Renewable Energy Development Strategies in China Based on Value Analysis

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ABSTRACT

The article surveys current status of renewable energy in China, focusing particularly on difficulties and problems in renewable energy development. In this article, empirical approach and data analysis method were used, and the strategies from the perspective of renewable energy value analysis were putted forward for energy developing in China.

Keywords: value composition; value appraisal; renewable energy; strategies

INTRODUCTION

In human history, there were two transformations in energy utilization, the first transformation was driven by industrial revolution in Britain, in the 1860’s, people used coal instead of firewood, in the 1920’s, the second transformation was happened, people used oil and gas instead of coal. The improving of human beings’ civilization according with the replacement of energy. At present, the energy crisis is increasingly severe in the world, traditional energy cannot afford the need of economic development. Renewable energy must be the reliable power for economic development[1]. In China, there are some problems in energy utilization, such as pollution, energy shortage and so on, realizing the practical value of renewable energy is important, and the development of renewable energy is significant in China.

CURRENT STATUS OF RENEWABLE ENERGY DEVELOPMENT

Hydro Energy

In the world, there are the most plenty water supplies in China, but when compared with developed countries, the development level in China is so low. The developed countries pay...
their attention on hydro energy development, for example, in hydro energy development, the United States has developed 53.3% in 1986, Japan has developed 95% in 1986. In 2016, the proportion of hydropower resources' generating capacity in potential hydro-energy resources' generating capacity is 32%. In the development of hydro energy, there are two problems, the resettlement and the environmental protection.

**Solar Energy**

Solar energy in China is abundant, there are more than 4KWh/ m² sunshine in most area of China. Photovoltaic and solar thermal utilization are two kinds of usage of solar energy. Photovoltaic systems, including large grid photovoltaic power station, grid photovoltaic system combined with building, and independent photovoltaic system, play important role in electric power production, in 2016, installed capacity of photovoltaic power was 77420000KW. Solar thermal utilization technology was used in the production of solar-powered water heater.

**Wind Energy**

In 2015, China's new installed capacity of wind power accounts in the Globe market is 48.5%, China become the biggest wind power market in the world. From 2010 to 2016, the capacity of wind power increasing more and more, at the end of 2016, the capacity of wind power was approximately 241 billion kilowatt-hour, the capacity of wind power has gone up 30% than last year.

**Biomass Energy**

Straight burning is common, in 2016, there are 51 projects were approved, the total capacity was 218.4MW. Biomass gasification is the second usage of biomass energy, in 2016, the capacity of biomass gasification production was 7MW, calorific value was 6-12MJ/m³, in 2016, the output of biogas in rural was 24 billion m³. Biological liquid fuels is another important usage of biomass energy, the production of ethanol was 1.32 million tons, the production of biodiesel was above 5,000,000 tons.

**Geothermal Energy**

Geothermal energy was used in electric power generation, heating and breeding. At present, geothermal power station was built in Yangbajing in Tibet, geothermal heating was used in Tianjin and Xi’an, at the end of 2016, the total capacity of geothermal power stations will be 100-150MW, the heating area will be 50 million square meters.

**Summary**

Renewable energy played important role in our society development. There are also some problems in the development of renewable energy. Compared with traditional energy, the cost of renewable energy is higher, the usage of renewable energy was limited. Compared with the developed countries, the ability of independent research is weaker in China, the development of renewable energy is lack of some key technologies, such as photovoltaic power generation.
technology, and the technology of cellulose making ethanol, and so on[2]. Research and development in renewable energy is lack of funding support, the lack of effective financing mechanism will be another obstacle of renewable energy industrialization. The evaluation of renewable energy is not scientific, the evaluation system of renewable energy has not been built, the guiding role of evaluation of renewable energy has been limited, and the capacity of renewable energy market has been limited. The figure 1 show the problems of renewable energy development in China.

![Figure 1. The main problems of renewable energy development in China.](image)

**RENEWABLE ENERGY VALUE ANALYSIS**

The value of renewable energy should be analyzed for finding the effective way of renewable energy development, generally speaking, the values of renewable energy include economic value, social value and resource value. The figure 2 show the values of renewable energy.

![Figure 2. The values of renewable energy.](image)

**Value Composition Of Renewable Energy**

**ECONOMIC VALUE**

People can get economic returns from the development of renewable energy, renewable
energy will be the great force for improving the whole nation economy, all of these reflect the economic value of renewable energy. In the macro aspect, renewable energy play important role in national economy, making great contribution to the whole national economic growth, supporting the whole economy development. In the micro aspect, the related investors can get economic returns from the development of renewable energy[3]. According to the relevant magazine reported, renewable energy industries, including the machine of wind power and solar panels, have got $125 billion in 2016, in 2020, the output of global renewable energy industry will reach $2400 billion, with the world economy increasing, renewable energy will replace the coal, oil and other fossil energy, becoming the important force for the economic growth.

SOCIAL VALUE

The development of renewable energy will gain the favorable social impact and reflection, it reflect the social value of renewable energy. Firstly, renewable energy can satisfy people’s demand for energy in production and daily life, the current energy strain made impact on people’s daily life, renewable energy play important role in satisfy the energy need, for example, in western China, there are 622 photovoltaic power stations, they supply electricity for 1,345,000 households. The development of renewable energy has great value in improving the life of human beings. Secondly, compared with the development of fossil energy will damage the ecological environment, the development of renewable energy will not damage the environment, ecological environment is the space supporter of human beings and human society, the positive externalities of renewable energy reflect the social value of renewable energy.

RESOURCE VALUE

Resource attribute belongs to the resource value, the reserve of resource and the exploitation potentiality can be also seen as the resource value of renewable energy. The abundant renewable energy will be the important capital of the related renewable energy industries[4]. The capacity of wind power is 1 billion KW in China, and as a great agricultural country, the development of biomass energy in China will be stable. The resource value of renewable energy is the foundation of economic value and social value[5].

Value Appraisal of Renewable Energy

The value of renewable energy consists of economic value, social value and resource value, when we make value appraisal of renewable energy, we should appraise the three values comprehensively. Aiming at the values of renewable energy, some indexes are studied out. Considering the quantitative indexes, we can make correct recognition to the practical value of renewable energy. Table 1 shows the indexes of renewable energy values appraisal.

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<td>Resource attribute</td>
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Table I. Indexes of Renewable Energy Values.

CONCLUSION

In the development of renewable energy, the value should be appraised correctly, only in this way, we can find the useful and efficient strategies for renewable energy developing.

Considering the economic value of renewable energy, we should pay attention to the important role of renewable energy in national economy, and the important role in economic returns for the related investors. Compared with fossil energy, the function of renewable energy in national economic increasing is still weaker, because of the lack of necessary laws, the economic returns of investors cannot be protected validly.

Considering the social value of renewable energy, at present, the relationship between renewable energy and fossil energy should be dealt with correctly, the renewable energy can satisfy people’s needs of energy consumption, and they will not contaminate the environment, but China’s energy consumption still rely on fossil energy consumption in largely today. We should take useful measures to promote the clean utilization of fossil energy, making their environmental contamination as little as possible.

Considering the resource value of renewable energy, the reserves of renewable energy are the basis of renewable energy developing, and the utilization efficiency of renewable energy should be improved.
REFERENCES