



Network governance of haze in Shenyang

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Abstract

Aim: This paper uses the framework of network governance theory to investigate the extent to which Shenyang's governors and the city's citizens and businesses work together to combat the haze problem. This paper will illustrate the roles of various collaborative subjects to describe each subject's individual and shared responsibilities in haze governance.

Methodology: The researchers used a qualitative approach, gathering information from a comprehensive review of the relevant literature.

Findings: The main result of this effort is a request to the government of Shenyang for their perspective on what can be accomplished through network governance in environmental governance. Network governance's strengths lie in its ability to bring air pollution issues to the forefront of the political agenda and its potential to create and nurture sustainable development through cooperation between public and private actors at the differentiated regional levels.

Implications: In this article, we apply the principles of network governance to the problem of haze weather, which in turn informs a new approach to environmental administration. Unlike top-down and bottom-up approaches, network governance encourages public participation and boosts social cohesion by flattening the social hierarchy into a planar network where all stakeholders involved in the issue have an equal voice.

Key Words: Haze, Network Governance, Sustainable Development, Shenyang

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INTRODUCTION

Air pollution and other forms of environmental pollution have attacked and run wild in China in recent decades, with recorded heavy haze pollution days in certain regions being the most obvious result of the imbalance between environmental protection and economic development during the rapid industrialization and modernization process. Many Chinese people's health has deteriorated in the last decade. Outdoor air pollution in this country is responsible for an estimated 300,000 premature deaths per year (Cohen et al. 2005; Sharma et al. 2017; Zhang et al. 2008).

During the winter months, the city of Shenyang in Northeastern China becomes the focus of public attention due to the haze that has settled over the area. Throughout 2015, Shenyang experienced 127 days of haze weather. People's health and social progress have been hampered by the recent haze phenomenon, which has been accompanied by an increase in the overproof rate of PM_{2.5}. Haze can be brought on by a combination of social and natural factors. The chemical reaction in the emissions of coal and fuel consumption is the social root causes, the tall buildings brought by urbanization are the social background, and the natural reasons are the catalysts.

Shenyang's municipal government, the provincial government of Liaoning, and the central government all have a stake in finding a solution to the haze pollution, but these governments face challenges from diverse stakeholders. At the outset of the policymaking process, citizens and relevant industries should be briefed and encouraged to participate. Meanwhile, non-governmental organizations (NGOs) act as the policy's implementation arm by carrying out projects and mediating between citizens, business owners, and the government. Therefore, it is crucial to investigate and address, in practice, the question of how well governance arrangements address the growing conflicts over the responsibilities of different subjects for haze pollution.

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LITERATURE REVIEW

In the very beginning, network governance was used in industries through informal social connections amongst firms and organizations. Network governance is "interfirm coordination that is characterized by organic or informal social system, in contrast to bureaucratic structures within firms and formal contractual relationships between them to coordinate complex products or services in uncertain and competitive environments (Piore and Sabel 1984; Powell 1992; Ring and Van de Ven 1992; Snow, Miles, and Coleman Jr 1992). Later, it was increasingly applied to other realms. But they are aimed to deal with vague problems on economic purpose. Network governance is defined as a stable articulation of mutually dependent, but operationally autonomous factors (...), who interact through conflict-ridden negotiations that take place within an institutionalized framework of rules, norms, shared knowledge and social imaginaries (...) and contribute to the production of public values (Sørensen and Torfing 2009; Sørensen 2005). Network governance refers to a shift from traditional hierarchical governance forms where the state is the regulator, to looser forms of governance where private actors such as business and NGO's increasingly participate in policy making (Bogason and Musso 2006; Koimann 2003; Pierre and Peters 2000; Sørensen 2002). The shift towards network governance is explained by the increasing policy dependency of governments on other actors derived from the complexities of modern societal problems and that states have ceded power to other levels and actors (Pierre and Peters 2000). There is a trend from government to governance that reflects a loss of state authority (Bellamy, Head, and Ross 2017).

This article applies the network governance theory to a concerned public issue haze weather, leading a new public administrative method on environmental governance for the government. Compared to the top-down and bottom-up methods, the network governance allows the public to be engaged amidst the whole process, and strengthens the unity of the whole society simultaneously by breaking the social hierarchy into a planar network where the equal opportunities for dialogue can be achieved amongst stakeholders related to the social problem.

CAUSES OF THE HAZE WEATHER IN SHENYANG

Social Causes

There are social and natural causes for the haze weather and the former is dominant. Scientifically, the haze weather is the result of pollutants from coal and fuel consumption, while the modernization which brings about the ignorance and unawareness of ecological economy among the government and the interest chasing of entrepreneurs and farmers is the social background for it. And the natural reasons aggravate the duration and degree of haze pollution. With the technology and policy process, the government can solve the problem finally.

Chemical reactions in coal and fuel consumption

There are complex causes analyzed for the formation of haze weather. The primary cause is chemical reactions in coal and fuel consumption from industries with high energy consumption and high emissions. The initial momentum of the development in Shenyang is from the heavy industry. Combined with extensive industrial civilization development, the energy generated from production and life has boosted. In contrast, industrial structure and energy structure have not been optimized and forceful action has not been taken into environmental protection because the governments GDP assessment method forces it to give privileges to economic development.

Besides the industries, another main source of coal consumption is heating. The winter in Shenyang is longer than in other areas of China, and the duration for supplying heating is longer in comparison. In the coldest dates, the temperature descends below -30 °C according to the study from the Institute of Atmospheric Environment, China Meteorological Administration (Xudong, Hongwu, and Yunhai 2015). For Shenyang, numerous emissions of pollutants from consuming coal for winter heating of coal-fired power stations are direct catalyst and over 90% heating in Shenyang is from coal burning. Since the technology applied has not been updated for years and the perception in the producers to construct gas purification treatment has been ignored for a long time in some energy producers, the implementation of environmental policies doesn't achieve the result expected by Shenyang government. In 2015, over 15 heating companies were invested to exhaust pollutant waste into the atmosphere illegally.

Fuel exhaust pollution is mainly from cars. According to Shenyang Statistical Bureau (2017), by the end of 2016, the number of civilian vehicles was 1.88 million, increased 14.3% compared to the last year. One third of the air pollutants is from the car exhausts, and even vehicles exhausting smog are witnessed by the passerby on the streets in Shenyang. The quality of cars and the low effectiveness of consuming the fuel aggravate air pollution.

Process of urbanization

The second actually you have already mentioned three reasons above the reason is that the process of urbanization caused the urban buildings to dominate the landscape, easy to form temperature inversion phenomenon and the static phenomenon, preventing air pollutants in urban area from spreading, which intensifies the obstruction of air flowing. Increasing construction sites, accumulated ground dust, boosting motor vehicles and growing car exhaust are complex social reasons deriving from the urbanization.

Burning straw in large tracts of cultivated land in autumn

In the vast plain of fertile soils grows wheat, soybean and cotton. Their remaining straws were used to be burnt for energy after harvest in households within villages (Qi et al. 2016). About 10 years ago, coal gas and natural gas hadnt been used widespread in villages and the straw was the main energy source. The farmers stored the straw for whole-year burning. After the use of new energy, burning straw outdoors is the last and only choice for farmer due to the high cost for the comprehensive recycling (Yu 2013). And it happens at a large scale not only in Northeastern China but all round the nation in October and November. Though the government has banned this conduct, the policy could not be applied as expected due to the economic consideration.

Natural Reasons

For natural reason, cold air mass piled up could not waft away because of the vast plain topography, worsening the waste gas accumulation. This also demonstrates that the pollution is more serious in winter season. And in recent years, the precipitation in Shenyang is generally less than normal, the wind is weakened and the humidity increases, which can exacerbate the occurrence of haze (Hu et al. 2010).

SOLUTIONS TO THE HAZE GOVERNANCE

In China, government is dominant in social issue management. With democratic political system built up and the doctrine of governance rather than management spread, citizens voices are more and more heard in governance process and the government attaches attention to all aspects of policy and laws.

Analytically, air pollution problems are resulted by the disability of the self-purification and self-repair for the environmental system. It is not produced in a short time and not by several individuals. To abate the regional pollution in Northeastern China, not only every local government is supposed to take responsibility in its own administrative district, but the Liaoning, Jilin and Heilongjiang provincial governments are also supposed to take their leadership. Basically, the local government in each area should coordinate to take fundamental research on fog and haze and strengthen capacity establishment of fog and haze monitoring, forecasting and warning mechanism and then build up a shared database of atmosphere in Northeastern China. And the central government formulates the overall plans for fighting against regional haze pollution.

The network theory advocates that social subjects from direct to indirect beneficiary participate in environmental governance. In the process of policy making, interests of different subjects conflict and compromise with each other and resources are redistributed in gaming and bargaining. As air is one type of public goods, there will be free-riding risk amongst citizens who are lacking in motivation and desire to maintain it in terms of rational market behavior (Bellamy et al. 2017). In spite of market mechanism, citizens are certainly to be involved as discussed since they are the beneficiary while the subject position of local government is the first to clarify. What more, they are family members of those entrepreneurs who construct pollutant exhaust factories, clean technology researcher, and even the streets that can supervise the effect of policy implementation and help with the elimination of pollution form their daily life.

Before the revolution and opening, citizens were isolated from the decision making basically, but after the government has started to establish the institution of public hearings for public affairs (Liu and Zhu 2015) there has been big generalization without any reference. The reason is the lack of service ideas, the shortage of coordination and unawareness of public interests in the local government, and also, the little motivation of democratic participation and lack of political knowledge in citizens. Laws that encourage citizens to organize groups dedicated to sustainable development and provide supporting access to artificial person qualification should be released. So should those enhancing democratic channel for public participation which is the premise for network governance, such as public hearings, mayor mailbox, political affairs talk show and so on.

For citizens, they can be heard through the representatives of the peoples congress, and express themselves in public hearings. Especially for farmers, burning straw is not their fault since no other way is more economical for them. So the grass-root government can not prohibit the burning outdoors simply, but the local government and central government should remit public finance subsidy for straw recycling facility construction and help with straw collection and transport. For citizens in urban areas, the most important responsibility of them is to reduce driving private vehicles as much as they could. When other subjects in the society start to focus on the environment governance, citizens are supposed to protect public resource –fresh air. They can utilize more public transportation invested by the government or ride the shared bikes for daily commuter and purchase less exhaust car. Since citizens have advantages in quantity and mobility, not only can they participate in policy making through public hearing bargaining with the government with the introduction of industries that bring potential pollution to the air, but supervision of enterprises and government. Additionally, they can serve in environmental organizations to support haze governance.

For NGOs, they can take the advantages of intermediary between government to citizens and businessmen, disseminating policy making agenda and perceiving audiences' sentiments. Also, as an independent and legally registered organization, they can supervise the government objectively by requesting the finance ventilation and consider more for other policy stakeholders (Eberhard et al. 2017). For example, they can conduct lectures to citizens on environmental regulations and basic knowledge about haze. The government can pay the NGOs for launching environment projects, attending the hearings and assessing the policy implementation by PPP (Hu et al. 2010).

These decades of years witnessed the spread of think tanks, most of which are universities and institutes. They gather researchers, utilize social resources and organize research activities. The application of theory and research achievement can provide practical method in haze governance. Nowadays, the clean technology for those chemical and procuring factories that cause pollution and consume large scale of energy, new clean fuel to replace coal and fuel for heating provision companies and economical exhaust purification system for vehicles and straw recycling system with at a low cost are all in urgent demand. In this occasion, think tanks can transfer their intellectual property to productivity.

For enterprises relative to environmental issues and sustainable development, they should be taken account of in policy-making and be listened to policy making procedures. In public administration processes, not only pre-examing but process monitoring with efficiency and effectiveness is also necessary for haze pollution control and environmental governance. Some factories that contribute to the pollution should improve their producing technique passively by regulation. And they should invest in the research on their own or that of some professional institutes. Their dilemmas are to be considered and their demands should be listened to invited into the process of policy making to reduce the resistance when they are forced to take measures to transition and upgrade.

CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

Developed countries have experienced heavy haze pollution alongside other environmental issues. After years of effort to restore the damaged environment, they have achieved success, such as Britian, USA, Germany, Japan etc. Though metropolis in China didnt suffer similar problems until the beginning of 21 century, they have become world-famous in few years rapidly because of over rising index of pollution. This paper has explored the role of network governance of haze in Shenyang. The main outcome of this endeavour is a call for a view on what network governance can achieve in environmental governance for Shenyang government. As this paper has

shown, there are some clearly positive aspects of network governance: its ability to mobilize actors from different backgrounds and sectors to put air pollution issues on top of the political agenda; its potential to create and nurture sustainable development through co-operation between public and private actors at the differentiated regional levels. There are, however, also clear risks associated with network governance mainly associated with its elitist character (Khan 2013). It should be emphasized that network governance is rarely developed as a means to increase democratic legitimacy. Instead its main focus is on achieving results.

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