

Dealing with Challenges of Energy and Climate Change: Policy-oriented Researches

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Rapid growth of total energy consumption and carbon emissions is a challenge to sustainable energy development

In the first decade of the 21st century, along with the acceleration of industrialization and urbanization, especially the rapid development of heavy and chemical industrialization, the energy supply and demand situation in China has undergone major changes, and the energy consumption saw an unprecedented rapid growth. In 2012, China's total energy consumption reached 3.62 billion tce, an increase by nearly 1.5 times than 1.46 billion tce in 2000; the energy consumption per capita was 2.68 tce, which is slightly higher than the world average level (2.5 tce). China has become the world's largest energy producer and consumer. At the same time, China's carbon emissions accounted for more than a quarter of the world's total. Although China's energy efficiency continues to improve, in terms of dealing with energy security and climate change, or reducing smog pollution and achieving sustainable development goals, we need to accelerate the transformation of energy and low carbon development, which poses new challenges to the energy and climate change policies. According to our analysis, policy-oriented researches are crucial to be conducted in the following three areas.

Exploring a new normal to increase energy efficiency and reduce carbon emissions in the context of economic slow-down

As China becomes a middle-income country, its economy cannot maintain a double-digit growth. Due to the requirements of economic restructuring, development pattern transformation and improved quality of life, as well

as the obligations of global carbon emissions reduction, our new policy objectives shall be taking control of the total amount of fossil energy consumption and reducing carbon emissions. In 2013, China's energy consumption elasticity has dropped to 0.5, which is a signal that in order to adapt to the new normal of economic growth, resources and environmental protection will also enter a new development process. We should establish the three-pillar indicators that regard a cap of carbon emissions (including the amount of fossil energy consumption) as the lead and the energy efficiency and energy structure (the share of non-fossil energy) indicators as the core, continue to improve the mandatory targets system of resources and the environment, and promote the energy transformation and low-carbon development.

Mapping the development paths to promote the transformation of energy and low-carbon economy

Although China has proposed goals and tasks for energy revolution and low-carbon development, as the biggest developing economy, China has no precedent to follow in achieving energy and low-carbon transformation. Therefore, we must take a comprehensive approach combining legal, economic, administrative and technical measures: on the one hand, we shall strengthen the overarching and top-down policy design; on the other hand, we need to encourage the exploration of bottom-up restructuring practices. In the supplementary adoption of both aspects, we will find the energy transformation and low-carbon development path that's suitable for the country and local characteristics, and continue to adjust and improve it in practice.



Building up the institutional and policy system of long-term energy security and low-carbon development

Currently, our policy and institutional system for responding to energy and climate changes is not perfect. Policy researches should be strengthened in the following areas in order to ensure the smooth realization of China's energy and low-carbon transformation and development. Establish the Law of Addressing Climate Change as a guide, build up a legal system to protect energy security and deal with low-

carbon development, integrate and improve the energy and climate change management system, strengthen capacity building of energy and low-carbon transformation, guide the comprehensive planning for dealing with energy and climate changes, reduce conflicts between plans, carry out relevant policy simulation and evaluation to address the energy and climate change issues, including economic policies such as all types of cap and trade, taxation and prices, examine their results and implementation conditions and develop a policy system appropriate for Chinese characteristics.