

The impact of new energy development on economic growth

Renrui Liu^{1,*}

¹Department of Economics and Management, Shandong Vocational College of Science and Technology, Weifang, China

Abstract. With the proposal of a sustainable development strategy, the development of new energy is accelerating day by day. The impact of new energy on economic growth has become increasingly apparent. Therefore, this article will analyse the characteristics and development status of new energy. This article focuses on the analysis of the development of new energy in China, including the current data on wind energy and biomass energy in China, so as to put forward the influence factors of the development of new energy on economic construction. At the same time, it also proposed a new energy development strategy centred on economic growth. The purpose of this article is to guide the coordinated development of new energy development and economic growth.

1 Introduction

In recent years, countries in the world have promoted the development of new energy to unprecedented heights. The investment of various countries in the new energy is showing an acceleration. The new energy industry is gestating new economic growth points. At the same time, new energy has become the strategic commanding heights of a new round of international competition. On the whole, developed countries are at the forefront of the world in terms of new energy development [1].

The development of new energy is closely related to economic growth. However, people's understanding of new energy is not sufficient at this stage. Many people are also relatively vague about the impact of new energy on economic growth, and related theoretical research is not mature enough. Hence, the analysis and research on the impact of new energy development on economic growth have special practical significance.

2 China's new energy development status

The so-called new energy is renewable, such as wind power, solar power, nuclear power. New energy not only harms the environment but also has the attributes of relatively low development cost, high environmental protection, reproducible and sustainable use. Traditional energy has the characteristics of one-time development. Once the extraction of traditional energy is completed, it will be transferred to other places for extraction, which is likely to cause repeated investment in construction. However, for new energy, although its construction cost is relatively high, it can achieve continuous circulation after completing the construction. New energy sources usually require only a one-time investment to be continuously developed and utilized, so in the long run,

their cost is relatively low. In addition, compared with the environmental damage caused by the exploitation of traditional energy, the development of new energy is more scientific and reasonable [2]. New energy uses advanced technology to directly convert existing resources into energy, minimizing damage to the natural environment. At this stage, China's wind energy development technology is relatively mature. Its power generation efficiency, total power generation and technology have all been improved to a certain extent.

Table 1. 2013-2020 China's cumulative grid-connected installed capacity of wind power (unit: 100 million kWh)



Solar energy mainly relies on photovoltaic cells to realize the conversion and utilization of solar energy. The share of photovoltaic cells is relatively high, and solar energy development is also relatively common. After experiencing the triumphant advancement of China's photovoltaic power generation industry from 2013 to 2017, it experienced an industry downturn in 2018. The sudden breaking of the 531 policies has caused a rapid decline in the domestic market, a rapid decline in product prices, and continued low corporate profitability. The industry has experienced rapid development. Major areas of photovoltaic power generation have begun to adjust their development

* Corresponding author: 514217942@qq.com

thinking, and the overall pattern of the industry has changed.

With the rapid development of biomass power generation, the proportion of biomass power generation in China's renewable energy power generation is steadily increasing year by year. In 2019, China's cumulative installed capacity and power generation of biomass energy accounted for 2.84% and 5.45% of renewable energy installed capacity and power generation, respectively, increasing 0.71 and 2.21 percentage points from 2014. In the third quarter of 2020, the cumulative installed capacity and power generation of biomass energy accounted for 3.13% and 6.26% of renewable energy installed capacity and power generation, respectively, and the proportions continued to increase. The rising status of biomass power generation reflects that biomass power generation is gradually becoming a new force in the use of renewable energy in China.

Table 2. China's biomass power generation operation from 2012 to 2020 (unit: 100 million kWh)



Table 3. China's biomass power generation accounted for the proportion of renewable energy power generation from 2012 to 2020



However, with the development of the new energy economy, China has problems such as aggressive and blind investment strategies, lagging industrial chains, and insufficient supporting technologies in the development of the new energy. This limits the integration of China's new energy products in the international market to a certain extent, and is not conducive to the healthy development of China's new energy economy.

3 The main factors affecting the development of new energy economy

As the global environment deteriorates, many countries have increased their protection and attention to the ecological environment [3]. Therefore, effective planning and development of the new energy industry are also essential. At present, China has also used some support and incentive functions and formulated and promulgated some rules and regulations in developing the new energy industry, which will further play a leading role in the development of new energy in the market. However, there are still some drawbacks in China's construction of new energy-related laws and regulations. There is inconsistency between some systems and laws. In different regions, government departments have different levels of support for the new energy economy [4]. This has also led to the slow development of China's new energy economy to a certain extent, thereby restricting the long-term development of China's new energy industry.

At present, the development of China's new energy industry is still in its infancy. In the economic market, the protection mechanism for the new energy industry is not particularly perfect. At present, a relatively stable energy market demand has not been formed in time. Therefore, there is often an oversupply phenomenon. This phenomenon has also hurt the development of China's new energy economy to a certain extent. Secondly, there is a lack of relevant professional technical personnel in the economic market [5]. The high demand for talents has also led to the failure of many new energy industries to develop well, slowing down the development progress of the entire industry. In addition, the lack of uniform quality of energy products within the economic market also reduces consumers' adaptation experience.

4 The impact of new energy development on economic growth

4.1 Reduced the cost of economic development

The development of new energy has reduced the cost of economic development. Under normal circumstances, economic development needs industry support. However, many industries need to consume a lot of energy in the production process, which increases the cost burden of enterprises. The development of new energy has greatly reduced energy costs in the process of economic development [6]. In addition, new energy has the characteristics of sustainable development and use so that the control of production loss and the increase of product output have a continuous guarantee-for example, investment in photovoltaic power generation projects. The initial investment cost of 100,000 volts usually takes seven years to recover. However, due to the long-life span of photovoltaics, the project will be very profitable in the long run, and it has an incomparable development advantage over conventional energy sources. At the

same time, the long-term operation of new energy will also reduce the average cost of energy consumption, thereby increasing economic production capacity.

4.2 Reduced environmental damage

The development of new energy has reduced the environmental damage in economic development. With the introduction of China's sustainable development strategy and scientific development concept, China has put forward higher requirements for green, low-carbon, and environmental protection in economic development. The development of new energy sources can reduce energy loss and environmental pollution to a large extent, thereby promoting sustained and stable economic growth. For example, the new energy power generation industry that China is currently good at (Table 4). From 2007 to 2016, China has reduced emissions by 87.547 million tons [7]. Through the application and transformation of wind energy, not only reduces the destruction of the natural environment and the consumption of other energy sources, but also promotes the optimized development of related industries. The traditional coal power generation not only pollutes the environment, but also has a relatively strong destructive effect on the environment.

Table 4. China's wind power emission reductions

Year	Wind power generation (100 million kWh)	Carbon emissions (100 million tons)	Emission reduction (10 thousand tons)
2007	56	70.25	498.4
2008	128	75.47	1139.2
2009	269	79.95	2394.1
2010	500.97	81.69	4458.6
2011	732	97.26	6514.8
2012	1008	100.2	8971.2
2013	1349	102.5	12006.1
2014	1534	102.84	13652.6
2015	1863	101.5	16580.7
2016	2410	101.51	21449
Total	9849.97	919.17	87564.7

4.3 Formation of new economic growth points

The development of new energy forms a new economic growth point. The development of new energy derives new industries, technologies, and talent allocation, thus giving a new structure to economic development. For example, the floor heating technology brought about new energy sources has already begun to be used in many parts of China. Because floor heating has the characteristics of energy saving and environmental protection, many decoration companies have started to try geothermal energy heating, thus broadening the profit path in the home decoration industry. For example, through the improvement of photovoltaic power generation technology, the photovoltaic power generation industry has gradually emerged. The demand for resources in technology research and development, manufacturing and other aspects brought about by the development of photovoltaic enterprises has greatly stimulated China's domestic demand, thereby giving another breakthrough point for economic growth. It can be said that the application of new energy technology has made an essential contribution to promoting the rise of related industries and promoting economic growth.

5 New energy development strategy centred on economic growth

5.1 Increase investment in new energy

New energy input intensity is an essential prerequisite for achieving sustainable development of new energy. The development of new energy can promote economic growth. If the investment intensity of new energy is unreasonable, it will also negatively impact and hinder economic development. Therefore, it is very important to increase investment in new energy to avoid unnecessary harm to the economic system. The first step is to control the investment intensity of the energy-saving emission reduction system. Proceeding from reality, optimize the proportion of new energy input so as to increase the actual utilization rate of new energy. Secondly, we must strengthen the research and development of new energy-related technologies. Improving the effectiveness and quality of new energy input to reduce the adverse effects of new energy input, and then promote the healthy development of the economy.

5.2 Establish a long-term incentive mechanism for new energy

Improving the long-term incentive mechanism for new energy is the core content of the sustainable development of new energy. In the short term, the development of new energy sources will add some burden to the economy to a certain extent. However, in the long run, new energy has an essential and positive effect on the economy and is conducive to promoting the healthy and sustainable development of the economy. Therefore, the development of new energy centred on economic growth should take a long-term goal to look at the development of new energy. We need to clarify the circularity, endlessness and environmental protection of the use of new energy [8]. A long-term incentive mechanism for new energy should be established and improved so that the development of new energy always revolves around sustained economic growth. This is conducive to realizing the effective connection of new and old energy, improving the green and environmental protection of energy consumption, and promoting the further development and popularization of new energy.

5.3 Adjusting the energy industry structure

Deepening the adjustment of the energy industry structure is a necessary measure for the development of new energy based on economic growth. New energy has the characteristics of abundant reserves, clean composition and renewable resources. However, new energy also has the characteristics of being scattered, difficult to extract, and high technical requirements. Therefore, in order to improve the effect of new energy mining, it is necessary to carry out a strategic adjustment of the energy industry structure. A reasonable development plan must be formulated before the exploitation of new energy. Only by continuously

adjusting the industrial structure and improving the utilization efficiency of new energy can the development needs of energy development be better met. In addition, it is necessary to strengthen the degree of integration between new energy development and economic development, and fully consider the pros and cons of new energy development. You can try to open the international new energy market to strengthen the mastery of core technologies. It is necessary to actively formulate a stable new energy development strategy to avoid causing economic burdens. Therefore, to realize the sustainable and effective development of new energy, it is necessary to deepen the strategic adjustment of the energy industry structure.

6 Conclusion

This article focus on economic development and combine China's current national conditions, through the analysis of the characteristics and development status of new energy to further clarify the impact of new energy development on economic growth. By increasing investment in new energy, establishing a long-term incentive mechanism for new energy, and deepening the adjustment of the energy industry structure, people's understanding of new energy can be deepened. At the same time, it can also promote the coordinated development of new energy and the macroeconomy, which is of positive significance to improving the natural environment and the sustainable development of the economy. Studying the impact of new energy development on economic growth can provide important guidance for China's future sustainable and healthy development.

References

1. Xu Yi. An Empirical Study on the Relationship between New Energy Consumption and my country's Economic Growth. *Economic Aspects*, 2017(05): 69-74.
2. Zhang Hailong. Research on China's New Energy Development. Jilin University, 2014.
3. Lan Lan. New energy power generation characteristics and economic analysis research. North China Electric Power University, 2014.
4. Li Song. Research on fiscal and taxation policies to promote developing new energy in my country. Capital University of Economics and Business, 2014.
5. Fang Guochang, Tian Lixin, Fu Min, Sun Mei. The impact of new energy development on energy intensity and economic growth. *System Engineering Theory and Practice*, 2013, 33(11): 2795-2803.
6. Li Qiang, Chu Mingqin. A comparative analysis of the contribution of new energy and conventional energy to economic growth — — Also on the development of strategic emerging industries. *Resources Science*, 2013, 35(04): 704-712.
7. Cheng Quan. Research on EU New Energy Law and Policy. Wuhan University, 2012.
8. Wu Hui. Research on the development of new energy technology in a low-carbon economic environment. Hefei University of Technology, 2012.