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Study on the Impact of Pilot Policies of Low-Carbon Cities on Environmental Pollution

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Abstract: *In recent years, environmental pollution has increasingly threatened human survival and directly affected the quality of the population. In this regard, people pay more and more attention to environmental protection. After sustained high-speed economic growth, China has become the second largest economy in the world. However, the growth pattern of extensive economic for many years has also led to a series of problems such as low efficiency of resource utilization and serious environmental pollution. In this situation, we must pay attention to air pollution and other issues. Find out the main influencing factors of environmental pollution, provide a reasonable basis for the formulation of regional ecological construction and environmental protection goals and the coordinated development of social economy and ecological environment, and create a more comfortable environment for people.*

Keywords: *Low-carbon cities; Pilot policy; Environmental pollution; Affect*

1. Introduction

Human beings originate from nature and are the products of natural environment, so there is a certain limit to their ability to adapt to the environment. In recent years, environmental pollution has increasingly threatened human survival and directly affected the quality of the population problems such as low efficiency of resource utilization and serious environmental pollution. In daily life, people's behavior will also cause pollution to the environment. Residents often have some bad behaviors, resulting in serious negative impact on the atmospheric environment [1]. From the actual situation, there are still people with weak awareness of environmental protection. The actual effect of urban environmental protection is not very good. The environmental pollution problem in many areas is still very serious. Because residents do not pay attention to the garbage classification work, a large number of garbage are piled together, and some of them will cause serious pollution to the environment due to chemical reactions, so it is necessary to pay attention to relevant issues, manage urban garbage, and reduce the impact of relevant factors [2].

In this situation, we must pay attention to the problems of atmospheric pollution and other aspects. This paper has studied the impact of the low-carbon city pilot policy on environmental pollution. Over the years, the central and local governments have continuously and deeply carried out various kinds of policy-oriented guidance and practice, and actively tried to achieve the goal of pollution control and pollution prevention by continuously strengthening the comprehensive treatment capacity of the urban environment under the condition of ensuring stable economic growth, And further realize the sustainable development of cities [3]. Focus on the effect of environmental governance policies on pollution prevention and control, and explore the impact of low-carbon pilot policies on urban environmental pollution, especially on air pollution. By reducing carbon emissions, however, reducing carbon emissions only reflects the policy effect of direct emission reduction, while promoting industrial low-carbon transformation is a long-term mechanism to indirectly reduce environmental pollution and achieve high-quality economic development [4]. The essence of resource allocation is the efficient transfer of production factors between different departments. Good urban infrastructure will improve the operating efficiency of the industry and avoid the waste of resources, thus effectively reducing the emission level of pollutants and the coefficient decreases, then the estimation in this paper is overestimated, but does not affect the final conclusion, which also proves the robustness of the estimation conclusion from the side[5-6].

2. Policy background and mechanism analysis

Based on the overall background and policy background of the pilot construction of low-carbon

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cities, this paper holds that the pilot construction of low-carbon cities comprehensively uses administrative means such as planning, engineering, technology and law. It is urgent to protect the environment while ensuring the gradual transformation of production mode. Innovation is an important way to achieve this dual goal. This requires that the government's policy incentives must be targeted. While affirming to be high-quality and high-level, which not only provides institutional guarantee for the resonance of urban economic development and environmental protection, but also "steps on the accelerator" for the city to transform into an innovation-driven city [7]. The essence of resource allocation is the efficient transfer of production factors between different departments. Good urban infrastructure will improve the operating efficiency of the industry and avoid the waste of resources, thus effectively reducing the emission level of pollutants. In order to reflect the advanced characteristics of the pilot area, it is necessary to formulate corresponding environmental control systems according to local actual conditions, strengthen government guidance and formulate economic incentive policies, and at the same time strengthen the construction of urban transportation, energy, water supply and drainage, heating, sewage, garbage disposal and other infrastructure; The third is to strengthen low-carbon development capacity building and talent team building [8].

Improve the corresponding low-carbon development institutions and organizations, and formulate working principles, so as to strengthen the overall management capacity of low-carbon industries. From an indirect perspective, technological innovation can be influenced by relevant policies, environment and infrastructure investment. For the government, the policy may encourage the technological innovation and technological upgrading of the manufacturing industry through corresponding subsidies or investment of guiding funds, so as to reduce and share the costs and risks of technological innovation.

3. Impact of low carbon pilot city construction on environmental pollution

In the process of economic development, these factors are embodied in the scale and level of economic activities, urbanization, industrial structure, scientific and technological progress, environmental protection investment level and environmental protection institutional arrangements. The selection of cities in the pilot policy meets the requirements of randomness. The National Development and Reform Commission mainly considers the pilot situation from such factors as the pilot area, work basis and the willingness of the city to apply. Although it is not a lottery choice, it is not highly related to the low-carbon development of the city itself [9]. From the general environmental economic theory, the main influencing factors and mechanisms of environmental pollution emissions are shown in Figure 1.

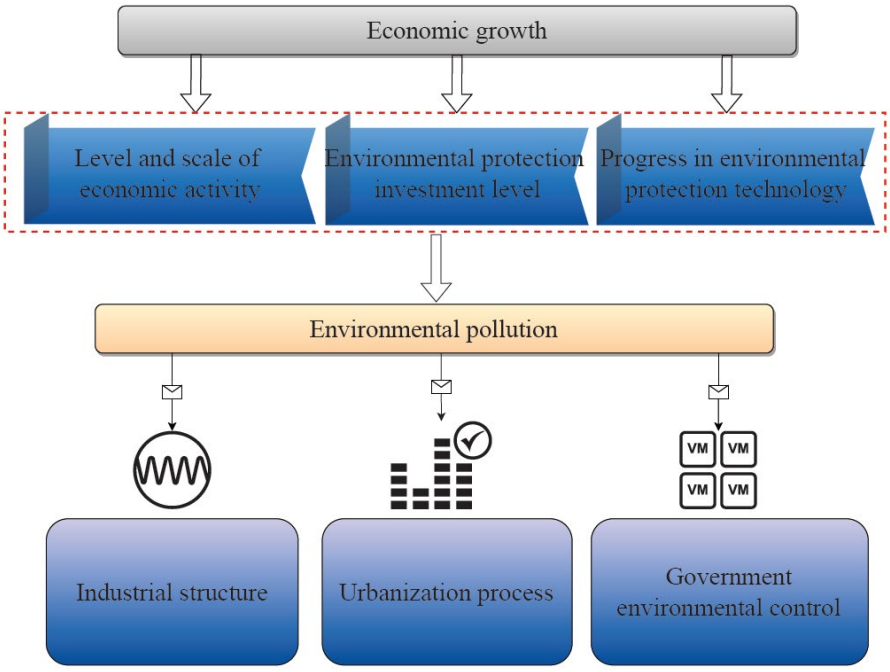

Figure 1: Main influencing factors and mechanism of environmental pollution discharge

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Through the analysis of the main influencing factors of the environmental pollution emission of the low-carbon pilot policy, it can effectively provide all residents with food, including food, with sufficient quantity, reasonable structure, and qualified quality. Therefore, we must vigorously strengthen the protection of agricultural ecological environment, prevent and control pollution, and reverse ecological deterioration.

3.1. Exhaust emission

The construction of low-carbon cities has significantly improved the level of urban technology upgrading, which may be due to the increase of R&D investment in cities, which has led to the emergence of new technologies, thus reducing the level of environmental pollution. At the same time, good public transport infrastructure is more conducive to ensuring the convenience and smoothness of resource transportation, and reducing pollutant emissions by improving the operational efficiency of enterprises. The growth of population inevitably requires the improvement of economic activity level and the expansion of scale, so as to maintain the growing demand for material products and spiritual products. The level and scale of economic activities are often measured by the scale of economic output, such as GNP, GDP or per capita GDP. In addition to labor, capital and technology, the factors supporting economic growth also include the environment. With the development of economy, the number of cars keeps rising, and a large amount of tail gas emitted by cars has become one of the important factors of air pollution.

The construction of low-carbon pilot cities is not a day's work, nor can it achieve immediate results by a single investment. It is a systematic project, which requires multiple factors to work together to achieve results. Therefore, the construction of low-carbon pilot cities must be supported by basic human, financial and material aspects to maximize its effectiveness [10]. Generally speaking, the factors that affect environmental pollution mainly include: the mode of economic development, structure and scale, production technology level, factor input, national or regional environmental policies, public awareness and behavior of environmental protection, etc. The differences between social and natural environmental factors can often be expressed through economic conditions, so environmental quality is essentially caused by changes in the economic environment. Therefore, the treatment of automobile exhaust is of great significance to the atmospheric environment, and more effective measures are needed to solve this problem and reduce the impact of pollution.

3.2. Daily life

Ecological deterioration in recent years, China's ecological deterioration is mainly manifested in: loss of fertile soil, sharp reduction of cultivated land, expansion of deserts, accelerated disappearance of natural forests, and large-scale red tides in coastal waters. As a result, disasters are frequent, and China is one of the few countries with the most serious natural disasters in the world. Burning waste, setting off fireworks during festivals or burning coins in memorial ceremonies will cause serious negative impact on the atmospheric environment. The development of urbanization reflects the purpose and driving force of human beings, and is controlled by human beings. Moreover, this control force is becoming larger and larger with the progress of human society, and the consequences of control inevitably lead to changes in various environmental factors and the overall environment. This change can make the environment more conducive to human life, survival, production and construction, or not conducive to human society.

4. Result analysis

The construction of low-carbon pilot cities provides a good quasi-natural experiment for improving and controlling environmental pollution. This paper evaluates the impact of low-carbon pilot policies on urban environmental pollution through investigation.

The results in Table 1 show that the construction of low-carbon pilot cities can significantly reduce the city's exhaust emissions regardless of whether the corresponding control variables are added impact of low-carbon city construction on wastewater discharge is not significant.

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Table 1 Impact of low-carbon city construction on environmental pollution

	①	②	③	④
	Exhaust emission	Exhaust emission	Wastewater discharge	Wastewater discharge
Economic development		0.348**(0.251)		0.201(0.219)
Urbanization		0.187(0.176)		-0.221(0.203)
Industrial structure		0.748(0.774)		1.578(0.745)
Manpower capital		0.072(0.067)		-0.038(0.042)

In order to control the influence of these factors, this paper adopts the interactive effect method to add the intersection of three benchmark factors, namely, whether it is a special economic zone city, whether it is a provincial capital city and whether it is a "two-control-area" city, to the benchmark regression, so as to control the influence of inherent characteristics differences among cities on producer services from a linear perspective. The results are shown in Table 2. The estimation coefficient is still significantly positive, which is consistent with the benchmark regression results, indicating that the results are still robust after considering the urban benchmark factors.

Table 2: Test results of other influencing factors

	Three policy impacts		Impact of urban benchmark variables	
	①	②	③	④
Control variable	Yes	Yes	Yes	Yes
Sample size	3124	3245	3315	3218
Urban fixation	Yes	Yes	Yes	Yes
Fixed time	Yes	Yes	Yes	Yes

This paper holds that the pilot construction of low-carbon cities comprehensively uses administrative means such as planning, engineering, technology and law. It is urgent to protect the environment while ensuring the gradual transformation of production mode. Innovation is an important way to achieve this dual goal. This requires that the government's policy incentives must be targeted. While affirming to be high-quality and high-level, which not only provides institutional guarantee for the resonance of urban economic development and environmental protection, but also "steps on the accelerator" for the city to transform into an innovation-driven city. The essence of resource allocation is the efficient transfer of production factors between different departments. Good urban infrastructure will improve the operating efficiency of the industry and avoid the waste of resources, thus effectively reducing the emission level of pollutants and the coefficient decreases, then the estimation in this paper is overestimated, but does not affect the final conclusion, which also proves the robustness of the estimation conclusion from the side.

5. Conclusions

After testing, excluding other policies, considering urban benchmark factors and conducting placebo test, the conclusion is still robust. At the same time, it also brings huge resource consumption and negative problems such as waste water and waste gas emission. Therefore, it is necessary to further strengthen the control effect of air pollution, change the way of energy utilization, and further optimize the way of resource utilization, so as to provide greater help for the improvement of China's ecological environment. Producer services not only meet the requirements of developing low-carbon industries, but also the construction of low-carbon cities has significantly improved the level of urban technology upgrading, which may be due to the increase of R&D investment in cities, resulting in the production of new technologies, thus reducing the level of environmental pollution. At the same time, good public transport infrastructure is more conducive to ensuring the convenience and smoothness of resource transportation, and reducing pollutant emissions by improving the operational efficiency of enterprises. From an indirect perspective, technological innovation can be influenced by relevant policies, environment and infrastructure investment. For the government, the policy may encourage the technological innovation and technological upgrading of the manufacturing industry through corresponding subsidies or investment of guiding funds, so as to reduce and share the costs and risks of technological innovation.

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