

Strategic Choice for National Adjustment of Renewable Energy in China

Tang Lihua

School of foreign languages of China West Normal University

Sichuan Nanchong, China

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Abstract: This paper gives a brief review of the development and utilization status of the renewable energy in China and explains the importance, urgency and feasibility of the development and utilization of the renewable energy regarding strategic choice for national adjustment of energy structure. The renewable energy will be regarded as leading energy in the 21st century which shows mighty vitality. It emphasizes the progress of solar energy, wind energy and ocean energy and some countermeasures on the development and utilization of the renewable energy in China are proposed.

Introduction

In order to realize the sustainable development of human society and environment, many countries have gradually generated the sustainable energy system based on renewable energy in the future energy system. After nearly 40 years of research and application of renewable energy in the modern development, the strong vitality of renewable energy development and utilization has been revealed. This paper tells the feasibility, importance and necessity of the development and utilization of renewable energy sources, taking Solar energy, wind energy, ocean energy as representatives. At the same time, it put forward some measures and suggestions with the combination with China's situation, in order to promote the development of renewable energy in China and the development of science and technology industry.

A Brief review of renewable energy resources and its exploitation and utilization in China

China has abundant natural resources of renewable energy, achieving the world's second largest Solar energy resources in the world. The total amount of wind energy resources in the country is 16000000000 kW/a, and the recent development and utilization of wind energy is 1600000000 kW/a; China has 18000 km coastline, and the direct jurisdiction of the sea area is 3540000 km². The theoretical reserves of its tidal energy are 1900000000 kW, of which 20980000 kW can be developed; Furthermore, China's other resources and water resources are very rich, and the storage condition of geothermal resources is also good.

The urgent request of adjustment of national energy structure system

Since the development of the modern industrial society, there have been three times for structural adjustment of energy use. After British Industrial Revolution in the second half of the 18th century, the traditional firewood energy quickly gave way to coal which dominated energy structure, and until the early 20th century the proportion of coal energy in industrial countries reached 95%, which promoted the development of the capitalist industry. At the end of nineteenth Century, due to the

development of electric power, iron and steel industry, railway technology, automotive and internal combustion engine technology, coal as the main energy has become increasingly not adapted to the needs of production. From the beginning of twentieth Century, with the development of oil resources, oil quickly boarded the energy stage, constituting 50% of energy. Because of the limited reserves of coal, oil, natural gas, it is not possible to meet the growing human demand for energy, and the environmental pollution is becoming increasingly serious due to industrialization of major developed countries by using the conventional energy. It has lead to a great threat to the survival of mankind, which forced people to curb the conventional energy consumption, to establish a renewable energy and other new energy as the main sustainable energy system.

For the third adjustment of energy structure, many countries, especially developed countries take a series of measures to encourage the development and utilization of renewable energy. Especially after United Nations Conference on the UNCED in 1992, it further accelerates the pace of adjustment of energy structure, and has made significant progress. However, because of the growth of world's population and economic development, especially the acceleration of industrialization process for developing country, the global energy structure adjustment pace can not keep the pace of the energy demand growth. The absolute amount of fossil fuel use is still in the increase and the global environment continues to deteriorate further. Therefore, in the global scope, it is still necessary to accelerate the pace of structural adjustment of the conventional energy to renewable energy.

It is more necessary for us to adjust our energy policies with greater urgency and faster pace, and put the development and utilization of renewable energy as a strategic choice

Suggestions to accelerate the development and utilization of renewable energy in China

Although the development and utilization of renewable energy in China has achieved some development, but on the whole, the level of science and technology development and utilization of the scale are far behind some advanced countries. Therefore, the development and utilization of renewable energy has great potential, and it should be used as a strategic choice for the adjustment of national energy structure. We should take the development and utilization of renewable energy in a very important position, and take effective measures to accelerate the development and utilization of renewable energy in china. For this, the following countermeasures and suggestions are put forward.

Change the concept of thinking; improve the attention to the development and utilization of renewable energy

China is currently in the rapid development of industrialization and informationization. The rapid economic growth has brought a sharp increase in energy demand. It is estimated that the total energy demand in China should be increased by 500000000 t standard coal, and 30 years or a little longer, China is likely to exceed the United States to become the world's first energy consumer. How to meet the needs of such a huge amount of energy? China's fossil fuel resources are limited, and the consumption of fossil fuels will cause more serious environmental pollution, which causes greater environmental pressures. And the price of removing these pollution is more huge. We should enhance the adjustment of the national energy structure, focus on the development and utilization of renewable energy, not use fossil fuels to develop the economy, which seriously affect the sustainable development of society and human survival environment. Therefore, we should change the traditional concept of economic development at the expense of the environment for realizing the sustainable development of society and economy and the requirement of the long-term development strategy of China's energy,

Strengthen scientific and Technological Development

To accelerate the development and utilization of renewable energy, we must strengthen the development of science and technology, improve the group's research and development capabilities as soon as possible, and get the innovative scientific and technological achievements. In solar, wind and marine energy, it is recommended to focus on the following technologies and related topics.

(1) Analysis and assessment of resources. It includes determination, exploration and evaluation of solar energy, wind energy and marine energy resources.

(2)Basic and key technology research

It includes conversion of energy mechanism and structure design; high performance of PV components and chemical solar cell materials production technology ; PV power station construction and grid connected technology; solar thermal power generation technology; solar hydrogen production and storage technology; wind turbine aerodynamics and high performance of wind turbine airfoil research; localization of large and medium-sized wind motor; ocean energy acquisition and energy system; application of OTEC system in thermodynamic cycle and low boiling point working substance.

(3)Comprehensive utilization of renewable energy resources

It includes two aspects: one is the comprehensive utilization of various renewable energy in the same region. This comprehensive utilization system can make full use of local resources to achieve more, especially suitable for the vast number of areas and agricultural and pastoral areas. Another is taking renewable energy power generation technology as the core, developing a variety of sub products, such as high quality fuel production, air conditioning, refrigeration, desalination development, etc.

Research on economic feasibility of renewable energy development and utilizationIn the development of planning projects, the consequences of technological conditions, economic, social and environmental ecological impact should be analyzed and identified to forecast and avoid the irreversible adverse effects as much as possible.

Unifying planning, increasing investment, and utilizing of preferential policies and management policies of the development of renewable energy development

(1)Unifying planning: A national renewable energy development and utilization development plan should be developed. This plan should make full use of all kinds of renewable energy resources to accelerate the development and utilization of renewable energy in China which includes the development of science and technology, the use of mature technology and the introduction of renewable energy power construction and comprehensive utilization.

(2)increasing investment: At present, China has a certain economic basis, so it is possible to develop the use of renewable energy sources. In addition, we can take a variety of ways to raise funds to establish a certain scale of the risk fund, or to introduce foreign investment in BOT. We could also actively seek national support for some major scientific and technological projects .

(3)utilizing of preferential policies and management policies of the development of renewable energy development:In terms of preferential policies, it includes tax relief policies, depreciation policies, investment and financing policies, price subsidy policies, etc. In terms of management policies, it includes the establishment of renewable energy development and utilization of scientific research and construction projects. After a period of trial implementation, all these policies should be given to the legislation for legal protection.

strengthen information exchange and international cooperation

It is suggested to establish a national information network of renewable energy resources development and utilization. In order to promote the level of scientific research and construction

projects in China, the collection, analysis, dissemination of renewable energy and Information Center through the network should be achieved. At the same time, the use of renewable energy development and utilization technology has reached a fairly mature level, and it is the good time to achieve commercialization and cooperative development. The introduction of key technologies and software could be expanded for international cooperation to accelerate the pace of development and utilization of renewable energy in china.

public education of renewable energy development and utilization

In order to promote the development and utilization of renewable energy, and to obtain the understanding and support of decision makers and the general population, we should actively carry out the development and utilization of renewable energy and the important strategic significance of technological knowledge and the publicity and education to enhance people's the environmental awareness and the social sustainable development.

In this regard, Western Europe and other countries have done well. They regard the work to support renewable energy policy system as an indispensable basis for the government. Therefore, when they introduced the non fossil fuel convention, coal-fired electricity tariff increases and the establishment of the green fund and other policies, they got the general support of the residents.(63)

Conclusion

The development and utilization of renewable energy is a new energy industry. It is a knowledge and technology innovation project. To accelerate the development of science and technology of renewable energy, we can adjust the energy structure, reduce the environmental pressure, strengthen the sustainable development of economy and society, and is also a powerful display of the national strength and scientific and technological development. China is a country with abundant renewable energy, and has made remarkable achievements in economic development in the last 20 years. We should pay attention to the development of renewable energy industry and take adjustment of national energy structure as a strategic choice. This is a good opportunity as well as great challenge for us.

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