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Research on Air Pollution Control Status and Air Governance of "2 + 26" Cities

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Abstract. "2 + 26" cities have been the focus areas for air pollution control in recent years. Encouraged and guided by national policies, they have brought tremendous development opportunities to the development of the atmospheric environmental protection industry. Air pollution has great harm to human health, industrial and agricultural production, and atmospheric climate. "2 + 26" cities play an important role in the country, and their air pollution control is urgent. Based on the "2 + 26" cities, this paper analyzes the pollution status and management prospects of the "2 + 26" cities with data. In addition, we put forward corresponding countermeasures based on the "2 + 26" urban pollution status, and provide a reference for relevant departments to carry out air pollution control.

1. Introduction

As China's increasing attention to environmental issues such as air pollution has brought about huge opportunities for the development of environmental protection enterprises, China's environmental protection industry is in the golden period of development. However, the coexistence of opportunity and risk is a characteristic of the market, especially for environmental protection industries that are heavily affected by industry policies and weak market supervision, enterprises are more confused about entering the market to invest and develop. Helping enterprises accurately grasp the development opportunities of the industry and clarify the problems they face is of great significance for enterprises to enter the energy-saving and environmental protection industry market and play a major role [1].

2. Analysis on the Status of Urban Air Pollution Control Industry

According to data from the National Statistical Yearbook, China's industrial waste gas investment from 2013 to 2016 changed from 64.91 billion yuan to 56.147 billion yuan, while China's total industrial waste gas emissions from 2013 to 2016 were 55.442 million tons[2]. Reduced to 35.783 million tons. The annual industrial waste gas unit investment amount is calculated by combining the annual industrial waste gas treatment investment amount and the total industrial waste gas emissions. In 2013, the investment per ton of industrial waste gas treatment was 1,154.915 yuan, and by 2016, the investment per ton of industrial waste gas treatment was 1600.62 yuan, see Table 1. Based on the calculated unit air pollution investment in China and the amount of waste gas emissions from the province where the city is located, the scale of urban air pollution treatment investment is calculated, as shown in table 1.

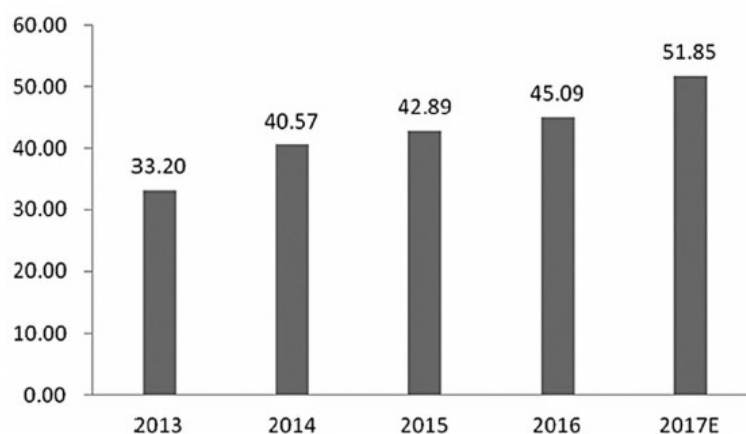


Table 1. Investment in industrial waste gas treatment units

	Industrial waste gas treatment investment (Ten thousand yuan)	industry exhaust Emissions (10,000 tons)	Unit atmosphere Investment in pollution (yuan / tonne)
2013	6409109	5549.42	1154.915
2014	7893935	5793.2	1362.621
2015	5218073	5248.15	994.269
2016	5614702	3507.83	1600.62
2017	4462628	2930.49	1522.827

Looking at the treatment capacity of industrial waste gas facilities, the conversion rate of industrial waste gas treatment in China is insufficient at this stage. According to the expert's analysis of the actual situation of the industry, it is believed that the current investment and operating cost of industrial waste gas treatment equipment account for 15% of the total scale. According to this ratio, the scale of operating costs of "2 + 26" urban industrial waste gas treatment equipment in 2013-2016 was calculated. According to the "Beijing-Tianjin-Hebei and surrounding areas 2017-2018 Autumn and Winter Air Pollution Comprehensive Action Plan", "October 2017 to March 2018, Beijing-Tianjin-Hebei air pollution transmission channel cities PM_{2.5} average concentration and heavy pollution day. The number is expected to decrease by more than 15% year-on-year. It is believed that emission reduction is required to reduce emissions, and the operation of industrial waste gas treatment facilities is the main means of emission reduction[3].

Suppose In 2017, the operation cost of environmental protection equipment increased by 15%, which can meet the requirements of the "Plan" can be obtained from the urban industry in 2013-2017 The scale of operating costs of the exhaust gas treatment equipment is shown in Figure 1.

**Figure 1.** Operating expenses of urban industrial waste gas treatment equipment, 2013-2017

3. Urban air pollution control market prospects

Since the 13th Five-Year Plan period, with the intensification of the battle against air pollution in some cities, the market investment in industrial waste gas treatment has also increased. According to industry insiders, the haze control will bring about The market space of 850 billion yuan will open up the market space of four major areas: environmental monitoring, ultra-low emissions of electricity, non-electricity emissions transformation, and automobile exhaust gas treatment. According to the results of 2017 statistical data, air pollution emissions in some cities account for the total national emissions According to this proportion, it is estimated that during the "Thirteenth Five-Year Plan" period, the urban air pollution control market will bring about a market size of about 127.5 billion yuan, and the industrial development prospects are good, and environmental monitoring, ultra-low emissions of electricity, The

four major areas of emission transformation and automobile exhaust treatment will become key investment areas[4].

The experience of developed countries abroad shows that the government attaches great importance to environmental protection and invests on a large scale. Generally, occurs in the late industrialization. At this stage, economic development has entered a stable stage. The improvement of the quality of people's lives and the improvement of the environment have gradually become the focus of social attention. Government workers the work center has gradually shifted from ensuring economic growth to focusing on people's livelihood, of which environmental protection is a priority Weight.

Since the founding of New China, China has passed 70 years of industrialization development, especially the rapid industrialization development since reform and opening up. China has achieved great achievements in industrialization, its economic development level has rapidly increased, and China has entered the first half of the industrialization period. From 2010 to 2017, although the growth rate of China's industrial added value decreased year-on-year, it still maintained an upward trend. In 2017, the overall industrial added value was 28 trillion yuan, an annual increase of 6.4%, and the industrial added value above the designated size increased by 6.6%. As China's economy enters the middle and late stages of industrialization, the traditional production mode with high energy consumption and high pollution can no longer meet the requirements of sustainable development. Energy conservation and emission reduction is an inevitable choice for China's economic development, and it is also the original driving force for the development of environmental protection industry. Encouraged and guided by China's environmental protection policy, investment in environmental protection industry has been increasing in recent years. In 2017, China's total investment in environmental pollution treatment was 953.9 billion-yuan, accounting for 1.15% of GDP 5. As China 's thermal power industry 's industrial waste gas pollution control has been nearing its end, investment in waste gas pollution control has declined in recent years, but with the rise of emerging areas such as With rapid development, environmental protection investment will continue to turn to the field of air pollution control, and the economy of the air pollution control industry will continue to rise steadily [5,6].

4. Problems Facing the Development of Urban Air Pollution Control Industry

Although Beijing 's cities are full of innovative resources for energy conservation and environmental protection industries, China leads the country, and the number of patents owned by enterprises in 2017 also leads the country, and has a wealth of Self-built industrial research institutions, national key laboratories, scientific research centers of universities and enterprises Laboratory and other resources, but its advantages in the treatment of air pollution have not been fully reflected. At present, most of the core technologies for the marketization of "2 + 26" urban air pollution control come from Introduce and absorb foreign technology or domestic technology transfer, etc. Weak development capabilities, relatively few original innovations, and low added value of products and services. Follow With "2 + 26" urban air pollution prevention and control standards are becoming stricter, especially in 2018 On January 16, After the Announcement of Special Emission Limits for Dyes was issued, the lack of innovation capacity of enterprises will Form technical barriers for enterprises to enter the market.

The characteristics of the energy-saving and environmental protection industry make it have the advantage of diversified funding sources, but the current environmental protection governance mainly relies on government financial input. Energy-saving and environmental protection projects are generally funded. Once the government is unable to pay on time, the enterprise will immediately face a financial crisis and it will be difficult to finance environmental protection industries Has become a problem facing enterprises, especially small and medium enterprises. At present, the market concentration of the "2 + 26" urban air pollution control industry is insufficient. Most of the enterprises are small and medium-sized enterprises, and their own investment funds are insufficient. In addition, the financial institutions in the regions where the "2 + 26" cities are located are not flexible enough and are relatively conservative The lack of institutions and credit support systems specifically for loans and services to the environmental protection industry makes enterprises often face insufficient funding and financing difficulties in entering the environmental protection market.

Due to the quasi-public interest nature of the air pollution control industry, the industrial market is not fully open, the government is involved in the approval of market access, and the competent department is involved in product sales and distribution. This situation is often accompanied by local protectionism, which makes the environmental protection industry market to some extent have problems such as market blockades and information asymmetries. Environmental protection companies with better technology and management skills need to expand across regions. Entering the urban air pollution control market faces certain obstacles.

5. Exhaust gas treatment equipment operating cost scale

The operating cost of exhaust gas treatment equipment is an important component of the industry scale. Based on the historical data of the environmental statistical yearbook, it is concluded that the number of industrial waste gas treatment facilities and operating costs for 2013-2017 including Beijing, Tianjin, Hebei, Henan, Shandong, and Shanxi provinces and cities are shown in Tables 2 and 3.

Table 2. Number of industrial waste gas treatment facilities in provinces in some cities, 2013-2017

	Beijing	Tianjin	Shandong	Hebei	Shanxi	Henan
2013	3316	4262	16436	18172	14353	10524
2014	4311	4621	18517	19519	16748	11736
2015	3996	5140	21612	22095	16943	12821
2016	4245	5352	22031	23852	17605	13991

Table 3. Operating costs of industrial waste gas in provinces where cities are located, 2013-2017

	Beijing	Tianjin	Shandong	Hebei	Shanxi	Henan
2013	90066	265606	1308652	1331603	861522	616657
2014	102783	316250	1614630	1635201	1001884	799232
2015	73155	335052	183486	1741038	889202	956014
2016	98281.76	345752	1851466	1875168	1011272	938621

6. Conclusion

The current urban air pollution control industry has low entry barriers and insufficient market standardization, leading to the phenomenon of “bad coins expelling good coins” in the air pollution control industry. Since many companies only pursue the development goal of short-term profits, there are problems such as non-standard environmental service companies winning bids at low prices and then subcontracting. This does not hold the competition for companies with relatively high technology and good quality stability Absolute advantage. In addition, in the actual bidding process, there is a certain tendency for local governments and institutions to favor central and state-owned enterprises.

The urban air pollution control industry market has a good development prospect, but there are still many barriers to market entry. Therefore, for environmental protection companies entering the market, they should make a reasonable layout from the two dimensions of regional and industrial development, reduce risks, and win market opportunities.

As the city's ultra-low emission standards have become more stringent, the traditional “point headache, foot pain, foot pain” governance model has failed to meet the governance requirements of polluting enterprises. Therefore, for small and medium-sized enterprises, they should proactively strengthen cooperation with large-scale enterprises with advanced technology and strong comprehensive strength, and join the leading enterprises in the industry to open up the entire industrial chain of energy conservation, emission reduction and comprehensive utilization of resources in the industrial sector to provide industry System solutions to support industrial energy conservation and environmental protection industry comprehensive service providers.

As the battle against air pollution control in cities continues, local governments continue to increase investment in air pollution control. At the same time, local governments are also actively promoting the

development policies of the financial leasing industry, the trust industry and asset securitization. For example, Tianjin, as a concentration area of the financial leasing industry, has issued a number of policies to support the development of the financial leasing industry, such as the establishment of new leasing companies. Financial assistance, office building and rental housing subsidy, business tax and income tax subsidy, management income tax award A series of measures including incentives for loans to small and micro enterprises in the city, export tax rebates, financial assistance for listing and listing, and simplifying and standardizing approval procedures on the mechanism. For another example, at the end of 2016, the Hebei Provincial Department of Finance issued a notice on "Guiding Opinions on the Establishment of Equity Funds for the Prevention and Control of Air Pollution". Environmental protection investment enterprises should actively seek relevant financial funding support in accordance with relevant policies. In addition, environmental protection enterprises should make good use of loans such as franchise rights, charge pledge rights, and green credit to multi-channel financing.

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