



# Analysis of the Legal Governance Status and Improvement Measures of Smog Pollution Control in China

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## ABSTRACT

Exacerbating smog weather has been considered a major environmental problem threatening China's sustainable development. As such, the Chinese government has initiated environmental efforts to solve this problem. Smog pollution can be legally managed by improving environmental protection standards, increasing environmental illegal costs, and enhancing the construction of environmental responsibility mechanisms. This paper focuses on the legislation status of smog pollution control at national and regional levels and analyses the limitations of the current legal measures. Legal strategies on smog pollution control are proposed on the basis of governance standards, pollution detection, legal liability, and public participation. Results indicate that many laws in China have recognized smog pollution and provided legal governance action plans and local regulations corresponding to national guidelines. Nevertheless, smog pollution control is associated with several problems, including outdated legislative philosophy, inefficient prevention and treatment policy planning, and enterprises' insufficient social responsibility. Therefore, relevant policy suggestions are proposed in this study on the basis of four aspects: enhancing the evaluation system conforming to ecological civilization construction requirements; comprehensive promotion of emission trading system; improving public participation system; and building smog monitoring and early warning mechanisms. This study provides a basis for the proper determination of legal regulation status and smog-related problems in China and for the development of updated legal governance measures.

## INTRODUCTION

Smog is a combination of fog and smoke. Fog and smog belong to visual obstacles, but they greatly exhibit different properties. Fog is condensed water vapour, and smog is aerosol composed of dust, sulphuric acid, nitric acid and other substances in air. Under certain illumination, temperature, and atmospheric movement, fog and smoke combine and form smog. Since the winter in 2013, many regions worldwide, especially North China Plain, have suffered from the harmful effects of smog weather, and many cities have issued yellow smog alerts (Table 1). In China, continuous smog weather may cause low visibility and negatively influence an individual's life, productivity and learning. For example, smog weather may cause frequent respiratory diseases. Low air visibility may lead to traffic accidents. Primary and secondary schools have to suspend classes because of smog. Smog also affects sunlight and thus reduces crop production and causes other severe consequences. Adverse and continuous smog weather may also evoke public concern. Government officials and civilians have realized the importance of atmospheric pollution control. Since the reform and opening-up policy, China has experienced extensive development in pollution and pollution control. However, environmental pollution has largely impeded sustainable economic devel-

opment. Severe environmental pollution also reduces the living quality of masses and influences human settlement. This condition also negatively affects foreign businesses and investments. To achieve economic sustainable development, China must strengthen environmental policies, that is, GDP and environmental protection must be considered. Sustainable development can be achieved when the economy, the society, and the environment are in harmony and unity. An ecological civilization system was also proposed by the Third Plenary Session of the 18th Central Committee of the CCP in 2013.

In 2013, Chinese President Xi Jinping hosted the Standing Committee meeting of Political Bureau of the Central Committee to examine Atmospheric pollution Control Action Plan. This committee was the first to discuss atmospheric pollution control and revealed the concern of national top leaders involved in smog weather governance. Solving current relevant problems on smog weather and releasing various pressures caused by environmental problems are necessary to promote ecological civilization construction. The ecological civilized society has established numerous atmospheric standards and recommended that pollutant concentrations in the atmosphere should be less than the damage level and should not influence the normal

Table 1: Concentration limits of the common environmental atmospheric pollutants in China in 2013.

| Pollutants                     | Average time    | Level 1<br>Concentration limit | Level 2 Concentration limit<br>Concentration limit | Unit                       |
|--------------------------------|-----------------|--------------------------------|--|----------------------------|
| Particulate Matter 10 (PM10)   | Annual average  | 40                             | 70   | Micrograms per cubic meter |
|                                | 24-hour average | 50                             | 150  | Micrograms per cubic meter |
| Particulate Matter 2.5 (PM2.5) | Annual average  | 15                             | 35   | Micrograms per cubic meter |
|                                | 24-hour average | 35                             | 75   | Micrograms per cubic meter |

behaviour of living things, including humans. Moreover, it has set high quality standards that require optimum atmospheric environmental quality for the whole environmental system and for humans' comfortable and healthy life. However, the current atmospheric environmental quality has failed to satisfy the requirements of the ecological civilization construction. Poor atmospheric environmental qualities in many regions have seriously influenced normal productivity and living activities and have hindered economic and social development; furthermore, such poor qualities have impeded the building of a harmonious livable environment and reduced human happiness. These consequences have greatly violated the principles of sustainable development and have prevented the establishment of a harmonious socialist society.

Smog weather formation is closely correlated with weak environmental protection laws. How can we promote smog governance through legal system improvement and strengthening? This study aims to analyse the causes of smog weather formation and system environment involved in severe smog weather in detail. Smog formation is partially based on natural causes, and environmental systems are a relevant factor. Thus, this study also aims to explore the development of legal strategies on smog control.

## PROGRESS ON DOMESTIC AND INTERNATIONAL STUDIES

Smog pollution leads to severe worldwide environmental crisis, and many countries have developed efficient strategies to solve environmental problems. Although smog pollution has been described, studies have mostly focused on smog-related atmospheric pollution. In other countries, smog pollution is not severe; as such, have extensively explored atmospheric pollution. In 1952, Hodges proposed that atmospheric pollution control should reasonably solve the discharge and disposal of atmospheric pollutants and prevent secondary pollution (Hodges 1952). However, Hodges provided the discharge and disposal measures of atmospheric pollutants on the basis of technological aspects but provided few guidelines on the establishment of related legal systems (Hodges 1952). In the same year, atmospheric pollution com-

ponents varied. Basic solutions to pollution control, emission reduction, and smog control have also been discussed. Wagner recommended ten measures on the basis of laws and government management strategies to reduce air pollution caused by industrial emission (Wagner 1953). Jutze emphasized that atmospheric pollution control measures should be relevant and established an atmospheric pollution control system and coordination mechanism between federal governments and states (Jutze et al. 1962). These measures can promote good communication, coordination, and regional defence mechanisms between the central and local governments of one country and the governments of surrounding regions. Auerbach indicated that the power of the masses should be considered and their right to know and participate in relevant activities should be protected. These initiatives exhibit good effects on atmospheric pollution (Auerbach 1967). According to Wiel, scientific, reasonable, and essential evaluation of atmospheric pollution control measures positively influence the pollution treatment behaviour of the government (Wiel 1972). Stuart also suggested that factory enterprises in cities should be supervised by the environmental protection administration or the government. The emission behaviour of factory enterprises in the suburb should likewise be supervised by related departments (Stuart et al. 2009). Chen believed that the government should enhance legal management and advocate cleaning production and cyclic utilization rather than promote landfill use (Chen 2008). Varkkey analysed the implementation of reinforcement laws in Indonesia to reduce the influence on smog in Southeast Asia Alliance from Indonesia's management (Varkkey 2009). Roesa examined the influences of cross-border pollution agreement on smog management in Indonesia and provided policy suggestions in theory and practice (Roesa 2009). Mushkat evaluated the Southeast Asian region and the released urban smog via the cross-region cooperation law mechanism of ASEAN (Mushkat 2014). In China, smog was very severe, especially after 2013, hence, studies on smog pollution laws in China have mainly focused on cases recorded after the severe smog weather in 2013. Yang analysed the smog governance model with distinct characteristics in England and proposed a legal policy system to improve the standards of overall atmospheric pol-

lution control specific to current air environment pollution problems in China (Yang 2014). Hu comparatively analysed the advantages and disadvantages of imposing Pigovian tax and pollution rights trading; smog treatment should involve mixed strategies, namely, pollution rights trading. When managers incorrectly determine the optimum emission concentration and cause poor consequences, Pigovian tax is utilized as spillover mechanism to correct such errors (Hu 2015). Song analysed the mechanism of International Laws on smog pollution control and suggested that carbon financial legal system should be established on the basis of emission rights and conflicts with economic development should be avoided (Song 2015). Qian examined the responsibility ethics in terms of environmental management and then compared and analysed the smog legal governance in China and other countries (Qian 2015). He believed that smog-related problems can be effectively solved by enhancing the supervision of local governments on smog control and proposed specific strategies on effective supervision of smog control for local governments (He 2015). On the basis of previous research and practical outcomes in China and other countries, we observe that China has achieved remarkable improvements in laws governing smog weather control and atmospheric pollution prevention and control. However, several problems in the macroscopic structure, mesoscopic construction, and micro-design of laws should be enhanced. Therefore, further developments in current legal situations, problems, and specific legal measures for smog control in China can provide policy suggestions for the transformation of government functions to accelerate smog pollution control.

### CURRENT STATUS OF LEGAL GOVERNANCE ON SMOG POLLUTION

Smog pollution exhibits a typical manifestation pattern of atmospheric pollution. Atmospheric pollution is a common occurrence, along with industrialization in China. To control atmospheric pollution, the Chinese government has passed Atmospheric Pollution Prevention Law, which has been implemented since 2000. However, related issues and enforcement of this law have failed to create legislative effects, such as atmospheric pollution prevention. Instead of reducing adverse effects, exacerbating atmospheric pollution in China has been observed yearly, and the society has tremendously suffered from atmospheric pollution caused by smog pollution.

**Laws related to smog pollution:** Several laws and regulations, including Atmospheric Pollution Prevention Law, have involved smog pollution prevention. Its legislative purposes are as follows: to prevent atmospheric pollution, to protect and improve ecological and living environments, and to promote social and economic sustainable development. The law

focuses on the characteristics of energy structure in China and establishes special provisions for coal-burning atmospheric pollution control (Chapter 2) named Coal-Burning Atmospheric Pollution Prevention and Control. Moreover, this law creates many provisions on the prevention and control of exhaust emission from motor vehicles and vessels, waste, dust, and stench. According to this law, smog pollution is also governed by laws on atmospheric pollution. For instance, smog pollution control is under Atmospheric Pollution Prevention Law.

**Enhancement of legal governance action plan of smog pollution:** Atmospheric Pollution Control Action Plan was issued in 2013 by the State Council. It is an overall plan formulated under the new situation specific to atmospheric pollution control. This plan specifically proposes comprehensive treatments to reduce the emissions of atmospheric pollutants and implements atmospheric pollution control strategies for industrial enterprises, strengthens non-point pollution control, and enhances moving-source pollution control. This plan also suggests detailed action plans in terms of upgrading industrial structures, improving technological innovativeness, accelerating energy structure adjustment, increasing clean energy supply, controlling energy conservation and environmental protection, and optimizing industrial space layout. However, this plan is an evident blueprint and atmospheric pollution control plan at the national strategic level. This plan can set overall goals and provide a basis for atmospheric pollution control instead of regulatory documents with rights and obligations. Nevertheless, its positive outcomes should be verified.

**Local regulations corresponding to national ones:** In severe smog pollution, some local governments actively implement legislation and formulate local provisions, such as Sichuan Province Dust-Haze Pollution Prevention Plan, Beijing Atmospheric pollution Control Regulation, Implementing Measures of Lanzhou Atmospheric Pollution Prevention Law, and Implementation Plan of Shanxi Province Atmospheric Pollution Control Action Plan. These local regulations also provide stipulations on smog pollution control. As lower-level laws of Atmospheric Pollution Prevention Law, relevant regulations formulated by local governments can be considered as its important part or implementation rules, such as Nanjing Atmospheric Pollution Control Regulations. Other regulations implicate the efforts of local governments in refining higher-level laws.

### PROBLEMS ON THE LEGAL GOVERNANCE OF SMOG POLLUTION

**Outdated legislative concept:** Environmental Protection Act and Atmospheric Pollution Prevention Law exhibit a legis-

lative purpose dualism in the legislative concept: equal promotion of economic development and environmental protection. However, this legislative goal is hardly achieved in real life, and conflicts are inevitable. A consensus between economic development and environmental protection has yet to be reached. With the distorted concepts of political achievements by local governments, environmental protection is usually compromised because of economic interests; as a consequence, severe environmental pollution occurs, and pollution ensues before effective control is implemented in developed countries past. These consequences entail high costs on subsequent pollution treatment. This condition is the cause of frequent smog weather incidences; although an effective atmospheric pollution prevention and control system is in place. This condition is also accounted for the failure of implementing Atmospheric Pollution Prevention Law and other environmental protection laws. These negative outcomes result in human centrism, a phenomenon in which all other benefits are compromised because of human development. Human centrism is strongly reflected in the legislative purpose dualism in China. Unfortunately, nature is overly consumed or destroyed for economic interests, and this idea is against scientific development concepts in China; hence, sustainable development is hardly achieved. In terms of legislative concepts in major developed countries, economic interests prioritized over environmental protection have been gradually the main concept of environmental legislation. Thus, this concept should be transformed to solve frequent smog weather occurrences.

**Inefficient policy planning of smog control:** In December 2012, three ministries and commissions of the State Council issued the 12th Five-year Plan for Atmospheric Pollution Control in Key Regions. In September 2013, the State Council also released Atmospheric Pollution Control Action Plan named ten articles of air. Likewise, relevant departments issued two plans of smog control within one year; these initiatives indicate the concern of the country on the current status of smog weather and the determination of smog control measures. However, several unsatisfactory aspects have been observed. For instance, these two plans have stipulated the goals in the past 5 years. The smog control measures in UK lasted nearly 60 years. Hence, we should considered smog control as a long-term task, but 5 years is too short for research, development, and trade cooperation. Although technical innovation has been achieved, innovation is difficult to apply to practice within such a short time. Furthermore, overdependence on coal energy is a major source of smog. However, these two conditions symbolically refer to the control of coal use and fail to provide specific goals involving coal reduction. Instead, they let provinces create promises

but do not establish the corresponding management strategies. Therefore, plans become a mere formality because of such rules, and the positive effects of smog control are impeded.

**Insufficient social responsibility of enterprises:** Natural factors elicit limited effects on smog formation. Environmental destruction caused by humans plays a key role in this phenomenon. The atmospheric environment is destroyed by humans mainly through the emission of industrial pollutants. The weak social responsibility of enterprises is a vital inducing factor of ecological environment destruction. In China, lenient enforcement of environmental laws and monitoring of enterprise production, low illegal costs of unlawful enterprises, and poor environmental awareness of some entrepreneurs result in insufficient social responsibility of enterprises. Enterprises prefer paying fines and emitting various pollutants into air rather than compromising economic interests. In real life, some enterprises even release untreated gas wastes into air via various covert methods to satisfy self-economic interests regardless of their environmental responsibilities. Hence, the lack of social responsibility of enterprises impedes the prevention and control of industrial emissions and smog formation.

## LEGAL GOVERNANCE ON SMOG POLLUTION

**Improvement of the evaluation system conforming to the requirements of ecological civilization construction:** In a report of the 18th National People's Congress, the ecological civilization construction is prioritized and reinforced. This factor is mandatory to achieve Wild China and sustainable development. We must promote scientific developments, integrate ecological civilization construction with each aspect of China's development, establish an effective evaluation mechanism conforming to this concept, and promote green development among leaders. The prevention and management of atmospheric pollution should be considered as an evaluation component of the political achievements of local officials. Problems relevant to the evaluation body and evaluation mode should be solved. At present, China adopts the top-down evaluation mode, namely, the superior government assesses the inferior government. This process helps improve the governing efficiency of the inferior government and increase the number of achievements of environmental pollution control. However, to unite the evaluation body and the evaluation mode, some local governments practice fraudulent activities, fabricate false figures, and conceal the truth to evade the monitoring and counter-checking of the superior government. As a consequence, this evaluation mechanism fails to utilize the supervisory power of civilians and suggestions of experts and scholars. The govern-

ment should therefore focus on the positive role of civilians in environmental protection and create a good atmosphere of environmental protection in the society. The current evaluation body on atmospheric pollution should be changed, and the evaluation measures on the government, civilians, and experts should be combined. In this way, an effective atmospheric environmental evaluation system can be established. However, all government officials hardly facilitate great efforts to carry out long-term ecological environmental protection. This reason lies in the evaluation system of political achievements to a great degree. The service period of government officials at all levels is limited, but ecological environmental protection and evaluation require a long time. Political achievements and environmental protection remarkably differ in periods, and this mismatch causes difficulty in carrying out efforts on atmospheric pollution prevention in a very limited service period.

**Comprehensive promotion of an emission trading system:** The permit and trading system of emission rights is an effective mechanism to solve environmental problems on the basis of economics theory related to environmental protection and major reforms and innovation of traditional environmental protection measures. This initiative has achieved good outcomes in many countries. Many developed countries have established a unified emission trading system. China also actively explores the trading system of emission permit. Some regions have established emission right exchanges for pilot work. However, the enthusiasm of pilot enterprises to participate in emission trading is low because of insufficient relevant legal bases and low environmental illegal costs. Some pilot regions even utilize administrative methods to contrive the market for self-interest; consequently, government officials experience difficulty in facilitating pilot work on emission trading. Emission trading systems are necessary to limit industrial emission and treat smog pollution in China. The emission permit system, its supporting system, and emission trading market system should be improved and a unified emission trading market should be established to clarify trading rules, relationship of rights and obligations between two trading parties, relevant dispute settlement mechanism, and other contents and to enhance the approval system and online trading system of emission exchange; in this manner, the emission trading system can be comprehensively promoted. Furthermore, a national unified emission trading information system should be developed to timely obtain market information for trading parties, reduce trading costs, and improve trading transparency. Special intermediary agencies should also be established to increase the market vitality. Government departments should also introduce the corresponding incentive measures to support enterprises actively participating in emission trading in

terms of funds and policies. Newly built emission enterprises are also encouraged to acquire emission rights from markets instead of initial allocation.

**Enhancement of a public participation system:** Public participation system is a right of the citizens of the People's Republic of China in accordance with national environmental laws. This system can help citizens supervise the environmental law enforcement of the government, participate in environmental protection, and maintain self-rights and interests. Relevant environmental protection departments formulate laws and policies on environmental protection and democratically and scientifically decide the construction of industrial projects on the basis of the wisdom and efforts of civilians. As an important part of the environmental protection law system, relevant laws and regulations on atmospheric pollution control should implement the public participation system. However, atmospheric pollution control lacks experience in legislation, judicature, and enforcement; the theoretical system of atmospheric pollution control is also inefficient. As a basic principle of environmental laws, public participation system is also characterized by many problems. Thus, the public participation system related to atmospheric pollution control should be enhanced. Provisions on the public participation system in Atmospheric Pollution Prevention Law should be refined. Although the public participation system is involved in the current law, the provisions in this chapter exhibit ambiguity and lack operability and enforceability. Therefore, relevant specifications and supporting measures should be established to improve the public participation system. The citizens' right to know the atmospheric conditions should be guaranteed. Citizens are direct victims of atmospheric pollution, and they have the right to be aware of atmospheric quality conditions. The government should publish the atmospheric quality conditions to guarantee the citizens' right to know of these conditions. The citizens' supervision hotline of atmospheric pollution should also be created to encourage civilians' participation in environmental protection.

**Establishment of a smog monitoring and early warning mechanism:** Smog pollution control should function along many lines. They are closely linked from forecasting to monitoring, and this interaction is of great importance to smog monitoring and forecasting. The harmful effects of smog can be reduced by strengthening monitoring and forecasting measures. Air monitoring and forecasting can be achieved through various methods. For example, network, mobile, and interactive platforms with wide audience and rapid spread are utilized to timely issue smog warning and other atmospheric pollution data. The public can implement the corresponding prevention measures on the basis of the released

forecast information. This initiative also protects the public's right to know the environment. In addition to monitoring and forecasting, emergency plans specific to smog pollution should be developed. China should formulate relevant systems to supervise pre-arranged plans. In case of severe smog, essential measures should be implemented to restrict traffic, prevent harmful gas emissions by enterprises, and shut down enterprises that cause severe pollution. Thus, the amount of the emitted smog can be maintained at maximum acceptable levels and its harm can be reduced to minimum levels. Corresponding articles should be formulated to guarantee that these effects and goals are achieved and to ensure that relevant measures are implemented legally when relevant laws of atmospheric pollution prevention and treatment have been revised.

## CONCLUSION

Among smog control measures, environmental law is the most effective. In accordance with relevant laws, we can strictly limit the emission of various pollutants and formulate various systems for smog control. However, control measures based on environmental laws remain insufficient in terms of smog control. Smog formation is caused by inharmonious relationship between the atmosphere and humans. Humans violate natural laws to promote development. Humans also emit various pollutants into the atmosphere without restraints; as a consequence, the pollutant loads in the atmosphere greatly exceed the bearing capacity of the atmospheric environment. The current status and problems of the legal governance on smog pollution are analysed, and relevant solutions are proposed in terms of four aspects: enhancing the evaluation system conforming to the requirements of ecological civilization construction, comprehensively promoting the emission trading system, improving the public participation system, and establishing a smog monitoring and early warning mechanism. These initiatives aim to provide policy suggestions for further improvements on smog governance legislation. Future studies should therefore focus on pollution prevention concepts and system reforms on the basis of global climate

changes, whose correlation with the prevention, control systems, and measures of smog and other relevant pollution has yet to be elucidated.

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