

Analysis of the Problems and Reasons for the Development of Suzhou Hydrogen Energy Industry and Industrial Policies

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Abstract

In recent years, although there have been some policy plans related to hydrogen energy development in China, a complete fiscal policy system has not yet been established. In policies related to hydrogen energy, we cannot keep up with the times. Only some policies are specifically targeted at solar photovoltaic and wind power generation, and some policies are even temporary. These fiscal policies are severely lagging and lack uniformity, which not only weakens the overall effect of the money supply, but also to some extent hinders the healthy and rapid development of the hydrogen energy industry. In addition, the national development plan, including national and local plans, cannot be well connected, resulting in some policies not forming strong support for hydrogen energy. In these industrial plans, production capacity targets account for the majority, but there is a lack of refinement of utilization targets and little mention of the development balance of the industrial chain.

Keywords

Hydrogen Energy; Industrial Policies; Suzhou.

1. Introduction

The main advantages of hydrogen energy batteries are power generation and convenient transportation. In terms of transportation, Suzhou actively promotes the application of hydrogen fuel cells in public transportation, such as in buses, light rail, and ships [1]. Currently, the development scale of hydrogen fuel cells in transportation is relatively large. According to the prediction of China's Automobile Industry Association, the output value of hydrogen energy vehicles in China will reach 1 trillion yuan in 10 years [2]. So now we need to actively develop the layout of the hydrogen energy industry, establish and improve the full coverage of hydrogen energy production, and focus on solving the cost and economic utility of car purchase, providing strong guarantees for future development. The development of the hydrogen energy industry in Suzhou relies heavily on technology, which is also the current situation of hydrogen energy development [3]. Only by achieving technological breakthroughs can the fundamental problem of hydrogen energy economic development be completely solved. For example, in the current hydrogen storage process, in order for cars to meet the requirements of hydrogen storage, they must make significant progress in carbon fiber technology and also reduce costs; Secondly, there are many technical defects in the hydrogen fuel compressor of automobiles, which make the counterfeiting of hydrogen energy vehicles high and the operating costs of enterprises difficult to compete with traditional cars [4].

2. The Problem

Suzhou is located in the central area of the northern wing of the Yangtze River Delta, closely connected to the eastern coastal economic zone and the Shanghai metropolitan area. The water, land, and air transportation system is well-established, and the transportation arrangement is the only transportation arrangement in the prefecture level region of China [5]. Within the one

hour commuting area, there are 12 highway industries, 3 high-speed train stations, 2 train freight stations, and 7 surrounding airports. The development of hydrogen energy towns in Suzhou has shifted from a blowout like development to a stable one, but the development of hydrogen energy industrial parks is more rapid than that of hydrogen energy industries. Due to the late start of China's hydrogen energy industry, its development in various aspects such as storage, transportation, and manufacturing is still in its early stages [6]. So the development and planning of the hydrogen energy industrial park is not in line with the current situation of the hydrogen energy industry in Suzhou, which is also the core issue of the park's development. The accurate development positioning of the park is a prerequisite for determining the industrial development model of the park and conducting subsequent spatial layout.

2.1. Lack of Policy Guidance in the Spatial Layout of Industrial Development and the Construction of Industrial Clusters

Conditions. At present, due to the positioning of Suzhou Hydrogen Energy Industrial Park as the overall development goal of the industry, it has not been combined with the development characteristics of Suzhou's hydrogen energy industry. This has led to blind planning in spatial layout without forming a coherent and energy-saving layout form [7]. The hydrogen energy industry in Suzhou has adopted a trend of current manufacturing and lagging operation, which is not conducive to the balance of market structure and also leads to a single development model. Secondly, although the combination of industry, academia, and research can bring talent advantages to the hydrogen energy industry, it cannot solve the problem of operational lag in the short term. In addition, the homogeneous competition among multiple enterprises in the hydrogen energy industrial park has led to a lack of vitality in the development of the hydrogen energy industry in Suzhou.

2.2. Inadequate Implementation of Supporting Policies for Industrial Development

At present, China's fiscal policy mainly encourages hydrogen energy investment, especially in key projects. However, policies and measures to promote the localization of hydrogen energy equipment, increase the market supply of hydrogen energy products, and strengthen government procurement of hydrogen energy products are insufficient [8]. Before the introduction of a series of policies in Suzhou, the government as a market leader as a whole did not establish a stable and reasonable source of incentive funds, credit support policies were chaotic, various support policies and systems were not established, and fiscal policy incentives were single. Generally, only new energy products could be enjoyed. In most cases, this is a good policy. Next, there will be a situation of 'taking care of one thing and losing another'. Although Suzhou has taken a series of measures to open the hydrogen energy market and achieved some significant results, the commercialization of hydrogen technology still needs to see the development of these measures. Especially the current new fiscal policy in Suzhou, which focuses on the research and development of hydrogen energy technology, has led to a significant lack of financial and tax policies supporting market operation mechanisms.

2.3. There is a One Size Fits All Approach to the Preferential Range and Incentive Standards of Industrial Development Support Policies

In the tax policy of hydrogen energy enterprises, the hydrogen energy tax policy is not significant. For example, as of January 1, 2018, there will be corporate income tax, customs duties, urban maintenance and construction tax, education surcharge, and value-added tax in the hydrogen vehicle production company. The tax and fee ratio for the purchase and retention of hydrogen energy in China is 6:4, while in developed countries it is 3:7 [9]. On December 27, 2017, the relevant national management departments jointly issued the "Announcement on Exemption of Hydrogen Energy Vehicle Purchase Tax", which stipulated that after January 1,

2018, hydrogen energy vehicle products that have been included in the "Catalogue of Hydrogen Energy Vehicle Models Exempted from Vehicle Purchase Tax" will be exempt from vehicle purchase tax, but other taxes such as tax, urban maintenance and construction tax, and education surtax will still be related. From this tax structure, there is a certain difference in tax attitudes towards the hydrogen energy industry between Japan and developed countries³⁶. Similar to the hydrogen vehicle industry, developed countries encourage and purchase the use of hydrogen vehicles. Japan encourages use and restricts purchases. Every developed country actively promotes consumers to travel in a more environmentally friendly way and encourages them to purchase hydrogen powered vehicles. The current energy tax burden in Japan is the opposite of the tax structure of developed countries and hydrogen energy in China, which increases the tax costs for consumers and purchases of hydrogen energy, as well as the development of Japan's hydrogen energy industry. There are still institutional obstacles to the development of hydrogen energy in Suzhou, and there is a lack of effective government policy incentives, which has led local governments to consider financial allocation and do not want to prioritize purchasing hydrogen energy through government shares [10]. Due to the rapid development of the hydrogen energy industry, local governments have a heavy financial burden. The current fiscal policy in Suzhou is mainly based on macroeconomic policies, with a fragmented policy system and a lack of relevant implementation rules such as funding sources, scope of use, and methods, and no clear operational regulations.

2.4. Imperfect Public Supporting Services

The hydrogen energy industrial park in this city is characterized by the hydrogen energy industry chain, with obvious industrial advantages, good scale structure, obvious development characteristics, and significant industrial effect system. However, the construction of living facilities in industrial parks was relatively late, and cultural and commercial facilities were insufficient. The problem of insufficient construction of some employee dormitories is still serious. Some companies can only rent or rent houses nearby, but some companies are currently building employee dormitories. In addition, public services ensure that enterprises and employees are able to survive due to water shortages, power supply, cable TV, internet, and cultural barriers.

The responsibilities that education centers, department stores, hospitals, and food markets need to bear cannot guarantee the normal life of employees. The problems of "difficult recruitment" and "difficult backup" have intensified to a certain extent, affecting the investment and development environment of garden wards. Secondly, the development level of productivity service industries such as finance and logistics has not yet spread to the park. The logistics service is not in the garden. The company's logistics mainly relies on self solving. The construction of modern logistics facilities and logistics system in Sono was relatively late. The lack of intermediary services such as labor, law, advertising, design, and management consulting has constrained and affected the expansion of the company's production and business activities. In summary, by analyzing the current development status of the hydrogen energy industry in Suzhou, it is found that there are problems in the development of the hydrogen energy industry in Suzhou, including different issues in terms of technology, financing, policies, and corresponding policy incentives.

3. Cause Analysis

3.1. External Environmental Factors

The development path of the hydrogen energy industry in Suzhou is uncertain, so the industry chain lacks foresight, guidance, and pertinence in the promotion process. The main development problem for enterprises is the lack of market prospects. Secondly, due to the need

for cooperation from numerous departments in the development of the industry, the ability of collaborative organization in the industry is weak, and there may be difficulties in positioning policies in the specific implementation process. There are no protective measures for policy implementation, making it difficult to advance various tasks. Finally, the positioning of the hydrogen energy industrial park in Suzhou is not unique. After spatial development, various enterprises in the industrial park have not established a coordination mechanism for mutual development, and disorderly competition is widespread among many enterprises, resulting in a waste of resources in the industrial park and repeated infrastructure construction, which has a negative impact on the development of the hydrogen energy industry in Suzhou.

3.2. The Particularity of the Industry to Which the Industry Belongs

The development of the hydrogen energy industry in Suzhou relies on industrial innovation capabilities. Currently, the Chinese government actively promotes enterprise innovation and regards innovation capabilities as the primary driving force for enterprise development. The insufficient research and development capacity in the hydrogen energy industry in Suzhou is due to the fact that enterprise research and development requires occupying a large amount of funds and resources in enterprise development, so many enterprises are unwilling to establish their own research and development bases; Secondly, the technical capabilities of the R&D centers established in the industrial park are insufficient, with a better number of patents than none. The public relations ability for key technologies is weak, and it cannot reach the advanced level in China, let alone compare with world-class R&D centers. For enterprises, many key technical equipment is imported from abroad. Overall, the innovation capacity within the industrial park is insufficient, and the competitiveness of the development of the hydrogen energy industry is relatively weak. For this reason, Suzhou has actively and extensively cooperated with enterprises such as Jiangsu Qingneng Hydrogen Energy Technology Co., Ltd. and Nantong Baiying Energy Co., Ltd. to carry out public relations on key equipment and technology, and to develop domestically produced excellent equipment and technology with a considerable level as soon as possible, obtaining recognition from relevant national departments and obtaining production licenses. This is also the basic requirement for the country to treat innovative development. The hydrogen energy industry chain in Suzhou cannot achieve significant development without technological innovation and the support of key equipment. The lack of these two innovative capabilities has a negative impact on the development of the hydrogen energy industry in Suzhou. Therefore, targeted solutions to key issues are the key issues for the development of the hydrogen energy industry in Suzhou.

The development of the hydrogen energy industry in Suzhou is constantly advancing, and for hydrogen energy enterprises, more talents from various aspects are needed, which also puts forward requirements for the quality of their own talents. However, Suzhou currently lacks high-end talents in the hydrogen energy industry, and mid-range talents are also unable to meet the growing needs of enterprises. However, Suzhou lacks corresponding systems and policy guarantees for talent cultivation in the hydrogen energy industry. There are no local scientific research institutions, no talent training bases jointly established with high-end enterprises, and there is a lack of specific policies for the introduction of excellent personnel from both domestic and foreign sources. The development prospects of the hydrogen energy industry in Suzhou are worrying, and in order to obtain high-end outstanding talents, it is necessary to seek them from large cities. Nowadays, Suzhou lacks corresponding high-end talents in various aspects of the hydrogen energy industry, which is also the main factor restricting the development and innovation of the hydrogen energy industry in Suzhou. This also has a significant impact on the speed of the development of the hydrogen energy industry in Suzhou. If this situation continues in Suzhou, it may lead to a lack of endogenous driving force for the development of industrial parks, which will inevitably affect the development of hydrogen energy in Suzhou.

3.3. Insufficient Government Industry Planning and Guidance

In the design and planning of the main Suzhou city, according to the existing mode of planning, it did not focus on its own development characteristics, planning in production and operation related aspects, and the planning of the upstream and downstream industrial chain was not designed in a scientific and reasonable order. The local policy requires the construction of the hydrogen energy industry within the hydrogen energy industrial park, without considering whether its related industries are suitable for establishment in the hydrogen energy industrial park, blindly resulting in unreasonable spatial planning of the industrial park. In the production base of the hydrogen energy industrial park, there is a lack of many related enterprises to settle in, such as equipment manufacturing enterprises and battery application project enterprises for production. Although the battery manufacturing enterprises in the industrial park have already moved in, their production workshops are not located within the park, which has resulted in the industrial park not forming a centralized production model and increasing production and transportation costs between enterprises. Secondly, there are also many issues with the connection between upstream and downstream.

There is no well-established one-stop model among enterprises, and for the industrial park in Suzhou, the key issues are fragmented governance, lack of communication on technical equipment, and spatial dispersion.

3.4. Government Departments Have Inconsistent Understanding of the Hydrogen Energy Industry

China has introduced numerous policies in the development of hydrogen energy, but overall, they are not yet perfect, and there are still various problems in hydrogen energy policies. On the one hand, the subsidy intensity of fiscal policies is not evenly distributed, and the subsidies received for solar energy and wind power are relatively large, while the subsidy policy for hydrogen energy is very limited. This effect has caused overcapacity in key subsidized enterprises, and the development of hydrogen energy has been restricted to a certain extent. Therefore, when providing policy assistance, the government needs to balance its support for various new energy fields. Secondly, in the production license process, the incentives for upstream and downstream are relatively small, and the problems that the industry fundamentally needs to solve have not been helped. There are no direct incentives in the incentives, and most of them are only given after reaching a certain scale. This initial stage of entrepreneurship brings certain difficulties to the development of the enterprise, and most of its funds cannot be directly applied to key technological fields. In order to implement innovative development, It's even more difficult.

3.5. Administrative Management System Difficult to Adapt to New Developments

The overall planning and supporting facility construction plan of the district is outdated. Some plans lack comprehensive and scientific evidence. Several of these projects have undergone repeated adjustments, and overall, the construction of some supporting facilities in the park lags behind actual investment and development needs. Insufficient investment. With the rapid development of the construction industry, the renovation of infrastructure requires a large amount of funds. The source of construction funds largely depends on the government's financial situation. There is a significant shortage of capital in terms of capital constraints and investment. Due to insufficient investment, the infrastructure construction of the park lags behind, and the progress of joint construction projects lags behind. Due to historical reasons, the northern industrial parks are basically managed in an open manner. Park services are just a collaborative mechanism. On the other hand, providing efficient administrative services to enterprises is difficult. On the other hand, it has also caused an imbalance between the

construction of public supporting facilities and the development needs of enterprises, resulting in a lag in overall planning.

4. Summary

The unfavorable government policy guidance and the problems encountered in the planning of the hydrogen energy industrial park have had varying degrees of impact on the development of the hydrogen energy industry in Suzhou. The hydrogen energy industry belongs to an emerging industry, and when faced with specific problems such as talent shortage and high technological content, it has a relatively long-term impact on the development of the hydrogen energy industry in Suzhou. However, under the growing demand of the market and pressure from various aspects such as environmental protection and economy, the development of the hydrogen energy source industry is urgent. Therefore, we can draw on advanced hydrogen energy industry development bases at home and abroad to provide ideas for the development of hydrogen energy in Suzhou.

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