide the analytical basis for the “Integrated adoption of New Energy Vehicles” project, in which technologies and commercialization pathways will be demonstrated at city level scale

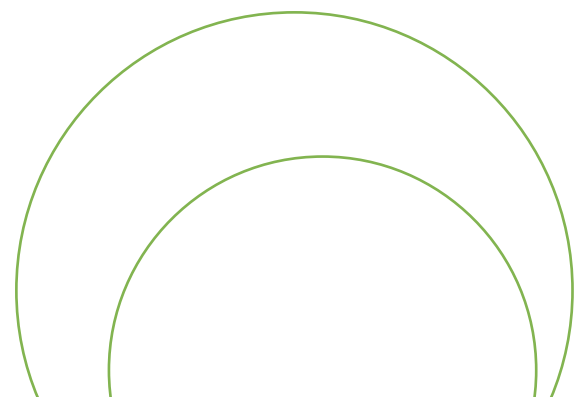
Expected outcomes

- » The commercialization pathways for NEVs and the policy framework are identified and provided to Chinese policymakers to facilitate their deployment.
- » The awareness and acceptance on the low-carbon transport by NEV stakeholders is improved to promote cross-industry cooperation and joint development.



Donors and Partners

China International Center for Economic and Technical Exchanges (CICETE), Society of Automotive Engineers of China (SAE-China).



Integrated adoption of New Energy Vehicles

Context

The main technical pathway to realize large-scale energy-savings and emission reductions in the automotive industry is through the development of “New Energy Vehicle” (NEV) technologies. These advanced-powertrain vehicle technologies, which include electric battery and plug-in hybrid technologies have the advantages of high energy efficiency (EE) and zero tail pipe emissions. While the use of EVs reduces the demand on imported liquid fuels, improving energy security; it does not reduce environmental impacts if electricity is mainly sourced from coal fired power generation.



To achieve the targets set in the “Energy Saving and New Energy Vehicles Industry Development Plan (2012-2020)”, China has conducted a NEV demonstration at city level in two phases: phase 1 demonstrations (2009 to 2012) were conducted in 25 cities and phase 2 demonstrations (2013-2015) are underway for 88 cities. In both demonstration phases at city level, it was the central government who choose the cities based on their geographic, social and economic diversity and representativeness, existing foundation and/or preparation work in NEVs and demonstrated interest by the local regions to be a pilot location.

Objective

To facilitate and scale up the integrated development of New Energy Vehicles (NEVs) and renewable energy (RE) through the development of policies, technologies and standard systems to promote NEVs and RE by deploying smart grid and smart charging infrastructure and carry out a demonstration of the integrated policies and technology standards in Yancheng and Shanghai.

Expected outcomes

- » Drafting of technical standards and guidelines to provide regulatory elements, leading to higher adoption of NEV schemes by city Governments, vehicle manufacturers and consumers.
- » Increasing the institutional capacities and public awareness of policymakers at national stakeholder on the use of integrated EV-SG (Smart Grid)-RE systems.
- » Demonstrating the technology integration at two city scale projects (Yancheng) and innovative business models for the promotion of EV fleets (Shanghai).
- » Raising awareness of stakeholders, on NEVs research and development, manufacture, operation, and maintenance.

Donors and Partners

Global Environment Facility (GEF), Ministry of Industries and Information Technology (MIIT), Society of Automotive Engineers of China (SAE-China).

Renewable and Rural Energy Unit

International Center on Small Hydro Power (ICSHP)

Background

The International Center on Small Hydro Power (ICSHP) was formed in 1994 with the support of United Nations Development Program (UNDP), United Nations Industrial Development Organization (UNIDO) and the Government of China. Since 2000, following the official Trust Fund agreement between the Chinese Government and UNIDO, ICSHP has been operating under the auspices of UNIDO and China's Ministry of Water Resources and Ministry of Commerce.

In addition, the ICSHP is the headquarters of the International Network on Small Hydro Power (INSHP), an international organization with more than 475 members from 84 countries.



Objective

ICSHP aims to promote small hydropower development worldwide by providing trainings, advice, research and information exchange on small hydro power (SHP) development and management. The Centre also focuses on South-South Cooperation which enhances the dissemination of China's practice and experience in SHP.

Donors and partners

United Nations Development Program (UNDP), United Nations Industrial Development Organization (UNIDO).

Achieved outcomes

- » ICSHP provided capacity building to more than 1,000 engineers from 60 countries and equipment and installation of SHP to over 50 developing countries.
- » Organized more than 50 international workshops and conferences.
- » Developed the first SHP Clean Development Mechanism project in China.
- » Established four pilot bases of SHP in Hunan, Gansu and Zhejiang provinces in China, and three sub-centres in India, Nigeria and Colombia.
- » In 2013, UNIDO and ICSHP jointly launched the first edition of the World Small Hydro Power Development Report (WSHPDR), the world first compilation of global small hydropower data and resource platform (www.smallhydroworld.org).



Renewable and Rural Energy Unit

International Solar Energy Center for Technology Promotion and Transfer (ISEC)

The International Solar Energy Center for Technology Promotion and Transfer (ISEC) was established in December 2005 jointly by the government of China and UNIDO.

Currently the ISEC/Asia-Pacific Research and Training Center for Solar Energy (APRTCSE) is the only centre focused on the research, promotion and application of solar and other new and renewable energy technologies as well as technical cooperation and capacity building in China and abroad.

Objective

ISEC's main objective is to facilitate the promotion and transfer of solar and other renewable energy technologies. Additionally, it enhances the improvement of energy structure, increases energy conservation and reduces pollution emissions. It promotes South-South Cooperation as well as the economic and social sustainable development particularly in developing countries.

Achieved outcomes

- » More than 130 scientific research achievements have been gained, of which 26 items obtained awards on national and provincial levels, e.g. the Passive Solar Heating Technology for Building.
- » 15 monographs and comprehensive tool books have been published.
- » Over 290 technical papers have been published in domestic and international publications and international seminars.
- » 70 domestic training workshops have been held by Gansu Natural Energy Research Institute (GNERI) and ISEC on solar water heater, solar cooker, solar building, solar photo-voltaic technique, energy saving and coal or firewood saving stove workshops.
- » More than 700,000m² solar houses were designed and developed, more than 11,500m² solar water heaters were researched and 420,000 solar cookers and 1,200 kW solar PV products promoted.

Donors and partners

UNIDO, UNDP, UNESCO, UNEP,

United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), United Nations University, World Bank, Asian Development Bank, Global Environment Facility (GEF), International Energy Agency (IEA), International Solar Energy Society (ISES), International Renewable Energy Agency (IRENA).



- » Organized over 63 International Solar Energy Application Technological Training Workshops' and invited over 1,400 solar energy experts from 121 countries in five continents from 1991 to 2015.
- » GNERI/ISEC has sponsored and hosted 36 international academic conferences and forums on solar energy and other renewable energy, together with several UN bodies and other international organizations, Commissions and Ministries of the Chinese Government, institutions as well universities.

Renewable and Rural Energy Unit

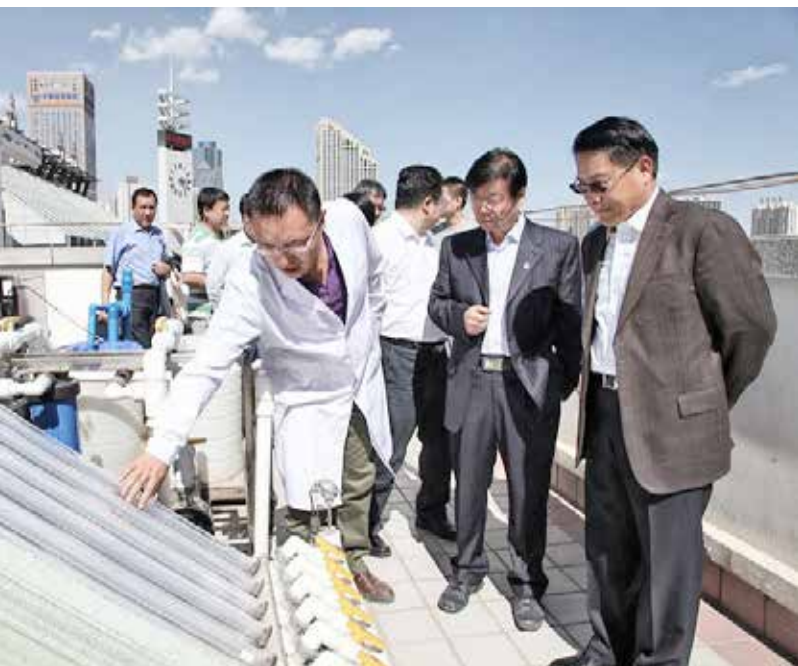
Strengthening of the International Solar Energy Center for Technology Promotion and Transfer (ISEC) – Phase II extension

Context

After the successful establishment of the International Solar Energy Center for Technology Promotion and Transfer (ISEC) in the first phase, this second phase extension aims at strengthening ISEC's mandate in developing applicable solar energy technologies and enhancing the transfer of these technologies to developing countries within the context of a South-South Cooperation framework.

Objectives

The project's main objectives are to strengthen ISEC's operational and functional capacity in providing technical services to developing countries in the field of solar technology and to provide technical assistance in the transfer and application of solar energy technology to the selected developing countries.



Expected outcomes

- » Clearer outlook of ISEC as a UNIDO Partner International Technology Centre (ITC) for continued partnership.
- » To fulfil its mandate in offering technical assistance to the selected developing countries in identifying initiatives on solar system application and capacity building activities, by providing technical services to these countries that are in need of scaling up their renewable energy sector.

Donors and Partners

The Government of China, International Solar Energy Center for Technology Promotion and Transfer (ISEC).

Renewable and Rural Energy Unit

Upgrading of China small hydropower capacity project



Context

The project aims to support China's Ministry of Water Resources (MWR) in broadening the scope of existing small hydropower (SHP) refurbishment projects in the country to reduce adverse impacts and to gain additional environmental benefits. The greening of SHPs will improve rivers' ecological condition, increase SHP plants efficiency and outputs, enhance management and safety practices, create opportunities to introduce green standards and increase local capacities, among others. The project is at the heart of the water-energy nexus. It aims at promoting innovation, technology transfer and supportive policies and strategies.

Objective

The overall objective of the project is to remove barriers to ecological refurbishment of existing rural SHP plants through pilot demonstrations in technology and management applications, policy advice and capacity building. The enabling policy framework, investment from different channels and benefit/cost sharing will be studied carefully to provide adequate models for replication.

Expected outcomes

- » Policy and institutional framework for promoting green SHP plants are strengthened.
- » Refurbished green SHP plants are fully operational and improved management and safety standards are in place.
- » Improved performance and safety management for SHP.
- » Knowledge and awareness of decision makers, experts and technicians about green SHP retrofitting and management are improved.

Donors and Partners

Global Environment Facility (GEF),
Ministry of Water Resources of China,
International Center on Small
Hydropower (ICSHP).



Donors and Partners

International Center on Small Hydropower ICSHP

Renewable and Rural Energy Unit

The World Small Hydropower Development Report

The World Small Hydropower Development Report (WSHPDR) is a flagship publication of UNIDO. It is expected to be updated and renewed biennially to maintain UNIDO's leading position in the field of small hydropower (SHP) for productive uses and for inclusive and sustainable industrial development. As the world's first compilation of global SHP data, the major achievement of the first edition in published in 2013 was to showcase the status of SHP development and its potential around the world in being harnessed as a clean source of energy across 20 regions in 149 countries.

UNIDO, in collaboration with the International Center on Small Hydro Power (ICSHP) have successfully launched the first edition of WSHPDR and its knowledge platform www.smallhydropower.org in 2014. This flagship assessment contains 20 regional level and 149 country level reports on SHP's installed capacity, potential, legislation and barriers of renewable energy for development. The report is a combined effort of over 60 authors and organizations around the world. The report and its platform have been well-received by the expert communities in the areas of renewable energy, climate change and beyond.

Objective

The project aims to provide accurate and up-to-date information to policy makers and to investors on SHP, its potential and opportunities as an option to generate electricity from renewable sources. It also aims to maintain and expand the knowledge platform and prepare future editions biennially (2016 and 2018). A Chinese version of the knowledge platform is under development.

Expected outcomes

- » Yield and maintain accurate, relevant and reliable data on the current status and development potential of SHP around the world.
- » Compile SHP data and present them in a user-friendly format while facilitating a SHP knowledge exchange platform for policy makers. A network of national focal points has been established to guarantee national ownership. The data is maintained and updated periodically.

Scale up small hydropower development in selected countries to contribute to inclusive and sustainable industrial development (ISID)

Context

Under the umbrella of inclusive and sustainable industrial development (ISID) framework, UNIDO, together with the International Center on Small Hydro Power (ICSHP), aims to scale up sustainable small hydropower (SHP) development in the selected five countries for productive uses. This would be achieved by providing technical assistance in the areas of resources assessment, conducting feasibility study, developing investment plans for co-financing and providing technical support to develop pilot SHP plants using technologies and business models that are suited to the local environment.

The five countries selected are Ethiopia, Kyrgyzstan, Myanmar, Nigeria and Peru. They possess rich renewable and natural resources to materialize economic, social and environmental benefits for productive uses. By scaling up SHP development and equipping local personnel with relevant knowledge and expertise, UNIDO and ICSHP see this as a South-South Cooperation opportunity to help these countries to increase access to modern energy supplies and to support the development of productive capacities in rural and urban areas.

Objectives

The overall objective of the project is to scale up access to clean and affordable energy for productive uses and industrial applications in remote rural areas by providing technical assistance to support the development of SHP pilot plants, thus provide rural communities with on-/off-grid access to electricity. This will, indirectly, enable income-generating activities to prosper through linking energy access to rural residents in the selected countries.

The project also aims to identify and collaborate with the existing projects or ongoing initiatives to promote SHP in the selected countries. It also aims to leverage resources and increase impacts by linking the project to other initiatives.

Expected outcomes

- » Provide technical assistance to developing SHP pilot plants in three of the five countries.
- » Organize SHP capacity building activities and recommend options in resource mobilization in two countries.



Donors and Partners

The Government of China, International Center on Small Hydropower (ICSHP), Ministry of Water, Irrigation and Energy of Ethiopia, Ministry of Energy and Industry of Kyrgyzstan, Ministry of Electrical Power of Myanmar, UNIDO Regional Center for Small Hydropower in Abuja, Nigeria and Ministry of Energy and Mines of Peru.

Industrial Energy Efficiency Unit

South-South Cooperation in the Energy-Saving and Environmentally-Friendly Industry



Context

In line with the Memorandum of Understanding signed in November 2013, the Ministry of Industry and Information Technology (MIIT) and UNIDO have agreed to further strengthen cooperation in order to promote Chinese energy saving industry to go global. This proposed project has been selected in late 2014 to be financed from the Chinese Voluntary Fund.

Industry plays a large role in China's economic growth; industry value-added accounted for 43.9% of GDP in 2013, and industry continued to grow by 7.3% in 2014. Thus, as industrialization continues to be a key national strategy, the ability to maintain a high level of economic and industrial growth, while avoiding further degradation of the environment and high CO₂ emissions will be a key determinant of China's

sustainable development. The increased promotion of energy-saving technologies for industrial applications within China and the region will further strengthen the resilience to climate change, while also having positive economic and social benefits through the promotion and support of manufacturers and specific technologies beyond individual sectors and regions.

Objective

The project purpose is to accelerate technical exchange and technology transfer of selected technologies between China and Thailand, as well as China and Indonesia, to promote the expertise of China in this field and boost green development of international industry.

Expected outcomes

- » Improved South-South cooperation facilitates technology exchange mechanisms within Asia and accelerates the adoption of energy-saving technologies in the targeted sectors and countries.
- » Growth of the energy saving industry in China is strengthened through the adoption of a going global strategy under the larger framework of the One Belt One Road Strategy.

Donors and Partners

Chinese Voluntary Fund, Ministry of Industry and Information Technology (MIIT) of China.



Projects funded by China

Renewable and Rural Energy Unit

Zambia: Renewable energy mini-grids

Background

Only 50 per cent of the country's urban and 3 per cent of the rural population is connected to Zambia's national grid. As a consequence, economic prosperity and social development are seriously hindered by the lack of access to energy.

Objective

The goal of the project is to promote locally available renewable energy to facilitate rural electrification and demonstrate the technical and financial viability of mini-grids.

Achieved outcomes

- » A 1 Mw Small Hydro-Power Plant (SHP) was constructed and is fully operational, distributing electricity in the Shiwang'andu area and surrounding settlements to 25,000 people.
- » A solar mini-grid of 60 kw capacity in Mpanta benefits a cluster of fishing villages, around 617 households, schools, a rural health centre, shops, businesses and a church on the shores of Bangweulu Lake.
- » A biomass gasifier of 25 kw in Ndola has created an incentive to help improve the image of the use of biomass in Zambia for electricity production.
- » The project demonstrates the viability of new institutional and financial practices that enable private enterprises to become power producers and energy service providers, while enhancing employment opportunities.
- » A biomass gasifier of 1 Mw, developed in collaboration with the Copper Belt Energy company. The commendation from the President of Zambia further raised its visibility of the project and highlighted the importance of RE for poverty alleviation.

Donors and Partners

GEF and ZESCO (Zambia's electricity utility), United Nations Environment Programme (UNEP), in collaboration with the Rural Electrification Authority (REA) of Zambia, International Center on Small Hydro Power (ICSHP).





Renewable and Rural Energy Unit

Solar technology transfer through South-South Cooperation from China to Fiji and Vanuatu

Context

The governments of Fiji and Vanuatu possess the legal framework to speed up their renewable energy development and the political will to reduce reliance on fossil fuels. This project will help to move forward the situation of energy shortage and limited human capacity in increasing access to electricity, maintaining the existing mini solar systems and the prospect to build new ones.

The project's overall aim is to increase capacity of solar technicians and experts in Fiji and Vanuatu in order to improve on-/off-grid rural electrification, linking energy services with productive uses by creating employment and business opportunities to improve livelihoods on both the sectoral and household levels. A functional mechanism for knowledge, technology transfer and South-South Cooperation will be established to promote solar energy applications.

Objective

The main objective of the project is to promote the deployment of solar energy technologies in Fiji and Vanuatu, as a means of addressing energy access and energy security, by accelerating technology transfer and enhancing local technical capacities.

Expected outcomes

- » Expanded capacities in the field of solar energy system operations.
- » Provide training in repair and maintenance of existing solar pumps for stakeholders in Fiji and Vanuatu.
- » Capacity building activities on identifying solar projects and opportunities in financing and investment promotion.
- » The solar system training promoted and made available to stakeholders in Fiji and Vanuatu with the aim of increasing electrification particularly to off-grid rural communities.

Donors and Partners

The Government of China, International Solar Energy Center for Technology Promotion and Transfer (ISEC), Department of Energy of Fiji, Ministry of Lands and Natural Resources of Vanuatu, Secretariat of the Pacific Community.





UNIDO Flagship Programmes

Climate Policy and Network Unit

The Climate Technology Centre and Network (CTCN)

The CTCN is the mechanism of the United Nations Framework Convention on Climate Change (UNFCCC) to stimulate technology cooperation and enhance the development and transfer of technologies to developing country Parties at their request. The CTCN is co-hosted by UNEP and UNIDO supported by a consortium of eleven partner organizations around the globe. These are complemented by a global network of organizations with experience in technology development, deployment and transfer.

To fulfil its mandate the CTCN has three core functions:

- » Deliver technical assistance to developing countries to enhance transfer of climate technologies
- » Provide and share information and knowledge on climate technologies
- » Foster collaboration and networking of stakeholders on climate technologies
- » Technical assistance is provided based on a demand driven process that begins with a request from a country's National Designated Entity (NDE). The dissemination of information and knowledge is carried out via trainings for NDEs as well as the CTCN Knowledge Management System (KMS), an on line platform that facilitates access to existing climate technology related data. The Network is a cornerstone and delivery channel for Technical Assistance and contributes to the KMS. UNIDO contributes to the CTCN by utilizing its strong expertise and experience in climate technologies, established partnerships with governments and the private sector, as well as its global network of field offices.

Objectives

To build or strengthen the capacity of developing countries to identify technology needs, to facilitate the preparation and implementation of technology projects and strategies to support action on mitigation and adaptation, and to enhance low emission and climate-resilient development.



Global Network of regional Sustainable Energy Centres (GN-SEC)

The Global Network of regional Sustainable Energy Centres (GN-SEC) Platform is a powerful post-2015 south-south and triangular multi-stakeholder partnership, which is executed by the CPN Unit in cooperation with various regional economic communities and organizations. The expanding partnership comprises of various Centres in Africa, Caribbean and the Pacific. The CPN Unit provides key technical assistance for the establishment and operation of the Centres and the global platform provides a common umbrella for promoting south-south cooperation between the various regions.

Objectives

The Centres respond to the urgent need for enforced regional cooperation and capacities to mitigate existing barriers for renewable energy and energy efficiency investments, industries and markets. They assist in creating an enabling environment through tailored regional methodologies and interventions.

The Centres enjoy high-level support by the counterpart ministries, operate according to local procedures and respond to the individual needs of the respective national governments. The Centres complement and strengthen ongoing national activities in the areas of policy and capacity development, knowledge management and awareness raising, as well as investment and business promotion. They assist in building up local sustainable energy industries and maximizing local value creation along the value chains of sustainable energy investments. The Centres form a strong global advocacy group for sustainable energy issues and provide a strong link between international energy and climate agreements and concrete implementation on the ground. The Centres strengthen the implementation capacities of the Sustainable Energy For All (SE4ALL) initiative.



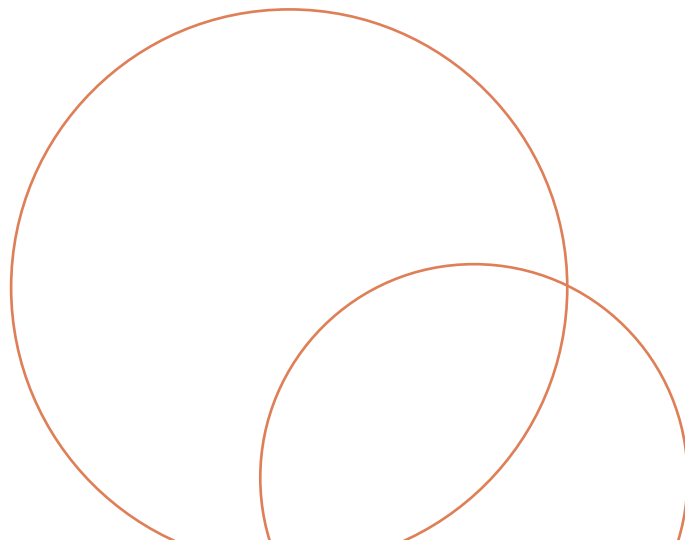
The Global Cleantech Innovation Programme (GCIP) for SMEs

In 2011, the United Nations Industrial Development Organization (UNIDO), with the support of the Global Environment Facility (GEF) and the Government of South Africa, successfully implemented the 'Greening the COP17' project. Building on the success of the 2011 Clean Technology Innovation Competition, UNIDO and the GEF developed a global flagship programme, the Global Cleantech Innovation Programme (GCIP) for SMEs. It currently encompasses 7 countries, and more than 10 countries have already expressed interest for the Programme to be developed in their countries.

The GCIP for SMEs demonstrates the significance that UNIDO places on nurturing innovation in clean energy technologies, strategic partnerships and enhancing private sector involvement. The programme involves four key features - a competition to create an ecosystem for sustainable growth, the showcasing of innovative technologies, the provision of mentoring and training through the Cleantech Accelerator, and the enhancement and facilitation of access to capital.

Objectives

The Global Cleantech Innovation Programme (GCIP) for SMEs in strong partnership with the Cleantech Open, USA and currently operating in Armenia, India, Malaysia, Pakistan, South Africa, Thailand, and Turkey, takes an innovation ecosystem approach to identify a pool of promising entrepreneurs and start-ups, and supports them through ongoing mentoring, webinars and networking events to grow their innovative concepts into full-fledged business models ready for the national and global markets.





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