

IMPROVING THE MECHANISM OF INVESTMENT IN ALTERNATIVE ENERGY (CHINA AS AN EXAMPLE)

Yan Wenlei

Belarusian State University, Minsk;

tianyy182@gmail.com;

supervisor – A. Yu. Andrushchanka, PhD, Associate Prof.

In modern times, the world community must secure national energy security. With China's growing energy dependency and rising energy prices, the country's energy-intensive economy suffers enormous losses, resulting in lower production levels and slower socio-economic development. Thus, lowering energy dependence and developing alternative energy in China should be considered a strategic issue demanding immediate attention. Alternative energy development is a significant aspect in increasing energy security. To develop this approach requires large investment resources, thus determining the strategic directions for investing in alternative energy within the context of China's national economy is critical.

Keywords: alternative energy; sources; mechanism of investment; China.

In modern conditions, the world community is faced with the need to ensure the energy security of the state. With China's growing energy dependence on energy supplies and a constant rise in energy prices, the developing energy-intensive national economy suffers significant losses, which leads to a decrease in production levels and a slowdown in socio-economic development. Therefore, the issue of reducing energy dependence through the formation of an effective energy conservation program and the development of alternative energy in China should be attributed to strategically important, requiring an urgent solution. The development of alternative energy sources should be considered as an important factor in increasing the level of energy security. However, the development of the corresponding direction requires significant amounts of investment resources, and therefore, an important issue is to determine the strategic directions for investing in alternative energy in the context of the development of China's national economy.

The development of the world economy, technical and technological growth and modern conditions for the existence of mankind need a sufficient level of energy supply. However, the development of energy has gradually led to the emergence and deepening of numerous problems - both environmental and economic, demographic, political, etc. Their consequences have jeopardized the preservation of the environment and the well-being of the world society. This forced the search for alternative energy sources that are renewable and have a comparatively less negative impact on the natural environment.

First, we should know what the investment is, In a broader interpretation, investment is an investment of capital with the aim of further increasing it. Investment has a financial and economic definition. and we can identifies the following investment attributes: values, investment object, the purpose of the investment is to achieve a certain socio-economic effect.

Then we should be realized that electricity consumption is predicted to comprise an increasing share of the global demand for energy over the next two decades. This is explained by the importance of electricity to industries. It is expected that the growth rate of electricity consumption will be more than that of the consumption of the other sources of energy, including liquid fuels, natural gas, and coal. Due to ongoing concerns regarding climate change, the increasing price of fossil fuels, and political instability in major energy supplying countries, renewable energy (RE) sources have become an important topic of research in world energy demand. Financial support mechanisms are gaining importance in the enhancement of renewable energy development. Conventional sources of energy could be replaced with renewable energy technologies (RET) to mitigate environmental damage caused by old electricity power generation technology. governments use a variety of policies to promote renewable energy. The renewable portfolio standard (RPS) is one of the most common policies used with FITs.

Alternative energy has become a stable trend in the modern globalized world. It is a field of energy that provides the generation of electrical, thermal and mechanical energy from alternative energy sources. Such alternative energy sources are VSE and secondary energy resources. The double-digit growth rates of renewable energy have been achieved since 1970, One of the trends in recent years has been the widening geographical spread of investment in renewables. In 2018, this was manifest in the highest number ever of economies investing \$1 billion or more. In 2019, the signal on this was a record number investing more than \$2 billion, at 21 - up from 20 in 2018 and 16 in 2017.

Thus, the constant increase in investment in alternative energy puts it in the global energy sector and in the energy balance of individual countries above the usual status of a secondary source of energy. The high growth rates of investments in renewable energy, which is in the upward phase of technological development, and the exponential growth of patent activity demonstrate significant potential for improvement, and renewable energy can be considered a high-tech innovative industry. The coronavirus health pandemic and ensuing economic collapse are projected to provide a temporary halt to some of those developments in 2020. However, when economies begin to unfreeze, governments and private sector groups will tackle the climate change emergency.

Since 2008, China has invested the most in renewable energy. Since 2013, renewable energy has outperformed fossil and nuclear energy.

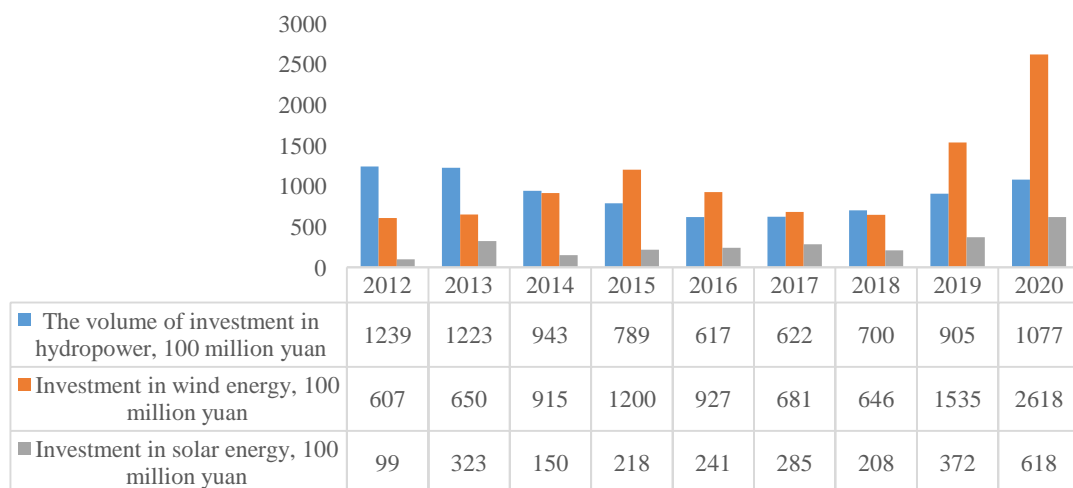
In 2011, the EU members invested a record \$ 123 billion. The next year, it fell to \$89 billion. From 2013 through 2020, the investment volume was around USD 50-60 billion. Basically, huge government programs to promote renewable energy were being phased down. The current high level of technology and industry development in the EU countries allows for private investments, which are, of course, smaller than state investments.

Increasing investment in alternative energy elevates it to a primary source of energy in the global energy sector and in national energy balances. Given the high growth rates of investments in renewable energy and the exponential increase of patent activity, renewable energy can be regarded a high-tech inventive industry.

Currently, developing countries have outperformed developed ones in terms of absolute investment in renewable energy.

By reading the relevant literature and analyzing the scientific results of Chinese and foreign scientists in the field of energy industry development and alternative energy development forecasting, we will address the following four questions. Renewable energy investment risk analysis, renewable energy investment decisions, how governments can create appropriate incentives, and how to improve the effectiveness of policies.

All countries are actively promoting the development and utilization of renewable energy. China invests heavily in the development of renewable energy every year, especially in the past two years, the investment scale of renewable energy construction has grown rapidly. In 2020, the investment in renewable energy construction reached 431.3 billion yuan, an increase of 53.4 % year-on-year. The following table introduces the investment scale of all kinds of renewable energy.



The scale of investment in various types of renewable energy construction in China in 2012-2020

Note. – Source: [3]

At the same time, we should know the problems and prospects of alternative energy development in China. China is once again the largest investor in this sector. Through continuous and active investment in clean energy, China has gradually established itself as a leader in global clean energy investment, but it is still a new field and there are still some problems to be solved. Such as the relevant policy system and governance mechanisms, geopolitics, core technologies and key clean energy purification methods, regulatory framework, etc.

Clearly, we still have a lot to do. In addition to developing stable and supportive policies and regulations, developing countries should explore the following four technical approaches.

First, we need to develop other renewable energy generation technologies besides solar PV and terrestrial wind.

Second, in addition to renewable energy generation, we also need to increase investment in smart grid technology.

Third, in addition to electricity supply, we need to develop other forms of green energy applications.

Fourth, we also need to address potential demand-side energy savings in homes, offices, commercial buildings and industry.

Finally, through the above series of research and analysis, we propose possible directions to improve China's alternative energy investment mechanism and provide certain countermeasures to help China's alternative energy can be developed in a better and higher quality way and provide experience for other developing countries.

First, clear direction of new power system construction, to ensure a safe and stable supply of energy. In the stock power optimization, one is to speed up the flexibility of coal power units in operation to improve the unit regulation rate and deep peaking capacity, new coal power should have deep peaking capacity. Second, the orderly development of natural gas, pumped storage and other peaking power, give full play to the advantages of short start-stop time and fast power regulation, focusing on the construction of new energy generation penetration rate is high, the power grid flexibility is low in the region.

Second, continue to improve the top-level design of the power market system to adapt to the high proportion of new energy, and promote the consumption of new energy through market mechanisms. Coordinated solution of new energy consumption and system safety and stable operation and other issues, promote new energy to participate in market transactions, effectively play a decisive role in the allocation of resources in the market, to guide the power supply, users of all parties to participate in the power system regulation, with the lowest economic cost to achieve clean and low-carbon transformation.

Third, we should improve the supporting mechanism of renewable energy consumption and supply guarantee, improve the capacity and overall economy of new energy consumption, promote the participation of renewable energy in the market in an orderly manner, and guarantee the enthusiasm of new energy project investment.

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