

Concrete cooperation projects under the EC-China Energy Dialogue



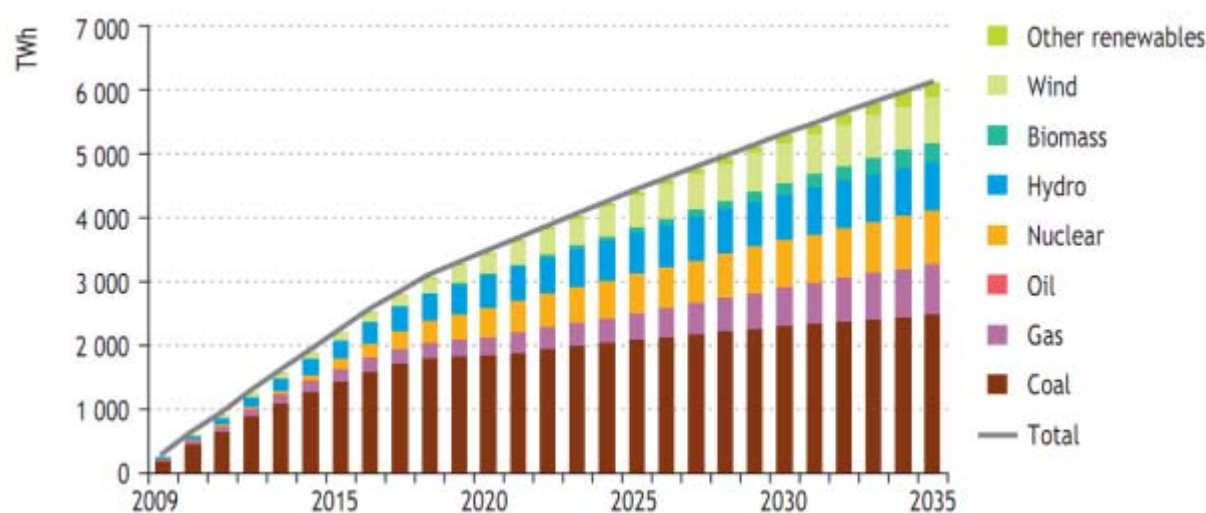
Six priority areas have been identified for cooperation between the EC and China in the field of energy: Renewable energy, Smart grids, Energy efficiency in the building sector, Clean coal, Nuclear energy and Energy law.



Renewable energy

China has started a process of adding energy sources other than oil and gas to its energy production capacity. Despite the fact that coal still accounts for the vast majority of electricity generation, renewable energy will play a central role for China in this effort, allowing for a transition towards less carbon-intensive growth. According to the World Energy Outlook 2010, the International Energy Agency estimates that between 2008 and 2035, the share of coal in China's electricity generation will drop from 79 % to 55 % with a respective increase of the share of renewables.

Projections for change in electricity generation in China relative to 2008



Being the global frontrunner for renewable energy, the EU and European enterprises have valuable expertise and experience in renewable energy to offer. Sharing similar targets of renewable energy in their energy policies, the EU and China are eager to cooperate closely in this field. Cooperation covers various aspects of renewable energy such as technologies, standardization, transmission, and production.

Workshop on renewable energy and grid integration

Following the 3rd meeting of the EC-China Energy Dialogue, it was decided to organise a **workshop on renewable energy and grid integration** in Brussels for Chinese industry representatives and officials. This workshop took place from 17 to 22 May 2010 and consisted of a study-tour to visit the off-shore wind farm in Oostende, Belgium, a two-days workshop about renewable energy and grid integration, a meeting with ENTSO-E (1/2 day), a study-tour in Spain to visit the Red Electrica Control Center for Renewable Energy in Madrid and the solar farms Andasol 3 and PSA in Granada, as well as a study-tour to visit solar panels in Belgium. The workshop was attended by 38 Chinese officials and representatives from Chinese power companies, transmission and distribution companies as well as manufacturers. The Chinese delegation participated in the workshop with particular interest, highlighting China's willingness to invest in their grids so as to make the best use of their renewable energy sources.

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Smart Grids

In order to make its power sector and its economy as a whole more energy efficient, China is increasingly interested to deploy Smart Grid technologies. Smart Grids are based on digital technology, enabling two-way communication between suppliers and consumers, with the aim of saving energy and reducing costs. In May 2009, China launched its "Strong and Smart Grid Plan" to effectively manage the utilisation of electricity which shall lead to substantial energy savings. The objective is to reach the completion of the whole Smart Grid with the most advanced technology and equipment by 2020.

China's efforts with regards to Smart Grids represent not only an opportunity for European businesses, but also a potential area for cooperation between the EU and China. Both Chinese authorities and the Commission have expressed their strong interest to cooperate in this field. Commissioner Oettinger committed to work closely with the Chinese National Energy Administration to foster cooperation in Smart Grids.

Activities on Smart Grids

A first tangible result of cooperation by the Commission and NEA in smart grids was a meeting among European and Chinese experts on smart grids and renewables, in particular wind energy, organised by the Directorate-General for Energy. The meeting took place at the margins of the "[GRIDS 2010](#)" conference by the European Wind Energy Association (EWEA) on 24 November 2010 in Berlin. The meeting brought together 16 European and 10 Chinese participants, from power companies, transmission and distribution companies, manufacturers in the renewables field as well as researchers. It functioned as the first of a series of events set up at expert level to promote mutual understanding and possible cooperation between EU and Chinese industry. Discussions touched upon the following topics: smart grid technologies and challenges for large-scale integration of variable RES, technologies for long-distance transmission (HVDC), and grid connection requirements for wind energy. The meeting sparked strong interest by both sides to continue and deepen cooperation.

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To build upon the constructive ground that was laid by this highly fruitful exchange of knowledge and experiences, a "**EU-China Seminar on Smart Grids**" has been organised on 16 December 2010 in Brussels in cooperation between the European Commission and [Asia Centre](#). This seminar dealt with Smart Grids, with the aim of highlighting that European and Chinese enterprises face similar difficulties when it comes to the large-scale deployment of smart grid technologies and thus fostering cooperation among the two sides. Participants came from both the private sector and research, including on the Chinese side the State Grid Cooperation of China (SGCC) and China Electric Power Research Institute (CEPRI).

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Clean Coal

China is the world's largest coal consumer: almost 50% of global coal consumption occurs in China. Traditionally self-sufficient, China has recently started importing coal. This reliance on coal is expected to continue for the foreseeable future.

The EU is the 4th largest global consumer of coal. Coal plays an important role in the EU's energy mix. For decades the public and private sectors have allocated large resources to technological development in coal mining, processing and combustion. This has been accompanied by a regulatory framework that encourages the competitive use of advanced technologies across the coal value chain in line with stringent environmental criteria. Furthermore the EU is also pioneering policy options and technological developments in CO₂ capture and storage (CCS).

Therefore close cooperation in this field is clearly of common interest for both parties. To facilitate such cooperation, the Directorate -General for Energy (DG ENER) and the Chinese National Energy Administration (NEA) regularly organise clean coal-related events under the umbrella of the DG ENER-NEA Energy Dialogue. The discussions cover subjects such as coal-fired electricity generation, coal gasification, coal to liquids, methane recovery, and clean coal technologies. Since 2008 the Working Group on Clean Coal has organised two joint workshops which allowed for an extensive exchange of knowledge and experience among European and Chinese industry with the aim of facilitating concrete cooperation projects:.

Workshops on Clean Coal

On 29 October 2010 the "2nd China-EU Clean Coal Workshop" was held. The expected number of 50 participants had to be increased up to 80 persons, due to the high level of interest from experts of both EU and Chinese industry and research institutions. Together with EU industry representatives in China, around 15 European experts travelled to Beijing to attend the workshop.

Europe China Clean Energy Centre

In its two-years existence, the EC-China Energy Dialogue with NEA has already resulted in a whole range of concrete cooperation projects such as the [Europe-China Clean Energy Centre \(EC²\)](#), a workshop on renewables organised in Brussels in May 2010, several workshops on Clean Coal in 2008 and 2010, a seminar on Smart Grids in December 2010.

An example of effective cooperation in energy between the EU and China is the [Europe-China Clean Energy Centre \(EC²\)](#). The EC² project was launched by the European Commission and the Chinese National Energy Administration in early 2009. It aims at setting up an autonomous body that shall promote the use of cleaner energy technologies and support energy conservation and efficiency, thus assisting China in its transition to a low-carbon economy. The Polytechnic University of Torino was selected to function as the implementing agency, working closely with a wide range of European and Chinese public actors as well as research institutions. One of the EC²'s main areas of focus is renewable energy and sustainable bio fuels.



This workshop had a focus on power plant modernisation and clean coal-fired power plant technologies: pulverised combustion, circulating fluidised bed (CFB), coal gasification (incl. integrated gasification combined cycle and coal to liquids/chemicals) and CCS. Companies from the EU and China presented specific projects, which allowed for more intense discussions. The workshop highlighted the common interest of EU and Chinese enterprises, and functioned as an important stepping stone for concrete cooperation projects between European and Chinese industry with the support of Directorate-General for Energy and NEA.

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The first workshop on Clean Coal ("Energy Efficiency over the Coal Value Chain") took place in Beijing on 17 October 2008. It brought together over 30 participants, including 16 representatives of EU industry and organisations and 11 representatives of Chinese ministries, industry and other organisations. The workshop was chaired by the European Commission. Discussions at the workshop touched on subjects such as incentivising change through regulation, emission monitoring and control, coal gasification (IGCC), coal to liquids (CTL), CDM and JI projects, coal bed methane/coal mine methane (CBM/CMM), and CO₂ capture feasibility. The workshop also addressed collaborative projects for Phase 1 of the EU-China NZEC project. To follow up on

discussions at the workshop, participants agreed to hold specialist workshops to better identify concrete projects.

NZEC project

In 2005, the EU and China Partnership on Climate Change agreed focuses on concrete actions to develop, deploy and lower the cost of clean energy technologies. In this respect the EU and China developed the NZEC project with the aim of developing and demonstrating carbon dioxide capture and storage (CCS) technology, in the EU and China, to capture and storage CO₂ emissions from coal-fired power plants by 2020. As part of the initiative, the construction of a CCS demonstration plant in China is foreseen.

Nuclear cooperation

Since 2008, EU has established a nuclear research cooperation with China (Euratom-China R&D agreement and cooperation on the ITER fusion project).



- [Euratom-China R&D agreement](#)
- [Euratom Nuclear Research International Cooperation](#)

For the future China is preparing to build at least three times as many nuclear power plants in the coming decade as the rest of the world combined. From current 13 nuclear power reactors in commercial operation with a net capacity of 10.2 gigawatts (GW), China plans to increase its nuclear capacity to more than 70 GW by 2020. In addition to 25 reactors under construction, about 40 additional reactors will be built. By 2030 China's nuclear capacity could rise to 200 GW, by 2050 it could reach 400 GW. These projections on China's nuclear ambitions constitute both opportunities and risks.

As world leader in nuclear technology and the nuclear fuel cycle, cooperation with European industry could offer substantial benefits to China's.

Energy Efficiency in the Building sector



China is the world's largest emitter of greenhouse gases. According to estimations, in 2009 China's emissions of CO₂, the main greenhouse gas from burning fossil fuels, accounted for 24% of global emissions. Its building sector is one of the major drivers of its rapid growth in energy consumption. Being aware that its energy production is very inefficient and environmentally unfriendly (68% produced through the use of coal), there are several reasons why the Chinese Government is eager to reduce the energy performance of buildings.

The constant rise of China's urbanisation rate (48% in 2010) and the population's per capita income, which is reflected by a rising consumption of housing appliances, preferences for spacious apartments and the increase in home ownership as a popular way of investment capital adds to this problem. On top forecasts see an energy consumption growth of 1.1% per year in the residential sector, reaching a demand of 397 Mega tons of oil equivalent (M TOE) in 2020 and of 464 M TOE in 2030. The Chinese government therefore has strong incentives to reduce energy performance of buildings.

When it comes to the regulatory dimension of energy efficiency in the building sector, China has made considerable progress. Both the Energy Conservation Law, which state that energy saving should be compulsory for new buildings and the Renewable Energy Law, which requires the Ministry of Housing Urban-Rural Development (MOHURD) to develop standards enabling the use of renewable technologies in buildings, partly address the issue of energy waste caused by this ineffective heating regulation.

However, further work needs to be done on the standards used across China for energy saving in buildings. China has provided a well developed system of standards and several have been issued in the last years to address energy consumption in the building sector: the most up to date set have 65% energy conservation targets in comparison to a mid-1980 baseline. However, this system is not effective due to confusing and overlapping standards between national and local level as well as a lack of enforcement of the above mentioned regulations.

In response to this challenge, the EC and China have agreed to work together closely. Acting on the building sector is of vital importance to have a real impact on energy use in China and support China in changing its energy consumption and environmental patterns.

In November 2009, a Cooperation Framework on Energy Performance and Quality in the Construction Sector was concluded between the EC and MOHURD. The signature of this Memorandum of Understanding (MoU) is a major breakthrough in our bilateral cooperation since we will be able for the first time to work with China in its highest energy consuming sector.

Fields for activities

Both China and the EU are faced to broadly varying framework conditions with regard to the structure of the property market and specific national, regional and local circumstances. Both sides can therefore profit of best practices and lessons learned regarding how to deal with the variety of circumstances in a flexible way but under a common framework for a central energy performance certification scheme. Today in the EU, all 27 Member States are required, under the

Energy Performance of Buildings Directive (EPBD), to implement such a scheme. The MoU therefore aims at enabling both administrations to carry out concrete cooperation projects in the building sector. This shall be achieved by facilitating the exchange of information and to learn from best practices in areas such as building energy performance labelling and building energy efficiency. Another possible field for common activities is standardization. European standards such as EUROCODES have the potential of functioning as models for Chinese standardization.

The EU can contribute by European experts participating in the "Concerted Action" for the EPBD sharing their expertise and experience. The same applies to members of the European Standardisation Committee (CEN), which was mandated by the EC to develop holistic energy performance standards for buildings in a way which fits to all national, regional and local circumstances of the EU and to find the right balance of scientific accuracy and simple applicability in practice for these standards. But also project partners from the Framework Programmes for Research and Technological Development (such as CONCERTO and ECOBUILDINGS) and the Intelligent Energy – Europe Programme (IEE Programme), both dealing with technological challenges in the building sector for saving energy, could share their knowledge with their Chinese counterparts.

- [Energy Performance of Buildings Directive \(EPBD\)](#)
- [European standards EUROCODES](#)
- [European Standardisation Committee \(CEN\)](#)
- [CONCERTO](#)
- [ECOBUILDINGS](#)
- [Intelligent Energy – Europe Programme \(IEE\)](#)



Research cooperation

Cooperation in research between the EU and China is based on the 'Agreement for scientific and technological cooperation signed in 1998 and renewed in 2004. Under this agreement cooperation may cover all the activities of research, technological development and demonstration included in the "Cooperation" Specific Programme of FP7.

- [Agreement for scientific and technological cooperation between the European Community and the Government of the People's Republic of China](#)
- [Further details on research cooperation in energy sat DG Research and Innovation's website](#)



Cooperation on the Draft Framework Law

In 2006, the State Council decided to set up a cross-Ministry Drafting Committee for a new “Energy Law”. The Committee consisted of 15 ministries. Under this committee, a Secretariat was established under the National Energy Office. China has enacted since 30 years, a large amount of legislation regarding energy. Laws such as the Coal Law, the Electric Power Law, the Energy Conservation Law and the Renewable Energy Law as well as a large number of administrative regulations and policy documents constitute the “energy legislative corpus”.

The new Energy Law

Despite the fact this corpus addresses almost every issue, Chinese energy legislation needs to be adapted to its needs of energy and economic development. The energy legislative corpus in particular lacks a framework law that would encompass the greater energy and policy orientation. There are furthermore inconsistencies between individual energy laws which limit the effect of their implementation; energy laws, administrative regulations and department rules are not properly coordinated; and energy security and energy emergencies are not addressed by existing law on energy. Therefore, the formulation exercise of the framework Energy Law aims at eliminating inconsistencies and improving China’s energy security and emergency systems.

The framework Energy Law shall ensure the implementation of energy strategies, guarantee national energy and economic security, improve energy production safety, and standardize the institutional design and arrangements of the regulatory bodies, management systems, operational mechanisms as well as other stakeholders, both enterprises and consumers.

Since November 2008 the State Council Legislative Affairs Office (SCLAO) is reviewing the draft Energy Law and possibly amending the legislation. According to SCLAO’s current work plan the revised draft should be submitted to the National People’s Congress (NPC) in 2011. The Energy Law review now falls into the first category of priorities in SCLAO’s legislative work plan. SCLAO has already consulted with different departments of the State Council as well as local governments and Chinese experts and incorporated some comments into the draft. During the consultation process SCLAO realized that several areas of the draft law still need further consultation and revisions.

Workshop on the Energy Law

SCLAO expressed interest to refer to the legislation and experiences of other countries and demonstrated its interest in direct exchanges with the European Commission and European experts. In June 2009 SCLAO and Commission officials met and agreed to cooperate on the drafting process of the new Energy Law.

As a result, a **two-days workshop** was organized in November 2009 in Beijing by the European Commission in cooperation with SCLAO to provide due support. The workshop focused on the following specific topics: the relationship between general laws and specific laws on energy; energy planning; role of the market mechanism; energy prices and pricing; energy market access; universal energy services; fossil energy; new and renewable energy; environmental protection; strategic energy reserves; energy emergency; and energy technology. The Energy Law Workshop was a very successful event, gathering every line Chinese ministries involved in the drafting process and generating fruitful discussions. By introducing EU experiences and legislations and

also giving related policy recommendations, the European Commission assisted in the drafting of China's new Energy Law. Following the workshop SLCAO acknowledged that the EC support was extremely efficient and well targeted. Participants agreed that more cooperation on the framework Energy Law should follow.

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It was recently agreed by Commissioner Oettinger and SCLAO Director Song Dahan that the European Commission will provide with further support to the finalization of this framework law in 2011.