Danish Energy Agency

China: Chinese Centre for Renewable Energy and Danish experts develop 2050 Scenarios for the Chinese energy sector

China National Renewable Energy Centre (CNREC) co-operates with Danish experts in developing scenarios for the Chinese energy system with the purpose of analysing alternative pathways for China's future energy sector development and contributing to the ongoing policy process on China's green energy transition.

China National Renewable Energy Centre (CNREC) has prepared comprehensive long-term scenarios for the Chinese energy system, using tools developed in co-operation with experts from the Danish Energy Agency and other Danish experts. The application of optimisation tools and methodologies, previously used in a Danish context, for the overall Chinese power, heating and transportation systems are unique in a Chinese context. The purpose of developing the 2050 scenario is to influence the future political choices by engaging in dialogue with the key decision-makers formulating the Chinese energy policy.

In order to analyse different development paths and end-goals for the Chinese energy system in 2050 three different scenarios has been identified with identical demand and distinctly different supply sides. Firstly a Reference Scenario based on the strategies from the 12th 5 year plan, secondly a Maximum renewable energy scenario showing the maximum potential use of renewable energy sources in the Chinese energy system and phasing out of fossil fuels; and finally an Optimisation Scenario with emphasis on a high share of renewable energy and taking costs into consideration. The scenarios cover all parts of the energy sector, including transportation. The scenario calculations are based on preliminary data, which will further be enhanced during 2014.

Renewable energy share of 50% in 2050?

In 2010 the share of renewable energy was about 9% and in the RE Max scenario this share will increase to 56%, while it will increase to 48% in the optimisation scenario. In all scenarios wind and hydropower are by far the main renewable energy resources. A large steep increase in the utilisation of solar power is also foreseen between now and 2050. As the all the renewable energy sources are indigenous, while a large part of the fossil fuels are and will have to be imported, the security of energy supply will be improving.
The analysis also indicate that it will be possible to balance the system even with very high shares of wind power production with more flexible dispatch and investments in new transmission capacity.

Huge environmental improvements

In 2010 the CO_2 emission in China were approximately 7,750 million tons. It is estimated that a continuation of the current policy of the 12th Five year plan will be 8 500 million tons in 2050, while the CO_2 emission in the two other scenarios will lead to a substantial reduction in the CO_2 emissions; and emissions of SO_2 and NO_x. It is interesting to observe that in terms of direct costs for investments, operations and maintenance of the system are less than 10% higher than the continuation of the current policy. Further it is noteworthy that maximum renewable energy scenario will create 5.6 million new vs. 2.2 million new jobs in the business as usual case.
The scenario analysis has already been presented in various important international events like for instance the Global Green Growth Forum in Copenhagen 2013. CNREC is currently in the process of developing the 2050 scenarios further; and new scenario results will be presented in 2014 based on the same models and methodology as the preliminary scenarios.

For further information please contact Mr Niels Bisgaard Pedersen, energy technology, nbp@ens.dk, Tel: +45 3392 7523

Read more:

Factsheet on the CNREC co-operation

Factsheet on the scenario work (also available in Chinese)

Presentation of the scenario analyses, The Preliminary Reflection on China's High Penetration Renewable Energy Scenario in 2050, High RE scenarios for China in 2050

Niels Bisgaard Pedersen
Fuldmægtig
Center for Global Rådgivning og Forhandling
Tlf.: 23 39 36 66
nbp@ens.dk

Contacts

Ture Falbe-Hansen
Head of Press (+45) 2513 7846 tfh@ens.dk