Collaborative governance in solving problem air pollution in Indonesia: a systematic literature review

A Feberina, A W E Mulyadi and R H Haryanti

Magister Program of Public Administration, Faculty of Social Science and Political Science, Universitas Sebelas Maret, Jl Ir. Sutami 36 A, Surakarta 57126, Indonesia

Corresponding author: annaginting3@student.uns.ac.id

Abstract. This research is explaining a problem in environmental management that need more attention because the impact of environmental problems involves all elements of the government, private sector, and society. The purpose of this paper is to review which one is the best practice for environmental problems related to air pollution in the government's efforts. This research focuses on the issue of environmental pollution on air pollution in Indonesia. The theory used is the Collaborative Governance model of Ansell and Gash and De Seve. The research uses a qualitative approach with Systematic Literature Review and secondary data. Perspective in Collaborative Governance. The Literature approach is applied to scientific journals published in the database. The author found that several policies related to environmental problems have been implemented. But not running optimally. The government needs to use its authority to solve existing problems, including the problem of poor air quality.

1. Introduction

Greenpeace encourages governments in all sectors to invest in renewable energy sources, namely wind, solar energy, and public transportation that have clean energy quality that serves to protect the public from dirty air pollution. Data from WHO kills about seven million people worldwide every year. This shows that 9 out of 10 people breathe air that exceeds the WHO guideline limit that contains high level of pollutants such as low- and middle-income countries with the highest exposure. About 4.2 million deaths per year are caused by air pollution [1]. The results of the Greenpeace Southeast Asia report in February 2020, predicts air pollution as a source of fossil fuels can cost the world around US$8 billion every day or 3.3% of global GDP. In 2020, approximately 160 people lost their lives in the world's five most populous cities and the cost of this urban economy was US$85 billion [2].

The effects of air pollution not only threaten public health but also harm plants and ecosystems, leading to the climate crisis with the effects of greenhouse gases and air pollutants originating from the same source. Indonesia is one of the most polluted countries and is ranked 20th out of 243 countries in the Air Quality Index (AQLI) https://aqli.epic.uchicago.edu/the-index/. The development of the physical development of cities and industrial centers, as well as the development of transportation, causes air quality to change[3]. The level of urbanization and population density affect air emissions in Indonesia [4]. Forest fires such as in Riau and Kalimantan are a serious problem faced because forest fires include modern air pollution with CO (carbon monoxide) as the dominant pollutant resulting from forest fires [5].
Without realizing it, in urban areas such as big cities in Indonesia, air quality has reduced the quality of life of urban people, especially in the transportation and industrial areas. This is a real problem faced by the government. Various efforts have been made by many parties. About the implementation of air pollution control in the regions, the legal basis governing the Regulation of the State Minister of the Environment is in accordance with Number 12 of 2010. This Regulation of the state minister for the Environment was issued in the context of efforts to control air pollution in Indonesia. The control of this implementation is regulated in PP Number 38 Article 2007 concerning the division of government affairs between the provincial government and the city district government. This implementation is determined by the minister as the organizer of government affairs in the field of environmental management.

Collaborative governance is one way to respond to the wishes of the stakeholders involved in the implementation of development and to respond to the limited government budget where the development of demands from the community regarding performance the wishes of the actors of these interests. Support and encouragement from the government are needed in the application of technological developments related to industrial pollution sources. In 2015, the construction of a network of air quality monitoring systems or e-Quality Monitoring, or systems were built in 26 cities spread throughout Indonesia by The Ministry of Environment and Forestry. In addition, the ministry of environment and forestry, local governments, and the private sector have also been connected to 45 stations belonging to the Meteorology, Climatology, and Geophysics Agency (BMKG). Therefore, air quality monitoring stations can also be accessed directly through the website.

The previous research contained in this study was sourced from journals. The results of research from Achmad Raihan Hidayat on the Provision of Green Open Spaces in Bandung City through Collaborative Governance (Studies on Ganesha Park) are in the collaboration process carried out there are four stages including a) face-to-face dialogue; b) building trusts; c) commitment to processing; d) common understanding [6]. Research results from Masyhuri, Aziz about "Collaborative Governance in the Implementation of the Healthy City Program (Study on the Batu City Government)" The results show that the government, private sector and community have collaborated well with the Healthy City Program and have been running since 2016 until now [7].

The issue of air problems is a serious problem. Community activities are expanding, so support for the environment needs to be increased and is environmentally friendly, without excluding socio-economic factors. Therefore, the handling and prevention of air pollution must be considered seriously, both by the community and the government. The government continues to try to monitor and overcome air pollution with various actions with several related parties. From the background of the problems above, the formulation of the problem in this study is how to control collaborative governance in efforts to solve air pollution problems in Indonesia. This paper aims to analyze the collaborative governance process in managing air pollution in Indonesia.

2. Theoretical

Collaboratively collaborate on the existence of an interest in finding solutions to issues or problems that will be faced. Collaborative Governance is governance that brings together public and private stakeholders in a collective forum with public institutions to engage in consensus-oriented decision-making [8]. In the dynamics of collaborative governance, the legal framework is an important variable as well as public value collaboration [9]. Collaborative governance is a response to the failure of the policies made. Citizens jointly develop and adopt a common understanding regardless of their identity, field, and motivation [10]. Ansell and Gash [8] defines collaborative governance as a government arrangement of one or more public institutions that directly involve non-state stakeholders in a formal, consensus-oriented, and deliberative collective decision-making process and has the goal of making / implementing public policies. or manage public programs or assets [8]. Collaborative governance is further defined by Emerson, Nabatchi and Balogh as a process, and structure in making public policy and management decisions that involve the community constructively with various levels of
government, public, private and civil to carry out public goals that cannot be achieved unless by shared forum [10]. Ansell and Gash [8] mention there are several important criteria in collaboration, namely:
1. Ideas in forums from public institutions or institutions,
2. Members in the forum are listed as non-permanent actors,
3. Members are involved in decision-making and are "consulted" by public agencies,
4. Formally the forum is organized collectively,
5. The purpose of this forum is to decide by consensus (including if the objectives are not achieved in the implementation of policies), and
6. Collaboration focuses on management or public policy.

Something that is an important thing in implementing collaborative governance is a problem-based approach to identify and address policy deficiencies. In decision making must integrate and prioritize flexibility and innovation.

3. Methods
In this study, the author uses a qualitative method using a literature review study method, which presents several references related to the research focus on accordance with the theme or topic. Then to search for journals, it is done online through the Google Scholar database. The author also limits the search through Google Scholar. With Boolean logic AND “Collaborative governance” AND “Environment” AND “Air pollution” AND “Indonesia”. Where the time span in searching the database is accessed in the range of 2016-2021. Then, by combining these methods, the author uses an international database as a basis for searching, which the author only focuses on searching for scientific journals. The databases used are since direct, Taylor, and France. Both databases are very rational because the data sources used are selected journals from academic and international organizations. The author also limits the year the journal is published with a minimum year of publication for the last 5 years. To find more relevant and specific data, the author uses 4 keywords, namely collaborative governance, environment, air pollution, Indonesia.

4. Results and discussion
Some the research result conducted on the impact of environmental pollution in Indonesia are related to air pollution. The first research from Bachtiar et al. [11] related to research on air pollution, this research was conducted in the city of Padang, by taking ozone gas samples at 52 points in the city of Padang analyzed by the NBKI method using a spectrophotometer. The results concentration of ozone gas in the city of Padang varies between 6.32 and 87.06 g/Nm3 with a concentration average of 25.67 g/Nm3. Regarding these results, the air pollution conditions in Padang city are below the standards set in the Regulation of the Republic of Indonesia No. 41 of 235 g/Nm3 [11]. There are several factors that affect the concentration of ozone gas, namely meteorological and transportation factors. The influential air temperature is related to Meteorological Factors.

The impact of air pollution causes various kinds of diseases such as respiratory, cardiovascular, diseases that can attack other parts of the body. From the results of research related to air pollution from the transportation sector reaching around 60 percent, this can be obtained from the effects of air pollution in the transportation sector such as motor vehicles on human health in the city of Bandung, especially Acute Respiratory Infections or abbreviated as ISPA. According to the results of a study conducted [12] regarding environmental disasters in the socio-ecological system, due to industrial waste that causes environmental damage, an adaptive approach is urgently needed. Approach to public governance, collaborative and adaptive. Collaborative governance looks at various levels as balancing policies, integrating adjacent policies, encouraging innovation and social learning, and adapting solutions continuously. Then the results of research related to the collaborative role of governance in environmental pollution efforts, namely research conducted by Denny Irawan in Surabaya City, requires a good governance perspective where effective government actions in public affairs are carried out [13]. Regarding the good governance perspective, in implementing its policies, governance actors such as the government, the private sector, and the community are involved through a governance perspective to
create a constructive and harmonious relationship between the three actors. Basically, the principle of good governance refers to shared responsibility related to the decision-making process and the implementation of the policy. An understanding of the principles of good governance will become a benchmark for performance in government. The assessment of the good and bad of government can be assessed according to the perspective of good governance.

A study by Nurwita et al. [14] conducted in Tangerang City on air pollution control related to efforts to prevent, restore air quality and countermeasures shows that the central government, local governments, and those in charge of a business, by making policies and managerial practices. Success in controlling air pollution can be seen from 4 criteria of organizational effectiveness such as adaptation, integration, motivation of members, and production. The government's role is seen in the process, socialization is carried out to the community such as through the eco-driving program or good driving procedures and the application of the use of manicure applications (monitoring air quality). One of the government's roles in air pollution efforts is by monitoring air quality which includes emissions and ambient, issuing regulations on air pollution control, implementing KIR vehicles, traffic engineering, vehicle restrictions, making Car Free Day (CFD) policies, developing green open spaces. (RTH) as well as providing education to the community, including school students [15].

Some of the results of the research above on the impact of environmental pollution on the first pattern related to the impact of air pollution can endanger human health. Respiratory disorders are one of the causes of air pollution in Indonesia. From the results of the study, it was stated that the transportation sector was the cause of dirty air. It is known that the State of Indonesia is a country with a dense population and most Indonesian citizens carry out various kinds of daily activities or activities outside the home. The second pattern is related to collaborative governance, from the research that has been done, the government makes various efforts such as issuing regulations on air pollution control, making policies and managerial practices, outreach to the public, and education to the public, according to what has been done by the city of Yogyakarta. DKI Jakarta, which is the capital city of Indonesia, issued Governor Regulation No. 66 of 2020 concerning Motor Vehicle Exhaust Emission Tests in July 2020. Findings from the website Dinas Lingkungan Hidup [16] there are various programs that have been carried out by the government according to the 2020 Environmental Service Work plan, among others: Data collection on emission descriptions and reporting of GHG emission reductions in DKI Jakarta Province; Air Quality and Noise Level Monitoring; PM 2.5 Standardization Study in DKI Jakarta Province; Application of Motor Vehicle Emission Test; Urban Air Quality Evaluation (EKUP); air quality monitoring of Motorized Vehicle Free Day (HBKB); Development of Workshops for Implementing Motor Vehicle Emissions Tests; Procurement of Air Quality Monitoring Equipment; Maintenance of Air Quality Monitoring Stations in 5 administrative cities as well as 3 mobile SPKU and management planning and utilization of landfill gas at Bantar Gebang TPST.

5. Conclusion
Collaborative Governance in this study is very relevant to be applied to problems related to air pollution in Indonesia which relies on a stakeholder pattern, which involves the private sector and the government. Regarding air pollution efforts, the role of the private sector has been seen starting from responsibility, organizational effectiveness such as adaptation, integration, member motivation and production. Meanwhile, the Government as a stakeholder has issued several policies to minimize problems related to air pollution. One of the government's roles seen in DKI Jakarta is the Governor's Regulation Number 66 of 2020 concerning Motor Vehicle Exhaust Emission Tests in July 2020. The Indonesian government in developing Collaborative Governance is seen in the principle of good governance in carrying out its duties and responsibilities.

Acknowledgements
The results of this study were written independently by the author. The author is also grateful that the Universitas Sebelas Maret, Surakarta, Indonesia has supported this study.
References
[1] Technical Advisory Group 2021 *Air Pollution* WHO (Rome: WHO)
[2] Greenpeace Southeast Asia 2021 Tracking the Cost of Air Pollution greenpeace.org
[3] Ismiyati, Marlita D and Saidah D 2014 *J. Manaj. Transp. Logistik* **01** 241–8
[4] Zuhri M S 2014 *J. Ilmu Ekonomi dan Pembang.* **14** 32
[5] Abidin J and Hasibuan F A 2019 *Prosiding Seminar Nasional Fisika Universitas Riau IV* (Pekanbaru: Universitas Riau)
[6] Hidayat A R and Pradana G W 2020 *Publika* **8** 1–15
[7] Masyhuri A 2020 *Collaborative Governance Dalam Pelaksanaan Program Kota Sehat (Studi Pada Pemerintahan Kota Batu)* (Malang: Universitas Brawijaya)
[8] Ansell C and Gash A 2008 *Journal of Public Administration Research and Theory* **18** 543–71
[9] Amsler L B 2016 *Pub. Adm. Rev.* **76** 700–11
[10] Emerson K, Nabatchi T and Balogh S 2012 *Journal of Public Administration Research and Theory* **22** 1–29
[11] Bachtiar V S, Raharjo S, Ruslinda Y, Hayati F and Komala D R 2015 *Procedia Eng.* **125** 291–7
[12] De Abreu M C S and de Andrade R de J C 2019 *Sci. Total Environ.* **694** 133700
[13] Irawan D 2017 *Kebijakan dan Manajemen Publik* **5** 1–12
[14] Nurwita M, Maesaroh M and Widowati N 2020 *J. Public Policy and Manag. Rev.* **10** 533–46
[15] Pusat Studi Transportasi dan Logistik 2017 *Emisi Sumber Bergerak di Kota Yogyakarta, Peran Pemerintah dalam mengatasinya* (Yogyakarta: Pusat Studi Transportasi dan Logistik)
[16] Dinas Lingkungan Hidup Provinsi DKI Jakarta 2020 *Program Pengendalian Pencemaran Udara Dinas Lingkungan Hidup Provinsi DKI Jakarta* (Jakarta: Dinas Lingkungan Hidup)