Government Functions of Haze Control

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Abstract. Behind China's haze pollution problem is the unsustainability of China's economic development model. The imperfect laws and regulations on haze control and the establishment of institutions in China also reflect the lack of the haze control ability of the Chinese government. For the atmosphere, a public good, the frequent occurrence of haze indicates that the market has failed, and no one pays for the haze. Under various circumstances, only the government functions can be used for haze control. Through the administrative and social functions of the government, especially the economic functions, we can find a suitable path for haze control in China. This paper reviews the process of haze control in London and proposes that the government should give full play to its role in this field when the market fails in the face of atmospheric public goods.

Keywords: Haze Governance, Public Goods, Market Failure, Government Functions

1. Introduction
Since the reform and opening up, China has made great achievements in economy, science and technology. In 2010, China's GDP surpassed that of Japan and became the second largest economy in the world. However, with the economic growth after the reform, more and more problems have been exposed in China, including environmental pollution and ecological damage. According to the public report data of 20 provinces and cities affected by haze events in January 2013, some scholars comprehensively adopted direct loss assessment method, disease cost method and human capital method to evaluate the direct economic losses of traffic and health caused by haze events. The assessment results show that the direct economic loss of traffic and health caused by the haze event in January 2013 is conservatively estimated at about 23 billion yuan [1]. Water pollution, the destruction of land resources, as well as the impact of severe smog, all warn us of the urgent need for environmental governance.

In recent years, frequent and prolonged haze outbreaks have seriously affected the normal production and life of ordinary people, which has aroused widespread concern of the public in China. The Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta economic zones are the main areas with high levels of particulate pollution. Haze not only seriously harms human health, but also exerts influences on China's economy and society in various aspects. For example, haze can cause direct or indirect losses in transportation, enterprise production, medical and health care and other fields. Obviously, haze has become a major environmental factor that restricts the healthy development of China's economy and society.
Therefore, haze control is an important part of China's current environmental pollution control. Due to the nature of "public goods" in the atmosphere, haze governance is faced with various difficulties and market failure, so it is urgent to strengthen the role of the government. Through the government to give full play to its functions, find the effective way of haze control in China, return the public a blue sky.

Haze governance is by no means a single environmental project. In the process of haze governance, the perspective of economics should be added and based on the transformation of social development mode, so as to finally solve the severe haze problem accompanying industrialization. Therefore, this paper reviews the causes of haze in China and the treatment plans of various experts and scholars. Based on the experience of haze treatment in the UK and from the perspective of the government, this paper proposes the way of haze treatment in China -- giving full play to the functions of the government.

2. Analysis on Smog Control in London

2.1. Experience in Governance
Smog is often associated with the devastating London Smog of December 1952, when 8,000 people died [2]. The incident has had a huge impact on British society, making the UK determined to carry out a thorough smog control project.

In the early stage, The UK mainly controlled haze through legislation to curb industrial pollution. After the Industrial Revolution, The process of industrialization in Britain continued to advance. By 1870, it was basically completed and the industrial civilization was highly developed. In the whole industrialization process of Britain, coal is the most important energy to support industrial development. It is the smoke, sulphur oxide and carbon oxide released into the atmosphere by coal burning, coupled with the unique geographical location of London that cannot be dispersed, forming a mixture of smoke and fog, and eventually the "London Smog" event. Therefore, the primary task of smog control in the UK is to control pollution sources. Against this background, in 1954, the "City of London Act" was introduced to control smog emissions. In 1956, the UK introduced the world's first air pollution prevention law, the "Clean Air Act", which adopted a number of specific measures to prevent haze [3]. Since then, several other relevant laws have been introduced in the UK.

In the middle period, The UK strengthened haze governance mainly by controlling domestic emissions. In this process, The UK has taken a series of measures to strictly limit vehicle exhaust emissions, such as whether the vehicle exhaust test meets the standards; A "congestion charge" and so on[4]. At the same time, the government has continued to strengthen urban greening. On the other hand, the British government has joined hands with multiple departments to deal with haze, integrating land, air and water into a unified system for management, and forming an integrated environmental protection management.

In the later period, the UK mainly focused on industrial upgrading and pollution output. As the root cause of pollution is the use of a large amount of non-clean energy such as coal burning in the industrial process, The UK made active industrial adjustment in the later period, promoted industrial transformation and upgrading, reduced its dependence on heavy polluting manufacturing, and vigorously developed service industry and high-tech industry[5]. At the same time, through industrial advantages, domestic high-energy-consumption industries will be transferred to other developing countries to reduce the environmental pollution of Britain itself.

2.2. Reference and Limitation
In the decades of haze governance in the UK, a complete set of perfect laws, the role of the government, the joint cooperation of multiple departments and the participation of the whole public are all worth learning from in China. However, there is a big difference between China's national conditions and the UK, so the governance experience of the UK cannot be fully applied. First of all, the composition and formation mechanism of haze in China are more complex than that in Britain, and
the road to control haze is more difficult [6]. Second, the UK has embarked on the road of "pollution first, treatment later" industrialization at great cost [7]. Although China has sacrificed its ecological environment in the process of pre-industrialization, China is still in the stage of accelerating industrialization and should avoid the old road of Britain later. Finally, the UK's smog control in the later stage relies on pollution output, which is self-beneficial at the expense of others and unsustainable.

On the basis of learning from the experience of haze control abroad and combining with its own national conditions, China should give full play to the functions of the government and find a suitable way for haze control.

3. Government Function of Haze Control in China

3.1. The Necessity of Giving Play to Government Functions in Haze Control

On the one hand, since Keynes macroeconomics, it is generally believed that the government mainly has many functions, such as economic regulation, market regulation, social management, public service and environmental protection. The government can take administrative, economic, legal and other means to manage various affairs, which is public, legal and mandatory, which is conducive to China's current complex problem of haze control.

On the other hand, the atmosphere is a public good, with external spillover benefits (positive or negative externalities). The frequent occurrence of haze proves that the market has failed in the field of atmospheric environmental protection, so the government is in urgent need of intervention [8]. Therefore, China's smog control is inseparable from the effective play of government functions.

3.2. The Absence of Government Functions in Haze Control in China

Although the formation of haze has a dual function of natural and man-made, main responsibility is because our country some inappropriate behavior in the process of economic growth, and on the choice of the pattern of economic development and in the process of fog haze of governance, our government has failed to play its role effectively, functional deficit problem. According to the current situation, the lack of functions of the Chinese government in haze control is mainly reflected in the macroscopic aspects:

Relevant laws, regulations and policies on haze governance are not sound and sustainable. In order to cope with the market failure in air protection, China's relevant policies are still not perfect, and some policies are unreasonable. For example, charging a "pollution fee" seems to be a good policy, but in fact it is less operable. The system design itself lacks scientificity, which only charges the pollutant discharge fee to the enterprises that exceed the pollutant discharge standard, but not to the enterprises that discharge low pollution. During the implementation, the cost of pollution control is much higher than the charge, and the cost is greater than the benefit. China should learn from the Experience of the UK and establish a complete and operable legal and policy system.

The establishment of haze control institutions is imperfect. At present, China does not have a unified smog detection and management organization. In practice, due to unclear responsibilities for environmental governance or protection among various departments, some problems are left unattended, while others have management contradictions and conflicts.

It fails to give play to the multi-subject common governance mechanism under the guidance of the government. Reviewing the UK's experience in haze governance, we can see that in the early stage, the UK also adopted mandatory measures such as legislation to combat haze, while in the middle and late stage, the government began to guide the cooperation of all stakeholders, making the government, enterprises and the public the main force in haze governance. From the perspective of China's situation, many enterprises and the public do not realize how much loss and harm their unreasonable behaviors will cause to the social environment, or many people want to change the situation but have nowhere to do. Indeed, the Chinese government should do more to guide the joint treatment of smog by multiple actors and at multiple levels.
The traditional measurement system of national economic and social development is unreasonable. In the early days of reform and opening up, China traded high investment and energy consumption for high growth, which proved unsustainable even when the economy grew. In the past, GDP was the only way to measure China's economic and social development and evaluate the performance of a local government. Now it seems that such an evaluation system has already caused obstacles to haze governance.

3.3. Suggestions on Improving Government Functions in Haze Control in China

3.3.1. Improve the administrative, social and operational Functions of the Government in Haze Control.

The government should improve China's legal system and supervision system for haze control, take haze control as a long-term national work, give sufficient government attention, and guide the establishment of relevant laws, regulations and policies, which are the primary work of the government for haze control. From the experience of the UK, we can know that in order to thoroughly control the haze, we must give sufficient protection and the courage of enforcement in the early stage in the law.

We should set up a relatively perfect haze supervision organization in our country as soon as possible. Only through the perennial detection of China's haze to form a database, we can find the formation of China's haze, the disappearance of clues, to solve the short-term haze control technology bottleneck provided ideas.

Actively guide enterprises and the public to participate in the joint haze governance process. The strength of any party is insufficient, and the efforts of the government alone are not enough. Therefore, the government should give full play to its guiding and coordinating role and encourage other subjects and departments to take part in haze control by means of incentives. The joint efforts of the society are the long-term road to haze control.

Clarify the responsibilities of government departments or environmental protection departments in environmental protection and governance. China could follow the UK's example in setting up a smog regulator: it could merge some branches of the National Rivers Authority (NRA), Pollution Watchdog (HMIP), Waste Control Authority (WRA) and Environmental Agency (DOE) into a single environmental regulator.

3.3.2. Give full Play to the Economic Functions of the Government in Haze Control in China

The economic functions of the government mainly include macro-control, provision of public goods and services and market supervision. Specifically, they include: indirect and macro-control over the operation of the entire national economy through the formulation and application of fiscal and tax policies and monetary policies; Indirectly control the entire national economy by means of government management, formulation of industrial policies and planning guidance. At the same time, give play to the power of social intermediary organizations and enterprises to undertake the task of providing public goods together with the government. To regulate and supervise enterprises and markets.

Due to the nature of atmospheric "public goods", our market fails in this field. Therefore, our government should give full play to its economic functions, regulate the failure of the market in the atmospheric field, and provide high-quality "public goods" for the society. To this end, the government can start from the following aspects:

The government makes full use of fiscal and taxation policies to encourage or punish enterprises' emission behaviors. The government should not only charge "pollution fees", but also make full use of its fiscal and tax power to subsidize environmental protection enterprises, while punitive taxes should be levied on relevant pollution departments, so as to urge enterprises to change their development mode and subsidize the cost of smog control [9].

The government actively guides industrial transformation and upgrading. China depends on the
high energy consumption, high investment of the industry in the market competition in the inferior situation, or in the harm of environmental pollution, China's industrial transformation and structural adjustment[10]. In the process of haze control, The UK also adjusted its own industry in the later stage and vigorously developed the service industry and high-tech industry. However, it is not advisable for the UK to reduce its own losses mainly by exporting its pollution industry to other countries.

Local governments should strengthen regional cooperation in haze control. As industrial transfer deepens the spatial spillover effect of haze pollution, local governments should not only consider their own regions but also other regions when making policy guidance, such as industrial transfer and adjustment. Otherwise, even after internal adjustment, haze pollution cannot be thoroughly controlled. Regional cooperation is essential for haze control [11].

The government should actively guide the transformation of China's energy structure [12]. Many scholars have shown that the proportion of coal in energy consumption and haze pollution change in the same direction, so to fundamentally solve the haze problem must change China's energy structure, reduce coal, oil and other energy consumption, develop solar energy, wind energy, biomass energy and other new energy utilization system. The change of energy structure is long-term, while in the short term, air pollution can be reduced by improving coal quality and reducing the use of inferior coal.

4. Conclusion
Haze pollution in China has been very serious, the government needs to give full play to its administrative, operational and economic functions, the use of legal, economic means and other comprehensive control of haze. For the "atmosphere", a public good, the government should unite all social entities, through the fiscal and taxation system, industrial upgrading, energy structure adjustment and other economic means, from the long-term haze pollution control in China.

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