



Without increasing the cost of energy, China can reduce the total annual CO₂ emissions to a quarter of today's. This means that in 2050 China can reduce emissions equivalent to 200 times the current Danish annual CO₂ emissions from energy demand.

ENERGY SCENARIOS SHOW THE WAY FOR LOW COST GREEN TRANSITION IN CHINA

It is possible for China to reduce annual CO₂ emissions by more than 7 billion tons in 2050. Thereby, China will produce only a quarter of today's emissions, and succeed with its national contribution to keeping global warming below 2 degrees. All without increasing the cost of energy. This is the conclusion from the 2019 China Renewable Energy Outlook.

China has committed itself to ensure that its CO₂ emissions will peak before 2030.

In order to encourage a more ambitious effort for CO₂ reductions and a green energy transition, China and Denmark cooperate on detailed analyses for a long-term low-carbon and sustainable energy system. One of the results of the cooperation is the annual China Renewable Energy Outlook, developed by the China National Renewable Energy Centre (CNREC), the Danish Energy Agency, the German Energy Agency and the German Institute for International Cooperation.

“ It is my firm belief that working with visions for the future is a necessary step in the energy transition process. The vision must be rooted in comprehensive quantitative analyses of the whole energy system to demonstrate how the visions can be realized and to link the energy system development with the enabling policy measures.

Wang Zhongying, Acting Director General, Energy Research Institute of China, China National Development and Reform Commission

The new 2019 Outlook shows that it is possible for China to achieve its national share of CO₂ reductions in the United Nation's Below 2-degree world scenario. This will require China to reduce its energy related CO₂ emissions to a quarter of today's – from 9.6 billion tons in 2018 to 2.6 billion tons by 2050.

To achieve such a scenario, China must expand its installed renewable energy capacity ten-fold from 699 GW in 2018 to 6033 GW in 2050. For wind capacity alone, this would lead to an increase from 184 GW in 2018 to 2636 GW in 2050. That is about 450 times the total wind capacity of Denmark in 2018, and will cement China's position as the largest wind energy market in the world.

Chinese-Danish partnership delivers input to China's national energy policy development

Through the Chinese partners' work for the national energy authorities, the results of the cooperation delivers input to the preparation of the next Chinese Five Year Plan for Renewable Energy Development as well as China's medium-term and long-term energy strategy development.

The outlook presents a clear vision for the energy system in 2050, which complies with the Chinese mid- and long-



term goals for a green transition, and provides a roadmap highlighting how these visions can be carried out while maintaining continuous economic development.

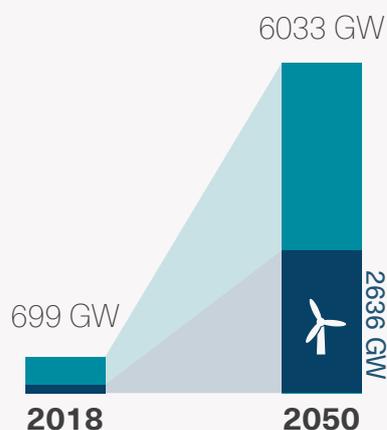
A long and close partnership between the two nations is the foundation for the Danish contribution to China's green transition. The partnership on renewable energy started in 2006. In 2012, China opened CNREC with Danish support. Today, the centre is one of the key national institutions assisting China's energy authorities in renewable energy policy research.

The cooperation aims to support the development of the Chinese institutional framework for renewable energy, power plant flexibility, and energy efficiency. Experts from the Danish Energy Agency and Energinet, the Danish transmission system operator, work together with experts from CNREC to analyze the possibilities of expanding renewable energy in China's energy system based on the many decades of Danish experience within the field.

Danish experience can inspire political decision-makers in China

China is the world's largest emitter of greenhouse gases, producing in 2018 almost 350 times more CO₂ than Denmark. China has experienced a significant increase in energy demand over the last decades. This development is likely to continue in the coming years. The International Energy Agency Outlook shows that the global annual CO₂-emissions from energy will increase with 30 percent in 2040 – India and China representing half.

To achieve its national share of CO₂ reductions in the UN Below 2-degree world scenario, China must expand its installed renewable energy capacity ten-fold in 2050.



FACTS

- The Danish Energy Agency cooperates bilaterally with 15 countries. The government-to-government cooperation promotes the green transition and institutional capacity building.
- China and Denmark started the government-to-government collaboration on energy in 2006. The aim is to encourage reduction of CO₂ emissions in China, hereby supporting China's contribution to the Paris Agreement and sustainable development goals 7 and 13.
- The cooperation is financed by the Ministry of Foreign Affairs through the climate envelope. The program initiatives are within renewable energy, scenario planning, power system flexibility, energy efficiency.
- Denmark supported the creation of China National Renewable Energy Centre in Beijing in 2011. The centre has now established itself as a key think tank for China's transition to a green energy system.
- China National Renewable Energy Centre and the Danish Energy Agency work together on long-term energy planning for the Chinese energy system.

China's energy vision is to build a clean, low-carbon, safe and efficient energy system towards 2050 as part of a comprehensive ecological civilization, but the energy transition is challenging and the concrete steps need to be further addressed.

Denmark is undergoing a remarkable transition of the energy sector from black to green. By 2020, half of the electricity production will be from wind energy, and electricity prices are still competitive in the EU. Denmark has extended experience and knowledge on the field of energy planning. Over the last decades, Danish government agencies have been responsible for delivering the foundation for political decision-makers to set ambitious objectives for the green transition – and to carry out the ambitions through creating the right incentives and policy frameworks. Outlooks serve as an important decision tool for the Danish government in this process.