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The Features of the Environmental Behavior of the Urban Population and the Mechanisms of its Improvement

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Abstract

The purpose of this study is to characterize the environmental behavior of the population and attempt to identify its models, as well as develop directions and mechanisms for improving urban environmental policy based on levers of influence on existing patterns of behavior, considering the goals of sustainable development. To solve the objectives set in the study, general scientific methods were used: theoretical: analysis of peer-reviewed scientific sources on the research problem to clarify the features of the environmental behavior of the urban population and empirical: a survey method.

It has been proven that the mechanisms of direct involvement of citizens in environmental actions and resource-saving practices are effective, since they become the beginning of a dialogue between the main stakeholders of the process: local and central authorities and public organizations of various orientations.

Periodic studies of the environmental friendliness of the behavior of the city's population in the future will make it possible to assess the effectiveness of the city authorities and become the basis for future management decisions.

Key-words: Resource-Saving Practices, Population Survey, Grouping of Respondents, Strategy of Population Behavior.

1. Introduction

Sustainable development as a worldview concept provides for the implementation of deep transformations in all spheres of human life, and indicators of sustainable development should

become key in the formation of national and regional strategies (Bogomolova, Ustyuzhantseva: 2020; Reshetnikova: 2020; Alekseev et al.: 2020). In Russia, the process of changing the development paradigm just begins and, therefore, the task of scientifically substantiating the directions and mechanisms of sustainable development at different hierarchical levels and determining the place and role of the main stakeholders of this process is urgent (Melnichuk et al.: 2020; Danko et al.: 2020; Kudrin et al.: 2019).

The mechanism for ensuring sustainable development is considered as a set of interrelated elements – principles, theories, concepts, goals, objectives, technologies, methods and tools for their implementation, which are organically combined in the process of implementing consistent actions of public authorities to ensure the interests of citizens, considering the needs of future generations. The components of the corresponding mechanism should be based on the environmental behavior of the main actors in the process of ensuring sustainable development (Nurutdinova, Bekisheva: 2020; Shomshekova et al.: 2020; Nikiforov et al.: 2019; Aitkazina et al.: 2019).

The study of the behavior of the population in the context of its ecological orientation will make it possible to develop a policy to stimulate the ecological activity of the population both at the national and local levels. The state can use tax incentives and sanctions, impose fines for violations of environmental legislation and improve the environmental education system. The local level is important when solving problems of urban improvement, handling household waste, establishing interaction and cooperation within settlements. This can give not only ecological, but also a complex effect, since it will also solve social and economic problems.

2. Literature Review

This study uses the term environmental behavior, which is a broad and frequently used concept (Meinhold, Malkus: 2005; Chao, Lam: 2011; Efrat, Trop: 2012). A. Kollmuss and J. Agyeman (2002) believe that environmental behavior implies a conscious will of the subject to minimize the negative impact of a certain action on nature and human-made objects (that is, minimizing the use of resources and energy, as well as nontoxic substances in production and consumption, reduction of waste generation).

Researchers attribute the following to the manifestations of the environmentally oriented behavior of the population (Table 1).

Table 1 - Manifestations of environmental behavior

No.	Manifestations of environmental behavior	Source
1	purchase of environmentally friendly products and services: energy-efficient goods, food	(Young et al.: 2010)
2	purchase of energy-efficient equipment, products from secondary raw materials, electric vehicles or hybrids	(Vlek, Steg: 2007)
3	reducing the use of electrical energy, heat and water in everyday life; in this case, various techniques can be used (replacement of incandescent lamps with energy-efficient) or a conscious transition to a more efficient consumption mode	(Gowdy: 2008)
4	garbage disposal, measures to reduce the volume of its formation: refusal to purchase goods in packaging that is not recyclable, food waste processing, separation of household waste and disposal of batteries, fluorescent lamps, etc.	(Whitmarsh, O'Neill: 2010)
5	switching to environmentally friendly modes of transport (electric cars, bicycles), using public transport for travel	(Schultz et al.: 2005)

In most of the studies analyzed, the set of environmental actions is different, and in some cases, the lists are not repeated at all. This is due not only to the goals of the studies, but also to the specifics of the regions or settlements in which surveys were conducted. In countries with extensive experience in implementing sustainable consumption models (Seoul, Tokyo), the list is as wide as possible due to the variety of mechanisms, the level of development of the necessary infrastructure and the high level of environmental awareness of the population (Bamberg, Moser: 2007).

Developing a mechanism for changing behavior patterns requires studying the factors of environmental behavior. The number of factors that determine the degree of environmental friendliness of the behavior of the population is constantly growing. In the early model of rational behavior (Heimlich, Ardoin: 2008), the main factor was determined by environmental knowledge and information, but over time, behavioral models became more complex. M. Feinberg and R. Willer (2013) additionally considered and substantiated the factors of morality, S. Barr (2007) – material benefits, J. Zeng et al. (2020) – social norms, etc.

Among the models and theories of environmental behavior based on the dominance of one key or several factors, the goal-framing theory is interesting (Schultz: 2002; Markowitz et al.: 2012). It assumes the existence of three key goals that determine human behavior: hedonic, aimed at ensuring the maximum comfort of the individual at a particular moment in time; pragmatic, aimed at obtaining material benefits and preserving resources; normative, prompting the individual to act in

accordance with the norms and rules that have developed in society. Making a decision on the choice of a particular model of behavior depends on which goal is dominant at the moment (that is, is in focus). Other goals are taken into account, but to a much lesser extent. According to this theory, a person's incentive to act more environmentally can be achieved through at least three mechanisms:

– creating material incentives or sanctions in the form of flexible pricing, tax policies, fines, etc. These actions are aimed at strengthening the pragmatic goal;

– by making it easier for the population to access infrastructure that facilitates environmental action. These actions are aimed at strengthening the hedonic goal;

– by creating visual examples of appropriate environmental behavior, while encouraging to follow the example; this can strengthen the normative goal and contribute to the formation of new patterns of behavior and traditions that can become sufficiently stable, that is, determine the environmental friendliness of the behavior of several generations of the population.

Developed countries have some experience in stimulating environmentally-oriented behavior of the population, based on proven and universal methods of regional economic and social policy: price regulation, taxes, fines, etc. (Binder, Blankenberg: 2016). Often the state policy in the environmental sphere is based on a powerful information campaign that corresponds to a model of rational behavior: for example, the programs of the UK government (Timlett, Williams: 2008).

It is possible to improve the results of regional environmental policy in the formation of sustainable models of environmental behavior if we consider the population not as a single and homogeneous object of influence, but as one structured according to the tendency to change in daily patterns of behavior. This thesis is based on research proving the inclination, for example, of women and young people to a more active environmental position (Dietz et al.: 2002). Signs that the level of education, duration of residence in the region and the property status of households affect the environmental friendliness of the behavior of the population are also revealed (Brick et al.: 2017).

The purpose of the study is to characterize the environmental behavior of the population and attempt to identify its models using the example of the city of Moscow (Russia), as well as to develop directions and mechanisms for improving urban environmental policy based on levers of influence on existing patterns of behavior, considering the goals of sustainable development.

The objectives of the study:

– to identify groups of the population, characterized by a certain type (model) of behavior in the environmental sphere;

– to propose methods and tools of influence for the identified models of environmental behavior of the population.

The hypothesis of the study: Mechanisms for direct involvement of citizens in environmental actions and resource-saving practices are effective, since they become the beginning of a dialogue between the main stakeholders of the process: local and central authorities and public organizations of various orientations.

According to the results of the study, it can be concluded that the purpose of the study was achieved.

3. Methods

At the first stage of the study, the available scientific works in the field of research were studied.

At the second stage, a survey was developed that included questions about the willingness to act and practical participation in the most common environmental practices of the urban population;

At the third stage, a survey of the population of Moscow and the subsequent processing of its results were carried out.

This study presents an attempt to identify groups of the population in Moscow, characterized by a certain type (model) of behavior in the ecological sphere. These groups differ in at least two characteristics: the degree of willingness to act and involvement in specific actions.

The grouping was carried out based on the results of processing 228 surveys that were filled out in August 2020 in different parts of Moscow. The ratio of men and women was 45% and 55%, respectively; the age structure of the respondents is as follows: 18-24 – 13.5%; 25-34 years – 32.3%; 35-60 years – 38.4%; over 60 – 15.8%.

The main task of the grouping was to identify groups of the population that have similar patterns of behavior, without focusing on the sizes of groups, which may be different, since significant transformations are taking place in this area and the behavior of the population depends not only on objective and assumed factors, but also on situational, random. At the same time, the groups were distinguished on two key grounds – the willingness of citizens to act environmentally and the intensity of such actions.

Questions about environmental behavior and resource conservation practices are presented in Table. 2.

All survey participants were warned about the purpose of the survey and that the organizers of the study planned to publish its results in a generalized form.

4. Results

The results of the survey of environmental behavior and resource-saving practices of the population of Moscow are presented in Table 2.

Table 2 - Readiness for environmental activities expressed by the respondents and their practical actions

Environmental practices of the population	Willingness to act (%)	Practical actions (%)
Recycling of packaging, batteries, waste sorting	72.9	32.7
Use of biking or hiking in the city	28.4	13.5
Use of travel by public transport in the city	34.1	12.7
Cleaning for pets	31.9	8.3
Participation in activities for cleaning and greening the city	31.9	11.4
Attitude towards the introduction of fines for throwing garbage on the street, material support for environmental activities	41	5.3
None of the above	3.5	49.3

In general, Moscow is characterized by a great tendency towards environmentally conscious behavior. Only 3.5% of the respondents expressed their unpreparedness for this kind of practice, and more than half of the respondents had the experience of environmental behavior. Such features are due to several reasons: a favorable age structure of the population, educational level, as well as the

capital factor. Capital in this context is in a faster perception of innovations, including models of behavior of the population, which are distinguished by a high level of social involvement and environmental orientation.

By types of environmental practices, residents of Moscow were most ready to sort garbage and hand it over for recycling (72.9%) and other actions related to cleanliness and tidiness of places of residence (Table 1). This is a generally recognized trend confirmed by the results of the survey, according to which cleaning of the territory was a widespread environmental practice and covered 11.4% of the respondents. Almost a third of the respondents expressed their readiness for such actions. However, in our opinion, the population is not ready enough to change the patterns of behavior in transport, since a conscious refusal to use their own cars in favor of more environmentally friendly modes of transportation was found in just over a third of the respondents. The share of the respondents who practiced this method was less than 13%, depending on an alternative mode of travel. In general, the gap between the willingness to act and practice is two times.

For each of the selected behavior models in Table 3 shows the characteristics of the group: share of the population living in the city for less than 5 years, %; share of the population with higher education, %; share of the population under 35 years old, %; share of the population with incomes over 50 thousand rubles. These characteristics varied most depending on the group, while gender, sphere of employment and occupation did not have a significant impact on the belonging of an individual citizen to one or another group.

Table 3 - Models of environmental behavior of Moscow residents depending on their compliance with the goals of sustainable development

Model	living in the city for less than 5 years, %	higher education, %	under 35 years old, %	income over 50 thousand rubles
Model 1	47%	91%	66%	24%
Model 2	16%	86%	47%	57%
Model 3	10%	100%	60%	60%
Model 4	14%	76%	43%	50%
Model 5	18%	52%	41%	44%

5. Discussion

Model 1 is a model of the prevailing environmentally-oriented behavior. Typical for citizens whose environmentally friendly practices are based on knowledge and belief. This least numerous group (3.6% of the respondents) included the respondents who noted more than four actions that they wished to perform and, at the same time, had experience in more than three environmental practices. The expediency of separating this group is due to the following considerations. Firstly, it is a kind of benchmark, which one can be guided by in the future when conducting time slices on the dynamics of the formation of the environmental behavior of the population. We forecast that this group will grow quite significantly due to the decrease in the shares of other groups. The second argument relates to the importance of this group, which can take on the function of a leader, initiator of change at the local level. The ways to attract active citizens can be different – working in public organizations, initiating projects and actions, environmental control, environmental education, etc. At the same time, the most socially significant is not so much the effect on improving the state of the environment as the spread of positive experience in society, which will eventually gain a foothold as a new norm of behavior.

This group brought together young and middle-aged people with higher education. All representatives of the group supported the introduction of fines for throwing garbage in the street; the overwhelming majority (75%) were directly involved in landscaping and improving the city. The fact that this group did not include citizens with a high level of income indicates the altruistic nature of their behavior, which they consider not a “hobby”, but a socially significant action.

Model 2 is a model with clear environmental intentions and a low level of practical participation. This group of citizens united 14.9% of the respondents. They can be considered potentially active, whose actions, however, are constrained due to certain reasons. The respondents were as interested in the willingness to act as the representatives of the first group (more than four practices), but their activity was limited to a maximum of two types of activity. The group brought together people of young and mature age, characterized by a high level of education and income, as well as a high proportion of people recently in the city. The high proportion of young people in the group indicates, on the whole, their readiness to change their behavior model and the existence of a demand for local initiatives, programs that would be aimed at obtaining useful advice, skills or getting the opportunity to act together and solve urgent environmental problems of the city.

Model 3 is a model with well-established individual resource-saving practices and moderate environmental activity. This small group (4.5% of the respondents) was formed by pragmatic citizens who had experience in the environmental sphere, but did not express a willingness to expand the

range of their activities. Purposeful work with this group may involve not so much encouragement to action, but an increase in understanding for what purpose such a policy is being pursued and what are its short- and long-term consequences.

The group was characterized by the absence of people of retirement age, had a high level of education and united people who moved to Moscow about 10 years ago. Among the directions of environmental behavior, everyone indicated waste sorting. This group should be considered a driver of the mechanism of sustainable development of society, since its representatives quickly master practical skills.

Model 4 is a model of the low level of willingness and implementation of environmentally oriented behavior. This was the most numerous group (45.9% of the respondents). It indicated less than four positions of environmental actions that may be interesting and hadpractical experience in less than two. The main feature that united people in group 4 was a rather long time of residence in Moscow (on average 20 years). Citizens had a well-established rhythm of life, an average income level and a fairly high level of education (76% of the respondents noted that they had a higher education) and did not see any significant reasons for changing that. Due to its size, this group requires considerable attention to the formation of environmental behavior. At the same time, it is advisable to use all types of goals (pragmatic, hedonic and normative). With a high probability, the introduction of new norms of behavior in the environmental sphere for this group may be effective, especially if these norms are disseminated by traditional channels of obtaining information: television, press, etc.

Model 5 is a model of a high level of rejection from environmental and resource-saving practices. This group united 31.1% of the respondents and is noted for the lack of involvement in environmentally oriented practices in any form. At the same time, the level of willingness to act was also extremely low (two or fewer positions in the survey). The group was distinguished by a relatively low level of education, the longest period of residence in the city (on average – 23 years); a noticeable share of the population had middle and low incomes.

For the group most passive in terms of environmental behavior, it is promising to introduce resource-saving practices, since they make it possible to significantly reduce household expenses, as well as negative consequences for the environment. It is inappropriate to try to radically reduce the size of this group, since it also includes citizens in general with a weak social position, which exist in any society.

The tools and mechanisms designed to change traditional models of behavior in environmental management should be different for different hierarchical levels of management, but,

at the same time, have a common vector and be coordinated in the temporal, sectoral and territorial aspects. Financial incentives and sanctions are usually imposed at the regional or national level, considering the existing tax burden, as well as the additional costs associated with tax administration, control and supervision. At the national level, the conditions for doing business in the environmentally friendly sectors of the economy should be determined: green energy, tourism, agriculture.

At the municipal level, sustainable development mechanisms should be directly related to environmental citizenship, which is designed to reconcile the discrepancies between meeting the personal needs of citizens and the needs of society living in a particular territory (Schild: 2016). As noted by G. Seyfang (2006), ecological citizenship is a mechanism for changing existing values in favor of the public and also the interests of future generations.

The analysis of individual environmental initiatives (Axon et al.: 2018) showed that at the local level, measures can be used to inform the population about environmental problems and ways to solve them, projects that provide for the testing of individual environmental initiatives and practices in organizations and households (for example, for sorting and recycling waste), use of participatory budgets for the implementation of environmental projects, support of local public environmental organizations, volunteer movement, etc. City authorities have the opportunity to support and develop environmental education at different levels, provide access to centers for the provision of environmentally oriented services and involve the population in the process of drawing up strategies and programs for city development, as well as general plans.

We propose to apply the following methods and instruments of influence for the identified models of the environmental behavior of the population of Moscow:

1. For models 1 and 2, develop methods that stimulate the normative goals of environmental behavior, namely the dissemination of world experience in solving environmental problems of cities and organization of contests of environmental projects for active youth and youth public organizations.

2. For Model 3, use methods that will stimulate pragmatic goals, namely, introduce a flexible system of fines and financial incentives to address acute problems such as waste management, landscaping, high levels of air pollution from emissions from mobile sources.

3. For models 4 and 5, it is advisable to choose methods and tools that influence hedonic goals, namely, to pay more attention to programs for improving urban infrastructure in the field of waste collection and sorting, urban public transport, energy efficiency of buildings, etc.

6. Conclusion

The mechanism of sustainable development of the city should be based on the understanding of all stakeholders of the existing threats, goals and objectives, as well as provide for the coordination of actions. The study showed that the population of cities is not sufficiently aware of the problems of sustainable development and is almost not involved in practical activities, which indicates a low level of efficiency of the current mechanism of sustainable development in general.

We consider it effective to single out groups of residents in the city's population that differ in the degree of attraction to environmental behavior, identify their characteristic features according to essential characteristics (age, gender, education level, etc.) and carry out a targeted impact on the corresponding groups, which can give greater effect in comparison with a single policy towards the entire population of the city.

The results of the study confirmed the hypothesis that the mechanisms of direct involvement of citizens in environmental actions and resource-saving practices are effective, since they become the beginning of a dialogue between the main stakeholders of the process: local and central authorities and public organizations of various orientations.

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