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POSSIBILITIES OF USING STAKEHOLDERS THEORY TO LIMIT THE PHENOMENON OF URBAN SMOG. EXAMPLE OF THE CITY OF MIKOŁÓW FROM POLAND

ABSTRACT

This article applies stakeholder theory to municipal efforts to reduce urban smog in Mikołów, Silesian Voivodeship. The goal was to assess the potential and actual implementation of stakeholder theory in local government actions. The research hypothesis assumed that the actions of Mikołów's municipal authorities utilize elements of stakeholder theory in the aforementioned area, focusing on communication with various stakeholder groups regarding initiatives or projects aimed at reducing urban smog and closely resembling PR activities. The conducted analyses confirmed the research hypothesis. A case study method was employed in this article. The conducted research and analyses are qualitative. The limitation was the access to information. They allowed to understand the actions undertaken by the municipal authorities towards key stakeholders from the perspective of reducing urban smog in Mikołów and to assess their justification and scope of advancement in connection with the assumptions of stakeholder theory. This article attempts to explore the possibilities of using stakeholder theory in the context of municipal government actions aimed at reducing urban smog. Mikołów municipal authorities undertake many projects and initiatives to encourage them to modernize their heating installations. Despite the indicated directions of the municipal authorities' actions in Mikołów and the observation that they align with the principles of stakeholder theory, such actions so far are limited to informational activities and largely resemble public relations aimed at creating a positive image of the municipal authorities among residents. For now, this approach proves to be pragmatic because it ensures the continuity of the mayor's tenure in this city and the majority of councilors.

KEYWORDS: *environmental security, urban smog, municipal management, local policy, ecological policy, stakeholder*

INTRODUCTION

Research on smog largely focuses on its technical, health-related, or legal dimensions. Air quality management in cities today serves as an example of network governance, which involves local authorities, residents, non-governmental organizations, and the private sector (Pierre & Peters, 2020). This model contrasts with traditional government, which relies on hierarchy and administrative commands. In the governance approach, greater emphasis is placed on deliberation, co-production, and the networked nature of relationships between public institutions and civil society (Emerson & Nabatchi, 2015).

In the context of environmental protection, increasing attention is given to the growing role of stakeholder engagement and co-management in improving the quality of environmental policies. This concept allows for the integration of technical measures with local community acceptance and the long-term implementation of policies. The present article draws on this approach (Nevig et al., 2023).

This article attempts to utilize stakeholder theory concerning the actions of municipal authorities aimed at mitigating smog in one of the cities in Poland. The research was conducted in the city of Mikołów, located in the Silesian Voivodeship.

The article offers a rich description of the practical actions undertaken by the authorities of Mikołów, which constitutes one of its main strengths. The case study presented in the article covers a wide range of stakeholders from residents to non-governmental organizations and illustrates how tools of communication, consultation, and environmental education are actually being used.

The article uses stakeholder theory (Freeman, 2010; 2017) as an interpretive tool for analyzing the actions of local government in reducing smog. This approach is relatively rare in the Polish literature, as research on smog typically focuses on technical, health-related, or legal aspects.

The stakeholder theory employed in the article allows for a more integrated understanding of the relationships between local authorities, residents, NGOs, and the private sector than traditional administrative models typically provide. The approach presented is relatively rare in the Polish context when it comes to analyzing actions aimed at reducing urban smog, and it serves as a distinctive feature of this study.

In contrast to the approach used in this article, the problem of urban smog can also be addressed through public management, which emphasizes state regulations, air quality standards, inspections, and subsidy programs for furnace replacement. This model enables the rapid implementation of environmental standards but faces certain limitations, such as bureaucracy, weak local adaptation, and low social legitimacy when citizens are not actively involved. Practical manifestations of this concept in Poland include programs for replacing heating sources and furnace inspections as elements of anti-smog policy (Jin et al., 2019).

Another possible solution to reducing urban smog is the application of network management (governance). This approach treats the problem as a field of cooperation among local authorities, non-governmental organizations, businesses, and citizens. In the case of smog, governance allows for the coordination of policies (transport, energy, housing), the use of hybrid instruments (subsidies combined with market incentives), and participatory monitoring. Examples of applying this concept to urban smog reduction include the cooperation of local governments with organizations such as Polski Alarm Smogowy and Forum Energii, which has contributed to reforms in heating programs and increased public awareness(Cieślicka, 2024).

The theoretical goal of the article is to determine the potential of applying stakeholder theory assumptions to the actions undertaken by municipal authorities in reducing urban smog. Meanwhile, the cognitive aim of the article is to assess to what extent the assumptions of stakeholder theory are realized in the realities of the analyzed municipality regarding the aforementioned issue. The adopted research hypothesis assumes that the actions of the municipal authorities of Mikołów utilize elements of stakeholder theory in the mentioned field. These actions involve communicating initiatives or projects to various stakeholder groups aimed at reducing urban smog and are also closely related to public relations activities, intended to enhance the positive image of the mayor and ensure their continuity in office after subsequent elections.

The article employs a case study method. Available information from local internet services related to the municipal authorities of Mikołów, as well as from online editions of local newspapers and websites of local non-governmental organizations focused on ecology and foundations implementing social projects related to the analyzed problem promoted by the municipal authorities of Mikołów, was used to create it.

SMOG AS A FACTOR THREATENING ECOLOGICAL

Climate change, increasingly evident in contemporary life, calls for a new mindset emphasizing the need to mitigate its negative consequences. These issues mobilize politicians and the scientific community to take collective action. With rapid urbanization and industrialization, many developing countries face serious conflicts between social development and environmental protection (Burki et al., 2021; Chuanglin et al., 2015).

The category of ecological security has various perspectives. Ecological security can be understood as the relationship between humans and the natural environment, treating the latter as a life-sustaining system. Therefore, the main value protected is the natural environment, and through it, social systems are also protected. From this perspective, ecological security is understood as the protection of the natural environment from degradation to ensure the survival of humans and societies (Pietraś, 2000, p. 86). Another approach to defining ecological security associates it with conscious actions aimed at preventing adverse ecological changes. It suggests that ecological security involves eliminating negative trends exacerbating adverse changes in the natural environment (Kozłowski, 1992, pp. 11–12).

A third attempt to define ecological security is the most extensive and least consistent due to the diversity of proposed definitions. The common feature here is treating ecological changes as a factor conditioning national and international security broadly (Dziamski & Nowosielski, 2012, p. 207).

In summary, the current definition of ecological security should refer to the anthropogenic nature of ecological threats. Moreover, it should seek ways to counteract them through changes in social, institutional, political, and international behaviors. Based on this, a definition of ecological security can be proposed, which synthesizes the concepts and directions presented above. According to it, ecological security can be understood as a state of social relations, including the content, forms, and methods of actions that limit and eliminate ecological threats, ensuring comprehensive and safe development for all of humanity (Dziamski & Nowosielski, 2012, p. 208).

THE LEGAL AND POLICY FRAMEWORK OF ANTI-SMOG ACTIONS

Actions undertaken by local governments to improve air quality are part of a broader framework of international, EU, and national law. At the global level, the key documents include the United Nations Framework Convention on Climate Change (UNFCCC) of 1992 (United Nations, 1992) and the Paris Agreement of 2015 (United Nations, 2015), which obligate signatory countries, including Poland, to reduce greenhouse gas emissions and strive for climate neutrality in the second half of the 21st century (Taroco & Colares, 2019).

At the European level, the following strategic documents are of particular importance:

- The Eighth Environment Action Programme (2021–2030) (Zarcone, 2021).
- The European Green Deal (European Green Deal, 2019).
- Directive 2008/50/EC on ambient air quality and cleaner air for Europe (Dziennik Urzędowy UE, *L 152/1*, 2008).

The objective of these policies is not only to reduce emissions but also to improve citizens' quality of life and promote co-governance at the local level. According to the assumptions of the Eighth Programme, local governments play a crucial role in implementing the principle of subsidiarity by translating EU objectives into local ecological strategies, thermal modernization programs, and environmental education initiatives (Papuziński, 2018).

At the national level, the legal foundation for local government actions is provided by Article 74 of the Constitution of the Republic of Poland, which obliges public authorities to protect the environment, and by the Act on Municipal Government (Dz.U. 1990 nr 16 poz. 95). The State Environmental Policy 2030 (Ministerstwo Klimatu i Środowiska, 2019), provides the strategic framework, setting goals such as improving air quality, supporting renewable energy sources, and reducing so-called low emissions.

At the regional level, the key document is the Environmental Protection Program for the Silesian Voivodeship 2022–2030, which aims to reduce PM₁₀ and PM_{2.5} particulate emissions by at least 50% by the end of the decade

(Urząd Marszałkowski Województwa Śląskiego, 2022). The involvement of individual municipalities of this region – including Mikołów, analyzed in this article – in implementing the program demonstrates the coherence of local actions with national and EU policy.

Considering these references, it can be concluded that local governments' initiatives, though implemented on a micro scale, represent an essential component of the European Union's climate policy implementation system (Wójtowicz, 2022).

UTILIZING THE STAKEHOLDER CONCEPT TO IDENTIFY ENTITIES INFLUENCING THE REDUCTION OF SMOG ON A LOCAL SCALE

The concept of stakeholders was defined by R.E. Freeman as any group or individual that an organization affects or that influences the organization's objectives (R. Freeman, 2017; R. E. Freeman et al., 2010, 2017). People's perceptions and preferences regarding environmental issues influence their behavior and the management of these spheres, and these aspects affect the scale of pollution, industrial emissions, and remedial measures (Islam et al., 2014). Misunderstandings and preferences of decision-makers, researchers, and society regarding environmental issues can exacerbate the global ecological crisis (Abbott et al., 2019; Rai & Henry, 2016). Therefore, research on environmental perception and the collective involvement of various stakeholders in environmental management are extremely important (Baird et al., 2019; Cheng et al., 2021). Polycentric or multilateral management is a new path to be taken if we aim to address many of today's environmental and climate issues (Jordan et al., 2015; Newell et al., 2012). The basis of polycentric grassroots management is understanding the ideas of various stakeholders regarding the possibilities of environmental protection. Therefore, it is necessary to emphasize and consider the views of many stakeholders on environmental protection and management.

Considering the municipality's perspective, its stakeholders should be understood quite broadly. Stakeholders in this case will primarily be residents, but also economic entities operating in the area, tourists, as well as municipal

office employees, local authorities, representatives of municipal auxiliary units, and managers of municipal enterprises, among many others. The interests of these groups may be somewhat different, and sometimes even conflicting, thus the assessment by these entities of the municipality's management system will vary. According to the stakeholder approach, *the municipality is most effective when it finds a point of balance between the interests of different stakeholders expressed by the optimal ratio of their benefits to the costs incurred by them* (Bielski, 2004, p. 67).

The stakeholder management process in any organization, including the municipality, consists of several stages, including (Savage et al., 1991):

1. identification of stakeholders – this involves identifying universal stakeholders: appropriate for every organization (e.g., employees, customers, competitors, suppliers) and specific stakeholders: individual, appropriate due to the organization's form or its scope of activity;
2. diagnosis and classification of stakeholders – in this regard, determining the importance of stakeholders for the organization is made, and two attributes can be indicated: their potential threat to the organization and their potential for cooperation with it;
3. formulation of appropriate strategies for improving or changing current relationships with key stakeholders and improving the overall situation of the organization;
4. effective implementation of these strategies.

Proper recognition and identification of key stakeholders enable their involvement in the effective functioning and development of the municipality. In this regard, four main forms of stakeholder engagement are distinguished (Grzybek, 2013):

- communication – the most common and simplest form of stakeholder engagement. It enables communication about the functioning of the municipality, initiatives taken for both internal and external stakeholders. Tools used for internal communication may include employee training, reports, newsletters, and intranet pages. External communication can take place through thematic conferences, websites, open meetings, press releases, and marketing communication;

- consultations – aimed at obtaining stakeholders' opinions on the subject of consultation. Tools used for consultations include surveys, focus groups, meetings with stakeholders, and obtaining feedback online;
- partnership – a form of relationship building with stakeholders that requires the most commitment from them. It is usually a long-term and labor-intensive relationship. Examples of partnership forms include joint projects for sustainable development, joint initiatives with various stakeholder groups, associations, and strategic cooperation;
- dialogue – in cases where a group of key stakeholders is easily accessible to the municipality, dialogue can take on an informal form. In situations where the list of stakeholders is long, tools that can be used in this regard include advisory panels, stakeholder forums, summary meetings with key stakeholders, and virtual engagement online;
- the stakeholder dialogue process conducted by the municipality allows the involvement of all relevant stakeholders from the very beginning;
- through joint technical discussions, common understanding of the problem can be achieved, even if the initial situations and general conditions differ significantly among various stakeholder groups;
- solutions developed jointly in discourse also enjoy a high level of acceptance in terms of further implementation;
- joint dialogue with the administration or municipal authorities means that stakeholders are already aware of political decisions at an early stage and can adapt to future developments, for example, in terms of discussed activities or investment decisions;
- if the dialogue process is successful, improvement can be achieved in a short period, for example, through voluntary actions that stakeholders can quickly implement;
- the dialogue process also provides an opportunity to identify problems that cannot be solved within the stakeholder dialogue process and proposed solutions where consensus cannot be reached, as well as to emphasize the additional need for action to address emerging problems (Bauer, 2013; McWilliams et al., 2002).

The municipality should manage in a way that reconciles often conflicting interests of stakeholders, considering additional aspects, such as environmental protection reflecting the interests of future generations of its residents. However, the realization of these interests should be aligned with the overarching goal of the municipality's functioning, which is meeting the collective needs of its residents. The demand to reconcile the interests of all stakeholders is often difficult or even impossible to fulfill. Solutions involving the involvement of stakeholders in deciding on the directions of local government activities allow for personal engagement of partners in implemented projects. The use of such an instrument leads to increased effectiveness of the actions taken. Partners involved in the implementation of urban projects are more convinced of their validity (Wiśniewska, 2014).

In the functioning of municipalities and solving their problems, cooperation with stakeholders is essential, including:

- the local community,
- public entities (other municipalities, other units of local government, other public entities),
- local private entities,
- third sector organizations (Wiśniewska, 2014, p. 307).

In the case of the urban smog problem, key stakeholders from a local perspective are residents of individual cities, divided into those living in their own homes and those living in housing estates, non-governmental organizations dealing with environmental issues, public entities, and children and youth studying in the municipality. The stakeholder groups presented here will be subject to further analysis in this paper.

RESEARCH METHODOLOGY

The appropriate combination of quantitative and qualitative methods enables a better understanding of research problems, as opposed to their individual application (Creswell et al., 2007). Academics dealing with issues related to public policy and management are increasingly using mixed methods and

triangulation strategy (Wolf 2010). Therefore, the proper way to combine qualitative and quantitative methods is through the mentioned triangulation. This method can also be applied in studies of public policy and management. In this way, researchers could, on the one hand, create a comprehensive picture of the world, and on the other hand, the current situation of problems and processes enables capturing their multidimensionality, comparative analysis of obtained data, which is crucial because it allows for in-depth analysis and thus for a holistic approach to political reality. Furthermore, the mentioned mixed method-based approach is suitable for studying various aspects of the third sector's activities and local governments, which significantly influence the living conditions of local communities (Macmillan 2020).

In the conducted research regarding the issue of utilizing stakeholder theory to mitigate urban smog in the city of Mikołów, a mixed methods research (MMR) methodology was employed. Mixed methods research (MMR) is a research methodology involves multiple methods of addressing research questions in an appropriate and principled manner, including gathering, analyzing, interpreting, and presenting both quantitative and qualitative data (Bryman 2012; Cresswell 2015; Creswell & Cresswell 2017).

This approach refers to the triangulation method based on the assumption that no single method used alone can capture, explain, or facilitate the understanding of human experience and phenomena of life in its multifaceted dimensions.

Triangulation enables researchers to overcome personal biases and limitations resulting from the adoption of a single methodology. By combining different methods in one study, researchers can partially overcome the lack of accuracy resulting from the use of only one method (Furmanek 2016).

For the purposes of this study, source triangulation was employed, which involves using and comparing data and information from different individuals, institutions, as well as municipal authorities, represented by the mayor of the city described in the article.

The theoretical aim of this article is to determine the potential utilization of stakeholder theory assumptions in carrying out actions and initiatives undertaken by municipal authorities concerning the reduction of urban smog. Its cognitive objective, on the other hand, is to determine to what extent the

assumptions of stakeholder theory are implemented in the realities of the analyzed municipality of Mikołów regarding the aforementioned problem.

A research hypothesis was adopted assuming that the actions of the municipal authorities of Mikołów utilize elements of stakeholder theory in the aforementioned domain. These actions concern communicating initiatives or projects to individual stakeholder groups aimed at reducing the phenomenon of urban smog. It was also assumed that such actions contribute to building positive PR for the municipal authorities of Mikołów among its residents.

In this article, a case study method was employed. Sources of information utilized for this purpose included local websites, information presented online by the authorities of the municipality of Mikołów, as well as online editions of local newspapers and websites of local non-governmental organizations related to ecology and air quality issues. Based on the information obtained, actions aimed at significant stakeholders of the municipality of Mikołów regarding the reduction of smog phenomenon were identified and described. Additionally, the activities of the city authorities and initiatives undertaken in this regard were characterized. The conducted research and analyses are qualitative in nature. Their limitation was access to information. They allowed for understanding the actions taken towards key entities from the perspective of reducing the smog phenomenon in Mikołów and assessing their validity and level of advancement from the standpoint of stakeholder theory.

RESEARCH RESULTS – ANALYSIS OF TASKS AND ROLES OF ENTITIES CONTRIBUTING TO THE REDUCTION OF SMOG IN THE CITY OF MIKOŁÓW. A CASE STUDY

Mikołów is a city with 40,000 inhabitants located in the Silesian Voivodeship in Poland. It is a city aspiring to develop with principles of ecology and sustainable development. To achieve this goal, various actions and projects promoting ecological principles have been implemented and promoted in Mikołów for many years (Czuba, 2018).

During the autumn-winter period, Mikołów faces the problem of so-called low emissions. The sources of these emissions are exhaust fumes from cars,

dust, and gases emanating from household heating furnaces and coal-fired boilers. The city aims to change this situation. At the city hall, residents can obtain a subsidy for replacing outdated heating sources in their homes with more ecological ones from the government program CLEAN AIR. Regular meetings are organized with the participation of municipal employees and councilors for residents to familiarize them with the principles of this program (Piechula, 2024).

The mayor and deputy mayor of Mikołów play a significant role in these activities, along with the actions of the municipal and local fire brigades in conjunction with the actions of the traffic police. These actions are aimed at an important stakeholder group in this area, the residents of Mikołów. These actions largely relate to residents of Mikołów living in single-family homes, as well as residents living in housing estates or small residential communities. Various communication tools are used in these initiatives, such as meetings with residents and information provided through municipal and local websites.

To build good relations with the citizens of Mikołów and promote actions related to improving air quality in the city, an eco-advisor position was established in 2022, whose tasks include:

- obtaining grants for replacing heat sources and increasing energy efficiency of buildings;
- conducting informational and educational activities among residents on improving air quality, including organizing meetings with residents and publishing informational materials;
- cooperation with municipal authorities, other public administration bodies, municipal guards, and financial support institutions;
- support in implementing tasks resulting from the Air Protection Program and the anti-smog resolution for the Silesian Voivodeship (Piechula, 2024).

However, the most crucial role in combating low emissions is human awareness. An increasing number of Mikołów residents realize that they should burn high-quality coal.

For example, in 2016, the Municipal Guard in Mikołów, together with firefighters from the Volunteer Fire Brigade, conducted a series of demonstrations on environmentally friendly coal burning. About 150 people participated

in the initial demonstrations. Supplementing the aforementioned stove burning demonstrations were instructional videos, which could be viewed on the municipal guard's website (Demski, 2016).

An important stakeholder group in Mikołów regarding the issue of urban smog is the residents of housing estates. Municipal authorities conduct investment activities related to the thermal modernization of urban blocks for them. These investments are linked to communication activities, especially using local websites where information about such projects can be found. New and aesthetically pleasing building facades are visible in several housing estates in Mikołów. After renovation, heating these same buildings becomes cheaper and requires less fuel, thus reducing air pollution. In 2018, dozens of buildings in Mikołów underwent thermal modernization. Thanks to the revitalization of the city center, tenement houses located in the market square of the city and on adjacent streets, which are currently heated with coal, will be connected to the city's heating network and stop emitting smoke (Mikołów City Hall, 2018).

In activities aimed at engaging residents of single-family homes and housing estates in the issue of urban smog, local internet services broadcast national social campaigns. For example, in 2019, the social campaign *Cycle Kilometers* by the Allegro Allforplanet Foundation was promoted in Mikołów. In 2019, its seventh edition was launched, lasting from May 15 to September 30. To participate in this campaign promoting physical activity and cycling tourism, participants had to register on the Cycle Kilometers website, then download one of the applications that counted the length of traveled routes in kilometers. In this way, every kilometer traveled was added to Mikołów's pool. Residents of Mikołów participating in this campaign could receive valuable prizes such as MI Air Purifier air purifiers, GARMIN Vivoactive 3 smartwatches, and Allegro gift cards worth 100 and 500 zlotys. Additionally, the top 50 cities in Poland received sets of air purity sensors as a reward. Mikołów was among this group (Zegralicka, 2019).

Another stakeholder in Mikołów concerning the reduction of urban smog is the Municipal Engineering Company Ltd. (ZIM), of which Mikołów is the owner. In the years 2007-2013, with the participation of municipal authorities, ZIM implemented investments related to the modernization of boiler rooms

and heating installations. As part of the project, district heating mains were rebuilt and constructed along with technical infrastructure, and existing heat exchanger stations were modernized. One of the two municipal boiler rooms was also modernized, along with its dust extraction and flue gas systems, and a new triple-stack chimney was built at the modernized heating plant, reaching a height of 60 meters (ZIM, 2019).

Regarding the reduction of urban smog, cooperation between municipal authorities and local non-governmental organizations whose activities concern environmental and sustainable development issues should be quite significant. In the case of Mikołów, the potential for cooperation with such stakeholders is currently small. A locally operating organization in this area is the Łaziski Alarm Luftowy, which continuously provides information on air quality in Mikołów and neighboring municipalities (Alarm Luftowy, 2020). It also conducts training for primary and secondary school teachers on smog issues. However, these activities are not essentially promoted by the Mikołów municipal authorities, even though they could complement pro-ecological initiatives and investments in the analyzed city.

DISCUSSION

The municipal authorities of Mikołów are taking actions aimed at reducing the phenomenon of smog. These actions take into account various stakeholder groups in this field. The most important of these are the residents, both those living in single-family homes and on housing estates. Other stakeholder groups such as non-governmental organizations dealing with environmental issues, public entities, local private entities, as well as youth and students, are also considered in these efforts.

Efforts targeting significant stakeholder groups in Mikołów related to the reduction of smog are mainly based on the municipal authorities of this city utilizing marketing communication to inform the aforementioned stakeholders about the city's actions to mitigate the smog problem. This usually involves informing about the possibility of obtaining grants for replacing furnaces under the government program *Clean Air*.

The municipal authorities of Mikołów promote nationwide or local actions and campaigns of non-governmental organizations related to business. These actions are more closely related to PR and are in line with the principles of efficiency in governance. So far, they have proven effective, ensuring further terms for the mayor of the city and most councilors. This approach is also akin to strategic marketing, where greater emphasis is placed on achieving the municipality's marketing goals rather than building lasting relationships with stakeholders.

Therefore, it should be considered how to utilize other tools for engaging stakeholders, such as consultations, partnerships, and dialogue. It seems that the authorities of Mikołów should collaborate more extensively with non-governmental organizations dealing with environmental protection issues, including the smog problem. One such organization is Polski Alarm Smogowy or locally operating Łaziski Alarm Luftowy.

Stakeholder engagement activities in Mikołów are largely based on one-way communication of pro-environmental initiatives implemented in the city, initiated by the municipal authorities. These activities correspond to the first form of stakeholder engagement – top-down communication and/or consultation. In this case, engagement is initiated and led from above by an organization with decision-making authority. It may consist of consulting with the public and stakeholders (while retaining the right to make final decisions) or simply communicating decisions that have already been made.

Although this type of activity is not usually considered a form of genuine *participation* (Rowe & Frewer, 2000), such actions can have positive outcomes. They may be fully justified in certain situations – for example, when a decision has already been made and cannot be changed but must be effectively communicated to those affected.

The second possible option is top-down deliberation and/or co-production. In this model, engagement is still initiated and managed from above by a decision-making authority, but it involves the public and stakeholders in a two-way dialogue about the decision. This allows the authority to gain a better understanding of the problem and to consider stakeholder suggestions before making a final decision. A more co-productive approach would involve jointly developing the decision and sharing responsibility for it between the

institution and the public or stakeholders. However, the ultimate responsibility for implementing the decision remains with the public institution.

This option is applied in a limited way by the Mikołów authorities, for instance through public meetings and discussions explaining the essence of the *Clean Air* program (Program Czyste Powietrze) a government subsidy scheme supporting the replacement of old furnaces to improve air quality and reduce urban smog.

Another option proposed by stakeholder engagement theory is bottom-up one-way communication and/or consultation. Here, engagement is initiated and led by stakeholders and/or citizens, who communicate with decision-making authorities often through grassroots networks, social movements, or social media – in order to persuade policymakers to open decision-making processes to dialogue and cooperation. Such engagement may also occur when social groups or stakeholders gain enough influence usually through public mobilization to challenge or reverse previously made top-down decisions. Those leading such efforts may consult with others to better understand and represent their views, gain support, and enhance their capacity to influence the decision-making process. In the case of Mikołów, this option is not used by the municipal authorities in their anti-smog efforts.

The final option proposed by engagement theory is bottom-up deliberation and/or co-production. In this model, engagement is initiated and led by stakeholders and/or citizens who participate in **two-way** discussions about decisions with other interested parties. Decisions may then be made and implemented by one or a small group of stakeholders based on the knowledge gained through deliberation, or they may be co-created by a broader circle of participants. This option is also not applied in Mikołów in the context of citizen-initiated activities aimed at reducing urban smog (Reed et al., 2018).

In this regard, it would also be beneficial to learn from the experiences of the municipality of Skawina in the Lesser Poland Voivodeship. The mayor of this city launched social consultations in April 2017 for the *Fight against Smog Program in the Municipality of Skawina*, which was prepared by the Skawina Smog Alarm in cooperation with the Department of Development and Strategy of the Skawina City and Municipality Office. After the consultations,

councilors voted on the acceptance of the program, aimed at measurably improving air quality in the Skawina municipality over several years.

Those interested in the consultation topics could submit their comments from April 7, 2017, to April 28, 2017, either electronically through a special registration form available on the Municipality's website or in writing through a paper registration form available at the Development and Strategy Department of the City and Municipality Office in Skawina. Representatives invited to participate in these consultations included members of the City Council, District Councils, Village Councils, Entrepreneurship Council, Skawina Senior Council, Youth City Council, non-governmental organizations, institutions, and economic entities, representatives of the scientific community, as well as all interested residents and stakeholders in the Skawina municipality area (Infoskawina Portal, 2017).

In contrast to Mikołów, the city of Skawina, when implementing actions targeting key stakeholders to reduce urban smog, applies the above-mentioned stakeholder theory by utilizing bottom-up one-way communication and/or consultation as well as bottom-up deliberation and/or co-production. Local and national pro-environmental organizations play an important role in these efforts by educating residents and teaching them how to respond when they observe violations related to the improper burning or incineration of harmful materials in household furnaces (Cieślicka, 2024).

Although Mikołów has undertaken a number of initiatives to reduce urban smog and has achieved measurable successes in this area, it should also implement the aforementioned approaches successfully applied in Skawina. Doing so would make its anti-smog efforts even more effective.

CONCLUSIONS

This article attempts to explore the possibilities of using stakeholder theory in the context of municipal government actions aimed at reducing urban smog. The research was conducted in the medium-sized urban municipality of Mikołów. Based on the gathered secondary research material, it can be concluded that the actions taken by the authorities in this area align with the principles of stakeholder theory. The key group among them are

the city residents, as well as the youth and children. This choice is appropriate because the current residents, especially those living in single-family homes, are the main source of air pollution in Mikołów due to coal burning in stoves. Municipal authorities undertake many projects and initiatives to encourage them to modernize their heating installations, which is facilitated by the currently implemented government program *Clean Air*. On the other hand, children and youth are prospective city residents who are easier to shape with pro-ecological behavior patterns. Despite the indicated directions of the municipal authorities' actions in Mikołów and the observation that they align with the principles of stakeholder theory, such actions so far are limited to informational activities and largely resemble public relations aimed at creating a positive image of the municipal authorities among residents. For now, this approach proves to be pragmatic because it ensures the continuity of the mayor's tenure in this city and the majority of councilors.

The presented example of Mikołów, where communication and informational activities dominate stakeholder engagement, illustrates a typical gap between *informing* and more participatory forms of co-governance (such as consultations and partnerships) a gap that the literature identifies as crucial for achieving lasting improvements in air quality (Nevig et al., 2023).

Municipal actions in Mikołów align partially with the goals of the EU Green Deal and Poland's Environmental Policy 2030. However, the predominance of top-down information campaigns over participatory engagement limits their transformative potential. Expanding co-production mechanisms could enhance long-term compliance with EU climate and air quality objectives.

Although various projects and initiatives aimed at reducing urban smog are being implemented in Mikołów, and the city has achieved successes in this field, it should also adopt the above-mentioned approaches successfully applied in Skawina and make broader use of the options proposed by stakeholder engagement theory. Doing so would enable the city to address the problem of urban smog even more effectively.

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