23 DILEMMAS OF PUBLIC PARTICIPATION IN ACOUSTIC CLIMATE MANAGEMENT IN THE CONTEXT OF ELABORATING ACTION PLANS AGAINST NOISE IN URBAN AREAS

23.1 Introduction

Noise is defined as all unwanted or harmful sounds created by human activities in the environment. Nowadays it is one of most serious environmental problems affecting the society. Due to its ubiquity and nuisance, particularly in urban areas, noise is an object of many research in the field of engineering, nature and social science. An adverse effect of noise on human psychophysical condition, social functioning, and even some economic phenomena is well recognized. The awareness of the seriousness of the problems generated by the noise renders the introduction of legislation regulating its acceptable levels in the environment.

The fundamental legal act for EU member states regarding this issue is the Directive 2002/49/EC of the European Parliament and European Council of 25 June 2002. The Directive requires Member States to determine the extent of exposure to environmental noise through noise mapping, showing the noise pollution and the adoption on the basis of the obtained data plans to prevent excessive noise and reduce its level where it exceeds the limit values [1]. The Directive established a deadline of acoustic mapping in June of 2007 in cities of over population of 250 thousand residents. In cities with populations from 100 to 250 thousand residents the deadline was set in June 2012. Deadlines for the preparation the action plans against noise were set respectively in: the end of June 2008 and the end of June 2013. 'Noise directive', specified also minimal requirements for the content of the program that include a duty to consult the plan against noise with the society [1].

For Polish municipalities obliged to follow the Directive requirements, fulfilling them appeared to be a great challenge. Among the cities with population over 250 thousands inhabitants only Gdańsk and Warsaw manager to elaborate strategic acoustic map on time. [2]. Following up the Directive's requirement demands considerable efforts and resources (including financial ones) and developing new competence among municipality employees and contractors. To meet these needs the team of Institute of Production Engineering of Silesian University of Technology undertook two successive projects aimed at providing solutions supporting the management of environmental noise in urban areas. The result of research project No 6T07 2002/C.05779 'Development of System of Creation and Exploitation of Strategic Acoustic Maps of Big and Medium Size Towns for the needs of Professional Spatial Planning and Schooling of Administrative Personnel' (the project was implemented in the years: 2003-2006), was developing a technology for acoustic mapping of urban areas [3]. Project No. N R14 0001 06/2009 entitled: 'Network-Based System For Supporting Administrators Of Strategic Acoustic Maps Of Urban Areas' (the years of project implementation: 2009-2012) is geared at support and advice to officials in the area of sound environmental management. One of the aims of the project is elaborating developing guidelines to assist public consultation regarding action plan against noise. This paper is a contribution to execution of this task. While working in the project the author of the paper noticed that although the

conducting public consultation is a legal requirement, it is difficult to organize the consultation process in an efficient manner that would satisfy both the residents and the municipality. The goal of this paper is to describe the determinants of the use of participatory approaches in the management of environmental noise in the city, that will be useful for understanding the social context of elaborating action plans against environmental noise.

23.2 Public participation in local government activity

Participation is most often understood as an active inclusion of citizens into public life. The term 'public participation' is defined as a process, by which public concerns, needs and values are included in governmental and corporate decision-making procedures. The main objective of initiating participation is making better decisions with the support of the citizens [4].

The extent to which citizens influence the decisions and actions of the authorities, can be varied. Different models of participation by the citizens according to the criterion of the strength of citizens' influence on making decisions are often presented in the form of 'ladders of participation' [5]. On the example of a 'ladder of participation' that was proposed by the OECD [6], in tab. 23.1 some of the tools of participation used at the various 'levels' of the ladder are presented.

It should be emphasized that the proposals of 'participatory ladders' does not presuppose the existence of the relationship between the 'rung' in which participation takes place and the quality of the decision made as a result of participation.

The advantage of the efficient use of participatory approach in city management is increasing the social legitimacy of decisions and a sense of efficacy and satisfaction of the residents.Information collected from the residents provide the overview of consulted problem that is more embedded in the social realities [4].

However, from the perspective of local government, using participatory approach as a common practice of local management raises some reservations. The most important of them are: the cost to be incurred (time, organizational and financial resources needed to perform participation process) and perceived lack of competence of the residents to decide in matters complicated from legal and technical point of view. Among officials there is also reasonable fear of stirring up local conflicts and disclosure of attitudes selfish and particularistic attitudes as a result of participation process initiated.

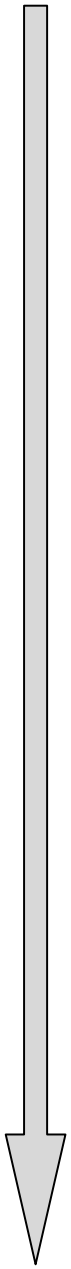
On the other hand, forcing controversial solutions by the local government without previous consulting them with the residents can raise social resistance and leads to escalation of local political conflicts quite often. Therefore, in practice, some governments try to stimulate public participation, but only to the minimal extend, that is necessary to require the legitimacy of the controversial decision. The decision made this way are subsequently implemented, and the authorities cannot be accused of not giving people come to the fore [4].

It is hardly surprising, since before initiating participatory processes local governments face various dilemma of different The list of the most important of them placed below is probably not comprehensive:

- The dilemma of scale: 'How to ensure adequate representation of citizens in decision making in the large and complex systems of modern administration?'

- The dilemma of risk: 'How to ensure the application of necessary, but risky decision that people may not want to the extend threatening the stability of the political-economic order?'

Tab. 23.1 Practice and tools in different models of public participation
Souce: Own authorship on the base of [5, 6]

Model of participation	**Characteristics**	**Practices and tools of participation**	Citizen's reponsibility
Information and transaction	Government informs citizens (one way process)	Information on decisions taken by the authorities on notice boards, the internet or BIP (Public Information Bulletin) Transmission of information on decisions by local media, press conferences or leaflets Sending information to residents, estate councils or non-governmental organizations Providing information while open meetings with residents, representatives of the estate councils or non-governmental organizations	
Consultation	Government consults with citizens (citizen's response is generally predetermined via multiple-choice, closed-questions options)	Street or telephone survey Questionnaire on the website Sending out questionnaires to groups of people / organizations defined by the authority Gathering opinions on the preferences of residents during open meetings Collecting signatures in support of the solutions proposed by the government	
Deliberative involvement	Government engages citizens in the consultation process (citizens are encouraged to discuss the issue before final response	Encouraging people to provide suggestions on possible solutions of the problem Organization of open meetings to learn the opinions of the citizens Public hearing	
Government-led active participation	Government instigates consultation but retains decision-making power	Organizing public debates Creation of the initiative of the formal and informal decision-making teams consisting of residents, representatives of non-governmental organizations and the government Presentation the consulted problem to advisory-consultative councils	
Citizen-led active participation	Citizens are actively engaged in decision-making processes, alongside government; citizens decision become binding; they share ownership and responsibility over outcomes	Referendum Ttransfer of decision-making power to the residents of particular area Delegation of the powers to decide to auxiliary units (district or estate councils) Transfer of decision-making power to experts designated by the residents	

- The dilemma of time and the crisis: 'Decisions must be made quickly, and citizen participation takes a lot of time, how can this be reconciled?'

- The dilemma of the common good: 'Decisions taken as a result of participation may not reflect what is the true common good. May common good therefore be a subject to deliberation?'
- The dilemma of technology and expertise: 'How people can decide in complex cases in which even the experts cannot reach an agreement?'
- The dilemma of oppressed and excluded groups : 'How to ensure a place for them in the process of participation? Is it possible at all?' [4]
- The dilemma of feasibility: 'What to do in a situation where a solution called for by the residents are not feasible for financial reasons or under the legal situation?'
- Ethical dilemmas: 'Is it right to expose residents to devote time and effort when their demands can be not included? Is raising the hope for change justified, when the final decision is uncertain?'

Conditions that should be taken under consideration by the municipality while deciding on initiating the process of participation and some indicates how to carry it out in the context of the consultation action plans against urban noise with the society are presented in the next section.

23.3 Determinants of public participation in the management of environmental noise

The term 'acoustic climate' is defined as all sounds occurring in the environment irrespective of their source. In urban areas, acoustic climate is usually dominated by noise emitted by means of transport and industrial plants. The Directive 2002/49/EU, imposed an obligation to consult the content of action plans against noise in a 'clear, comprehensible and accessible way. This general recommendation does not specify neither the level of citizen engagement required, methods of participation nor what particular issues connected with noise reduction should be consulted. It seems that in the context of consulting action plans against noise, the participation could be performed in three fields: areas of most annoying noise problems, ways of reducing excessive noise and sequencing of anti-noise activities to be performed.

In 12 Polish cities that were obliged to elaborate action plans against noise in the first turn, participation activities while consulting the plans were not very extensive. Usually the documents containing the plans were published in the internet and some time was appointed for the citizens to submit comments on them. In Kraków and Warsaw the municipal authorities broke this scheme and organized open debates with residents, non-governmental organizations and media. Additionally in Warsaw leaflets and brochures about the plan against noise, written in understandable for non-professionals language were distributed. In Poznań e-platform was created to allow the citizens to discuss comments and doubts about the plan with the experts. However, according to the classification proposed in the previous section, all these activities can be categorized as 'information and transaction' or 'consultation' only in some cases reaching the level of 'deliberative involvement'. But certainly, it is possible to strengthen public participation through the use of other tools or more intensive information campaign. Since the possible range of public participation, beyond the good will of the au-

thorities, are affected by other factors, the possibility of transferring the citizens' involvement and responsibility to higher levels remains an open question.

23.3.1 Legal determinants

Existing law is most important factor limiting the freedom of the participation process. Apart from the Directive 2002/49/EU, the basic regulations concerning matters connected with acoustic climate management in Poland are: Environmental Law (of 27th of April 2001[7] and regulations of Ministry for Environment (of 14th October 2002 [8] and of 14 of June 2007 [9]). In the context of acoustic climate management these regulations put the framework for possible public participation and limit the extent of possible citizens' responsibility in different ways.

Legal acts enlisted above require to include into strategic acoustic maps and action plans against noise only four sources of noise: traffic noise, rail, industrial and airport noise. At the same time the fact that in the opinions of residents, noise from sources 'invisible' on the acoustic maps is often judged to be more annoying cannot be ignored (for example, sounds of air conditioners, mass events held regularly near the settlements, or the sound of sports facilities are the common nuisances that the acoustic maps do not reflect [10]).

Another limitation provoked by legal reasons are requirements to be met by action plan against noise. Existing Polish law indicates the sequence of undertaking anti-noise actions according to so called 'M indicator'. 'M indicator' conveys volume of exceeded noise level and the number of inhabitants of area exposed to noise [8].

Moreover, the regulation on permissible noise levels in the environment [9] states clearly "protection zones" in which the noise should be reduced in the first place. These include: health resorts, hospitals, welfare homes and places of long-term stay of children and adolescents. Noise limits according to European and Polish regulation are conveyed with the use of LDEN indicator which describe the A-weighted long-term average sound level in decibels [dB] determined over all the days, evenings and nights periods of a year.

23.3.2 Social determinants

Taking under considerations all social conditions of environmental noise problem, emphasizing the role of sound, understood as a volume of decibels, in the environment seems problematic.

The main purpose of the implementation of action plans against noise is to reduce noise to acceptable levels in the areas where this level is exceeded. This assumption, however, does not fully reflect the complex nature of human perception. Human perception of sound, is affected by numerous other factors apart from the sound intensity. These include physiological factors (age, health status), psychological (for example emotional relationship to the noise source, a sense of control over the source of noise, the semantic value of the sound) or situational ones (the spot of perception of noise, time of day) [11].

The term 'acoustic climate' refers not only to environmental noise pollution, but also to the natural diversity of sounds in the environment. In a fast developing approach described as 'soundscape' [10, 12] the importance of the semantic content of the sound to the users of the space is emphasized rather than its acoustic measures. Research conducted in the

'soundscape' trend are geared at learning about the role of sounds for the creation of identity of the city, its specific climate and mood. The focus here is not on noise-reduction, but to identify the sounds that people want to hear in a given context. Such studies have shown that excessive noise, generated by source preferred in a given context, is not perceived by the residents as troublesome, but in some context for example: in busy city centers, amusement parks or in places of mass public events, as an expected and natural. The implication of these findings for the practice of public participation in the management of environmental noise of the city is possibility to survey residents on their preferences connected with sounds in different area of the city. 'Soundscape' approach also draws attention to the advantages of sound masking phenomena for the purpose of noise reduction. Masking occurs when the human ear cannot distinguish between several different audio signals presented simultaneously. It has been proved that the so-called sounds of nature, especially the sound of flowing water (such as fountains) can effectively mask the negative impact of traffic noise [12].

The correctness of this approach is confirmed by results of studies on the effects that noise reduction exerts on people annoyance. Although the noise reduction typically reduces annoyance, this effect is associated more likely with the fact of the application of solutions aiming at reducing noise then the decibels reduction in the environment (the experience of "care" from the government) [11, 13]. The results of studies on the long-term impacts of noise barriers set in German cities indicated that the noise barrier had a positive influence on residents' satisfaction only to the distance about 150 m from the noise source. Beyond this distance, the impact seemed to be negligible [13]. It was also noticed that the noise generated by the highways had a greater impact on residents dissatisfaction than noise with the same intensity generated by the city traffic. There is also evidence that reducing annoyance is less dependent on decrease in noise level than on the way in that the effect was achieved. Tra fic regulation, replacement of window frames in the estates, public transport fleet modernization, construction of bypasses or the use of sound masking phenomena exert much better psychological effect than noise reduction by noise barriers [11, 13]. Unfortunately, careful lecture of action plans against noise prepared so far by the Polish cities that these facts are largely ignored (or unknown). Most popular (cheapest?) noise reduction solution used is constructing a noise barrier. The disadvantage of such approach turns out to be lack of will to look for other solutions in the situations where there is no possibility of using an acoustic barrier. For example, on one of the streets in Katowice, where residents demanded reducing annoying traffic noise, the authorities concluded that there was no possibility of mounting on facades of buildings acoustic barrier, because the houses were private, not public property, and as such could not be an object of the public (city) efforts [14]. In other cases, thoughtless building of acoustic barriers led to the impoverishment of the landscape, or to arouse public discontent for other reasons such as covering windows that resulted in cutting off the residents from view and daylight. The approach of "soundscape" thus appears to be more consistent with the objectives of a participatory approach than focusing on efforts to reduce the level of decibels.

Among the theoretical assumptions of public participation there is a claim that citizens want to participate in decision-making by the authorities. However, practice shows that, participation in the public consultation processes is generally low - unless the consulted issues is

connected with potential violence of the interests of a particular group of people. In the case of consulting municipal action plans against noise performed so far in the Polish cities, not more than several dozens of people usually took part. The exception was the mobilization of residents in districts or neighborhoods, which were omitted in the records of the plan, despite of the fact that the residents subjectively felt noise pollution as a great problem. The phenomenon of over-representation in the process of consultation of dissatisfied people, or disclosure NIMBY syndrome while public consultation is often and psychologically understandable (residents lack motivation to undertake the effort associated with participation in the situation when the authority work "our way") [11]. In such cases, the question of representativeness of the results of the consultation appears.

A practical recommendation that can be drawn here is to try to ensure the broadest representation of residents in consultation with regard to excluded groups. It is worth for the governments to realize the possibility of using innovative tools supporting participation process for example developing computer tools such as Participatory GIS. Tools of this class allow the integration of spatial data contained on acoustic map with the information about the preferences and expectations of citizens acquired as a result of participation. [15].

With the progress in an information technology, the possibility of effective use of GIS maps on the internet increase. More and more intuitive use of GIS maps allows residents to use acoustic map on their personal computers or even via mobile phones. This makes online consultation with the use of the map more easy. People could put tags or comments on their perception of acoustic problems and proposal to solve them to the acoustic maps. It could be a potential remedy for difficulties in recruiting people the processes of participation. British research on the use of tools such as Participatory GIS [15] in the evaluation of urban noise and proposing anti-noise solutions, indicate the usefulness of these tools in consultation with the residents. Social determinants of noise perception cause that the application of the elements of ‘soundscape’ approach by examining the expectations of the residents regarding the quality of the acoustic climate, rather than focusing only on the noise nuisance for residents, may be the right course of action while managing urban environmental noise.

23.4 Conclusion

The dilemmas that arise during the consideration the questions of admissibility and feasibility of the assumptions of participatory approaches to solve current problems related to the management of urban environmental noise do not have easy solutions. On one hand, existing law force local governments to initiate processes of participation, on the other hand, there are practical limitations and of the legal and social nature that bid challenges for using in-depth participatory approach in case of consultation action plans against noise in urban areas. The use of public consultation web tools such as Participatory GIS can help overcome some of these limitations and assist reaching a mutual agreement between the authorities and the residents regarding acoustic climate management policies. As a direction for further research in this area the development and verification of the effectiveness of the tools of this type can be indicated.

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