
Promoting the involvement of citizens in environmental management: a case study

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Abstract: Noise pollution and certain related aspects were analysed in the Third District of the City of Parma (Italy), with an approach, which aims at promoting the participation of citizens in the choices concerning the administration of the territory. The project aimed at investigating a way to manage an environmental problem such as noise in an urban area by integrating the human perception of it and technical measures. A *Local Agenda 21* approach was set up to initiate environmental negotiations between the local authorities and the citizens. At the beginning, a questionnaire was created and submitted to a sample of citizens. On the basis of results and priorities emerged by questionnaires, a survey was then made to obtain noise levels. The integrated analysis of the data acquired, has finally enabled the promotion of strategies to approach noise pollution, by considering the real needs and priorities perceived by citizens.

Keywords: noise pollution; participation of citizens; human perception; questionnaires; technical measures; local agenda 21.

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1 Introduction

Every sound generated by human activities that produces negative effects both on human health and on the quality of the environment, is defined as *noise*.

During the last years, acoustic pollution is become a problem concerning large city areas and large groups of citizens and consequently, the damaging, disturbing, or simply annoying effects deriving from noise exposure, became elements of great importance in defining the quality of the environment. On these presuppositions, the World Health Organization (the WHO) in 1990 defined 'an unfavourable acoustic environment' as a condition that compromises a good quality of life, from the point of view of a physical as well as a psychological well-being.

Several characteristics of the acoustic phenomenon assume particular importance relative to human perception: among them, the intermittence, the duration, the content of information or the moment and the place in which it is generated.

Furthermore, the degree of exposition, the personal sensibility, and the cultural and social living conditions of receivers may influence the perception of the different sounds that can be deemed unpleasant and consequently defined as 'noise'. This high variability in the answers of one individual to one noise in different situations, and the variability between different people in the same situation and the consequent interaction of all these aspects, makes a general definition of causes and effects for noise exposition difficult.

The complexity of the problem is also linked to:

- all the dangerous effects (both psychological and pathologic) it produces on the quality of human life
- the variety of its sources
- its characteristic to concern several places even very distant from the source of emission.

Noise pollution is a serious problem for urban environments. The fast growth of urbanisation and of vehicles circulating in the streets have the most important responsibility as noise sources but, in spite of these 'emergencies' for people, until now in Italy there are delays both in the specific legislation and in measures for prevention and remedy. In the European context, the programmes for mitigation intervention of many city Boards include both the city organisation (acoustic zoning, intervention on traffic flows, for instance) and the implementation of point measures (mostly anti noise barriers). The implementation of these programmes is a difficult task, both in organisational and financial terms: therefore it has only just begun after the acquisition of extensive data spanning a considerable geographical area and length of time.

According to these considerations, it seems clear that noise pollution bears a strong relevance to the national context and that it represents an environmental problem that is difficult to approach and manage.

In relation to this problematic nature of acoustic pollution the discussion on some aspects related to its management, especially in the light of its role in generating environmental conflicts, seemed interesting.

In Italy, in fact, the management of every environmental problem, often impacts with the lack of culture and attention regarding the participation of citizens in environmental decisions. On one side, there are local authorities, accustomed to a highly bureaucratic and formal management of the decision-making process who obstruct new methods and approaches, which they perceive as ways to loose their authority; and on the other side, there are citizens who very often exercise an excessively rigid and therefore counterproductive opposition.

Chapter 36 of *Agenda 21* 'Promoting Education, Public Awareness and Training' seems to be an interesting reference for prevention of these conflicts thanks to participation and sharing of the choices. Participation, in particular, becomes not the control of citizens on public administration, not a biunique process of communication (citizens/authorities) but a 'complex and common dialogue':

- to define problems
- to stimulate awareness in relation to sustainability
- to identify strategies and actions for the entire community.

Consequently, in this context, the sharing of objectives and methodologies, the accessibility of information, the exchange of knowledge and competencies, become truly strategic.

The project aimed at investigating a way to manage an environmental problem such as noise in an urban area by integrating the human perception of it and the technical measures, in the aim of reducing or preventing of environmental conflicts. A *Local Agenda 21* approach was set up to initiate environmental negotiations between the local authorities and the community, and to make all citizens aware of and active in managing their environment. Particular attention, consequently, was also placed on pursuing the involvement of the District Council, and communicating the project and its aims to citizens, thanks also to the local mass media.

2 The context

Parma is a city located in Northern Italy with about 170,000 inhabitants and divided into seven Administrative Districts. Noise pollution and some related aspects were analysed in the third District of the City through an approach that aims at promoting the participation of citizens in choices for the administration of the territory. The Third District is characterised by a variety of contexts (from large rural areas to densely populated areas) effected by a very diversified 'acoustic climate' (all the sources which act in a specific area). In addition, it represents the only district of the town of Parma for which a significant series of data on acoustic intensity levels is available, thanks to some monitoring campaigns carried out in this territory during the 1990s by the local chapter of Legambiente. Finally, because of the presence of a multitude of noise sources (extra urban roads, ring road, railway, industries, etc.) and sensitive receptors (general hospital, schools, etc.), in an environmental context in which a significant data series on noise levels was available, this specific context was chosen.

3 Materials and methods

On the basis of knowledge related to the specificity of the context chosen for the research (the Third District), experimentation divided into two different parts was performed.

In the first part, a survey on the perception of environmental problems was carried out through:

- a questionnaire for a sample of residents
- a questionnaire for a sample of shopkeepers
- an interview to 'privileged witnesses' (members of Committees of Citizens and members of the Third District Commission).

In the second part, noise level data were collected in certain locations of the Third District chosen in relation to the results and suggestions that emerged from questionnaires and interviews. These measurements have been important to widen the data series already available for the Third District, and to evaluate a 'possible' comparison between the subjective perception of the problem and the level of acoustic intensity actually measured.

In order to guarantee an involvement of citizens and to acquire complex information with a simple, direct and comparable approach, an instrument such as the questionnaire was chosen. It was articulated in 32 questions divided as follows:

- *a first part*, dedicated to the personal data of people interviewed, in order to characterise the sample
- *a second part*, dedicated to the perception of certain environmental problems strongly related to the specific environmental context (the City of Parma) and to the impact of traffic on citizens, in order to estimate how much importance is given to noise in connection with traffic

- *a third part*, dedicated to the perception of acoustic pollution near people's houses, in order to highlight the importance and distribution of noise sources on the territory and the ideas on the possible effects on health
- *a fourth part*, dedicated to the individual commitment towards the denunciation and resolution of the emerging environmental problems in their quarter, in order to reflect people's attitudes and interest for a wide participation in the decision-making processes.

A large part of the questions submitted were closed (with some pre-defined options) while others were open, to stimulate a free expression of individual ideas and feelings.

According to the available time and resources, it was decided to carry out a random sampling involving adults, males and females, residing in the urban area and in some suburbs of the Third District, passing in squares or streets, together with visitors of public places (bars, clubs, churches, etc.).

On the contrary, the survey of shopkeepers involved men and women working in business activities located in streets with an intense traffic of motor vehicles.

Finally, interviews of 'privileged witnesses' were organised; these subjects were considered to be highly and directly involved in institutional roles or in groups of citizens and consequently in daily contact with the local environmental problems.

Information, consultation and cooperation processes amongst citizens, NGOs, local authorities, etc. were supported during the development of the project activities. On this presupposition, in order to inform and to stimulate the involvement and participation of the population, a communication regarding the survey and its aims, has been released on the local daily paper (in October 2001) and several meetings have been organised by the Commission for the Environment of the Third District. Finally, between November/December 2001 and January 2002, the phase of administering the questionnaires was carried out, involving 130 residents and 47 shopkeepers. The interviews were proposed to four people.

At the end of this phase focusing on people and their needs, a monitoring of sound levels by 'spot measurements' (measurements of fifteen minutes, in proximity of public spaces: squares, sidewalks, etc.), was carried out in the territory of the District. The aims of this survey were:

- to obtain a high number of recent measurements
- to obtain data useful for a comparison with those emerged from some previous campaigns carried out by the local branch of Legambiente.

The points for the measurements were chosen considering data and suggestions emerged from:

- the results of questionnaires and interviews
- the sound measurements of the previous years
- the analysis of the 'Plan for Noise Depollution' of the Municipality of Parma.

During the survey, in addition, each measurement was characterised by an indication of:

- the number of motor vehicles, trucks, scooters and buses
- the number of other possible noise sources (trains, airplanes in takeoff, ambulances, bells, dogs, etc.).

All the measurements were taken during May 2002, in conditions of clear weather and no wind.

4 Results and discussion

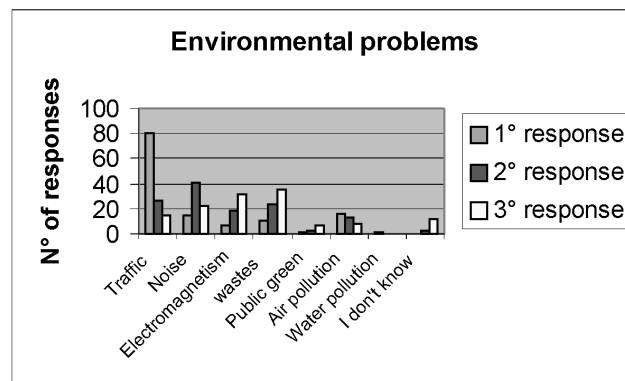
Citizens involved in the survey seemed generally interested in the issues proposed. They clearly showed the importance given to communicating their ideas and needs to the Public Administrators of the City and therefore cooperation for this survey was strong.

The results of the research showed interesting and helpful indications to approach the problem of acoustic pollution, especially in relation to traffic and mobility. In this paper, only the results most relevant for their consequences and impact on management and future development programmes are discussed.

The sample was characterised by an equal distribution between males and females. Nineteen percent of individuals were 20–30 years old, 36% were 31–50 years old and 45% were 51–80 years old. They showed, in addition, an average level of education and were involved in different kinds of jobs (housewives, students, etc.).

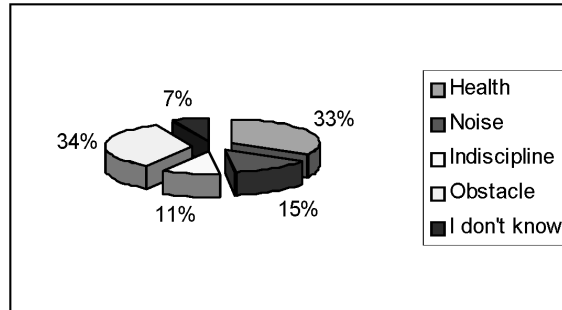
Traffic represents the main environmental problem for the City of Parma as underlined by interviewees (Figure 1) for the congestion generated, especially in some periods during the day and because it causes concern for its effects on health (atmospheric pollution).

Figure 1 Importance of environmental problems



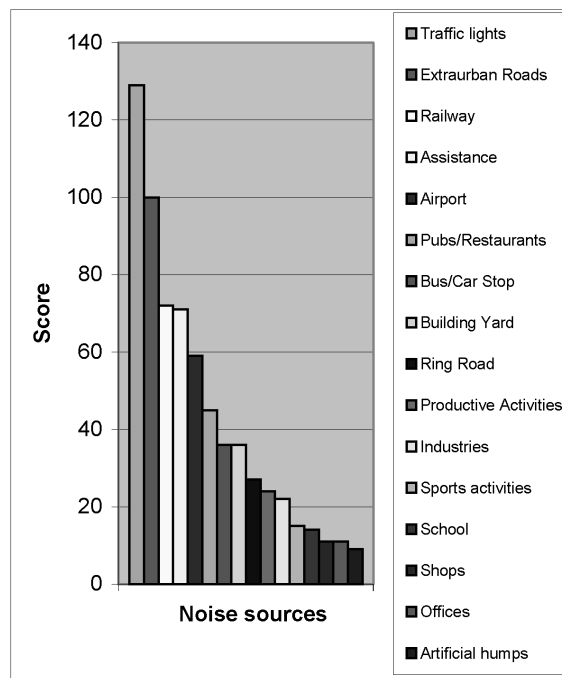
In addition, as shown in Figure 1, noise is considered a 'secondary problem', even if closely related to traffic.

Interestingly, in spite of the effects of acoustic pollution on health, on professional activities and on the quality of life, noise was not considered particularly important (it was mentioned by only 15% of interviewees) compared to other problems of traffic (e.g., stress or loss of time) (Figure 2).

Figure 2 Effects of acoustic pollution

Almost 87% of people interviewed underlined that traffic is the most important source of noise near their houses; trucks, motorcycles and ambulances were the principal causes mentioned.

The elaboration of the data by attributing a score to each noise source, emphasised the strong 'impact' of traffic lights and/or junctions (Figure 3), even if differences in perception seem to be related to the territory and its characteristics and to the individual sensibility.

Figure 3 Impact of different noise sources

A high percentage (65%) of the interviewees underlined that their own houses are sufficiently soundproofed but both residents and shopkeepers stated that double windowpanes could not be considered as an effective remedy as they seem.

External noises were considered the causes of different diseases, among which stress or nervousness were often mentioned.

In spite of these results that clearly emphasised the global psycho-physical disturbances generated by noise, nearly the totality, (81% and 98%) both of residents and of shopkeepers, did not consider themselves as noise sources. Acoustic pollution is therefore not perceived as an environmental problem of which all the citizens are responsible.

In the light of these results, it was not surprising that people demanded that the local authorities manage noise globally.

The road system is considered, by both samples of citizens interviewed, the most urgent issue that needs to be approached in the Third District.

Finally, another interesting result that emerged from the questionnaires was the considerable involvement of citizens (38% of residents) in active protests related to some emerging environmental problems in the district (waste, ring road, for instance).

As mentioned before, the second phase of the experimental plan was organised to acquire some technical measurements, especially in relation to some of the noisiest sources.

In all the survey points, an exceeding of the limits provided by the Italian Norms, both in the diurnal and nocturnal hours was detected. Trucks and motorcycles emerged as the most important noise sources in the streets.

During the day, in proximity to important streets, elevated acoustic levels clearly correlated to traffic fluctuations were detected. Rather, in the nocturnal hours and in the residential areas, acoustic levels seemed to be mainly correlated to frequent and above all, isolated peaks of noise (e.g., the high speed of the vehicles).

An integrated analysis of data emerged from questionnaires for the residents in streets effected by the noise measurements enabled a comparison between the intensity of the acoustic levels measured and the actual disturbance perceived by citizens.

Even considering the limits of the approach proposed, the comparison mentioned, emphasised:

- the coherence between noise sources as perceived by people interviewed and as measured in their acoustic levels
- a correspondence between the entity of the impact for each noise source perceived near houses and its effective importance (its contribution to the acoustic climate).

5 Conclusions

According to these considerations, our intervention summarised above, attempted to catalyse cooperation and agreement in relation to an environmental problem such as noise pollution, thanks to questionnaires and public debates. The most important aim, consequently, was to promote both dialogue and active involvement in order to understand people's needs and to identify ways for the shared management of environmental problems.

The 'strength' of this process, which developed an attempt to support and promote the approaches to prevention of environmental conflicts and to *Local Agenda 21*, was to identify ways to build consensus and commitment among the different actors involved (citizens and local authorities, in particular).

An inevitable weakness, however, was a certain lack of effort in exploring the ways to give a concrete character to the results that emerged from the research.

Developing participation of citizen and active involvement is in fact difficult for several reasons, among which:

- the citizens are accustomed to a prescriptive approach and rarely are involved in the identification of global proposals to ameliorate their environment
- in many contexts it is often unclear whether the interest of local authorities towards participatory approach arose from a sincere change in their thoughts and practices or whether the motivations remained primarily political.

On the basis of the results of this work, also considering the difficulty in developing real cooperation between citizens and local authorities, we hope that it may be useful when the City Board of Parma will elaborate and implement a detailed programme of acoustic reclamation.

Our efforts, in the future, will be then directed to:

- supporting and catalysing a general climate of consultation and cooperation among the different actors working on the territory of the City, such as citizens, NGOs, public agencies, etc.
- organising public meetings and debates in relation to different environmental emergencies and issues
- encouraging research aimed at promoting a strong link between citizen and local authorities.

Finally, we think that the above results could be translated into reality if enough people want work towards this goal and we hope they will become an interesting reference for similar cases in different contexts.

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