

Public perception of environmental issues and climate change in the Republic of Moldova: a systematic review

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The main objective of the present study was to form a profile of public perception about environmental issues and climate change in the Republic of Moldova. To evaluate the level of concern for these problems, as well as to understand the specific environmental problems affecting the residents of the country, as perceived by them, the existing body of literature on the topic was analysed and synthesized.

Four national level public polls, done between the years 2012 and 2017, were reviewed. The public opinion surveys were done by IMAS and the United States Agency for International Development, with population samples ranging from at least 1134 respondents to more than 4,000 respondents, geographically covering the whole country. The surveys did not include respondents from Transnistria.

Additionally, reports analysing different areas potentially impacted by climate change, like agriculture, water resources, as well as a study on waste management, were taken in account for the purpose of this study. These reports contained valuable information of public perception, extracted from surveys and interviews with locals, farmers, households, experts, and also focus-group led discussion in different regions of the country.

The findings indicate a high level of awareness regarding climate change among the population, but a lower level of engagement and commitment to take action. The most aware segment of the population about the impact of climate change is the rural segment of the population- the ones who witness the phenomenon in their daily lives. Farmers and practitioners of subsistence farming are also some of the most vulnerable segment of the population towards the effects of climate change.

Studies, throughout years, show that ethnic groups and Russian language speakers are less informed and concerned about climate change. However, generally, there is an increasing interest in environmental topics, with people wanting to receive trustworthy information, as opposed to consulting family members or friends on these topics. The internet and the television are the main sources of information about environmental issues, with the internet registering a significant increase in the last years. But the overall picture is that there is no constant and reliable flow of information to citizens, which would inform the public opinion about the state of the environment; rather it is an optional task for each individual, depending on the level of interest, and the sources someone inquires.

Respondents do not perceive climate change in national or global terms- when hearing the word environment, they think of their locality. Also, the local public authorities are viewed as one of the main actors in dealing with climate change. As far as the NGO sector, it registers a low visibility among the population and there is little interplay between the parties.

The most pressing environmental issues, in the perception of the population, are the absence of a waste management system and the water pollution, together with water resources depletion. Surveys, throughout years, show that these issues have had primacy over other environmental issues for more than a decade.

1. General facts about perceptions of environmental issues and climate change

People are aware of climate change and its consequences, but lack knowledge on the big picture and especially on the mechanisms causing climate change, mechanisms of prevention and adaptability. People perceive and evaluate climate change as happening from the direct impact it has on their lives, and not from a scientific, well-informed perspective.

The majority of the population, 85% according to the IMAS survey (Doru Petruți, 2017) seem to understand that climate change is impacting their lives directly. The analysis of the data shows an interesting perspective: respondents seem to know better the effects of climate change than the causes and human behaviours that lead to these effects, while very often being insecure in their answers. This might be the case because the scientific arguments are not sufficiently known to them, are contested because of suspicions or because of the so-called debates in society and among scientists (Doru Petruți, 2017, p. 10). The lack of knowledge and of understanding of the phenomena was concluded by the incapacity of respondents to answer specific questions related to climate change, and to the large share of non-answers in the survey (Doru Petruți, 2017, p. 9). We can even talk about a phenomenon of information uncertainty held by respondents – in regards to knowledge questions, most of the answers are placed in front of the "probably true / false" answer, instead of "Definitely true / false".

The top cause of climate change mentioned by respondents is the human activity, although approximately 35% of respondents have chosen this response, and the ones who mostly opted for it are the respondents aware of global warming and the inhabitants of urban areas. The segment of population to give the largest number of wrong answers in reference to the causes of climate change are the young people (15-25 years) from rural areas (Doru Petruți, 2017).

This shows that even where knowledge levels are low, concern for environmental issues is often still high, pointing to the importance of local environmental conditions in shaping concerns. Those most likely to be directly affected by pollution or climate change are also most likely to see it as a problem.

People from rural villages are most concerned with climate change.

This statement comes as a surprise, since most studies regarding perceptions about climate change mention as the most aware and concerned segment of the population being the young and urban one. This finding could be connected to the fact that rural inhabitants, who are also owners of land and producers of subsistence farming, are most impacted by climate change, and can visibly perceive its effects. The most sensitive with respect to climate change remain, across studies, approximately the same group of population: those over 40 years old, with medium and higher education.

Throughout years, studies consistently show that ethnic groups and Russian language speakers of the population are less informed and concerned about climate change.

Most informed about climate change are the inhabitants of the Centre region, while the least informed are the people living in the South of Moldova (Mișcarea Ecologistă din Moldova, 2005, p. 69). It is worth pointing out this: constantly and throughout years, in-depth analyses showed a significant difference between Russian language and Romanian language speaking people, those in the first category declaring that they were generally less informed and less interested in environmental issues. An explanation might be the lack of such information in the language they are usually using or the much lower visibility of information and informative campaigns in Russian language (Doru Petruți, 2017, p. 3).

People do not perceive climate change in global or national terms. When asked what comes to their mind when hearing the word environment, they think of their locality.

In a national poll, when asked to provide three spontaneous problems which Moldova is facing at the moment, none of the answers referred to climate change or aspects of it, instead most answers being connected to problems of economic nature. However, when asked to provide three spontaneous answers regarding the problems which their locality is facing, answers that can be attributed to the phenomenon of climate change were provided- cleanliness (read also waste management) and water supply (Baltic Survey/ The Gallup Organization, 2017), both ranking high in the hierarchy of issues. This suggests that people perceive climate change and pollution in local terms,

and not national or global. This conclusion is consistent with several surveys done by different entities (IMAS, 2014) (Baltic Survey/ The Gallup Organization, 2017) (Mișcarea Ecologistă din Moldova, 2005).

Next to that, respondents perceive the problem of pollution and environment as an emotionally charged one, mentioning the concern they have regarding the environment the children will inherit (IMAS, 2014).

Environmental NGOs, compared to other institutions which work in the area (Local Authorities, Government, other agencies), have a low visibility among respondents.

When asked who should take the lead in protecting the environment or providing ecological education, the NGO sector scores some of the lowest points, lagging behind institutions and even personal involvement when it comes to environment protection, and ranking the lowest in terms of ecological education (3% compared to 35% attributed to the Local Authorities or the 30% attributed to family) (IMAS, 2014). Also, in 2014, only 1% of respondents were part of an organizations, which indicates little interplay between individuals and NGOs.

2. Means of information regarding climate change

The television and the internet are competing for being the first source of information regarding environmental issues.

Different studies show different results in terms who lands the first place as the source of information, the competitions taking place between the television and the internet. However, the internet has registered a steady and considerable growth in the last years (more than 10% in the last 5 years), while the television has seen a slight decrease, a trend which is expected to continue (Doru Petruți, 2017).

There is a growing interest in information regarding the environment and climate change.

More awareness brings about a greater need for information, and more information results in more awareness. The environmental theme seems to be gaining more ground, although the increase in interest is not bold – this is visible in the increasing interest in tracking news about the weather forecast (49% ticked as being very interested in 2017, with a

growth of 9% compared to 2012) or environmental news in general (29% in 2017, up with 4% compared to 2012) (Doru Petruți, 2017). Meanwhile, around 50% of the respondents claim to be little informed about global warming, its causes and slightly less, the consequences (Doru Petruți, 2017).

The general visibility of information regarding environment and climate change is low.

In 2014, only 18% of the respondents mentioned seeing news about the environment in the last week, while more than 40% mentioned last time seeing such news at least two months before (IMAS, 2014).

In the meantime, there is a growing need to get trustworthy, reliable information about climate change and the environment, with a significant decrease in individuals seeing family members or friends as a trustworthy source of information, and a slight increase in seeing school professors, scientists and NGOs as a trustworthy source of information regarding global warming (Doru Petruți, 2017).

There is little contact with diverse mediums which could provide information about climate change and the environment. Getting information on climate change is an optional task, left to each one's personal interest and opportunities.

The mass-media and the internet are by large the solely providers of information regarding the environment, while the contact with other mediums which could provide information is very low (museums, cinema, Governmental institutions). Surprisingly, in the 2014 IMAS survey, the schools have ranked one of the lowest score in terms of representing a source of information, 0,8%. The data, without a doubt, shows that getting information about the environment is a chaotic and fluctuating process, it is an optional task for each individual, depending on the level of interest, the opportunities for acquiring information and the sources someone inquires. There is no constant and reliable flow of information to citizens, which would inform the public opinion about the state of the environment, and build awareness about climate change and the actions to be taken (IMAS, 2014).

3. Attitudes and behaviour regarding climate change

Declaratively, people have a good feeling about themselves and what they are doing for protecting the environment. Paradoxically, the parts don't add up, since respondents are dissatisfied with us as a community.

About 70% of the respondents state that they are consciously trying to protect the environment, while about 60% of them affirm their personal role and willingness to protect the environment (IMAS, 2014). However, collectively we are not doing sufficiently to protect the environment, with respondents being mostly dissatisfied with what citizens, the Government and the local authorities do for that matter, the percentage being as high as 50% to 70% (IMAS, 2014).

There is a notable discrepancy between what is declared and what is being done by each individually, shown also by the fact that a significant part of the population, between 10% and 40% of the respondents, do not consider reducing water consumption, the amount of waste they produce or lowering the amount of plastic used (Doru Petruți, 2017). This could be also a result of the little knowledge of the connections between certain actions and consequences respondents have.

Respondents place the local authorities as the most important actor in dealing with climate change and providing ecological education (Bologan, 2010) (IMAS, 2014) (Mișcarea Ecologistă din Moldova, 2005).

This can be seen as a reflex of passing the responsibility to someone else, but the other side of the coin is that respondents could view the local authorities as the manager coordinating the activities, without whom goals cannot be reached. Studies show that the Local Public Administration, in the perception of the population, presents itself as the basic exponent of the state power, and whose responsibility is to unite the efforts of all the inhabitants in solving the common problems.

Anyhow, there is a tight connection between respondents and the local authorities, which can be exploited for the benefit of everyone.

Poverty, lack of ecological knowledge/education and indifference are the most frequently mentioned reasons for missing out in protecting the environment.

The lack of ecological knowledge/education and indifference is a constant argument cited by respondents across studies, for the population's non-involvement in caring for the environment.

Another argument, cited across studies, is the population's poverty, which leads to unsustainable use of the natural resources and their degradation (Bologan, 2010).

Other reasons stated are the lack of mechanisms/infrastructure which would allow the public to partake in environmental protection (for example creation of a mechanism of waste management- authorized waste storage, places for sorting the waste), the failure of prosecuting the persons who violate the environmental law and the general indifference/apathy of the authorities regarding climate change, which is passed on to the citizens (Bologan, 2010).

Declaratively, people showed willingness to participate in a range of activities related to environment protection.

When asked in what activities the respondents participated in the last year, they provided several options, with most of them being involved in tree planting, and at the lower end being actions related to recycling (IMAS, 2014). People have showed willingness to participate in ecological education and informational activities, whether it is trainings, conferences or school hours, to participate in voluntary activities related to their locality (tree planting, cleaning activities/collection of waste), participating in public debates about issues affecting their locality, participating in decision-making processes related to issues in their locality, providing consultancy to authorities regarding environmental problems of their communities, which would be used for policy drafting (Bologan, 2010) (Mișcarea Ecologistă din Moldova, 2005).

4. The most pressing environmental issues affecting the population of Moldova?

The top environmental issues, as perceived by the population, are the ones having a direct impact in their lives, and have had persistent primacy over other issues for more than a decade.

The absence of a waste management system, together with the presence of unauthorized landfills, and on the other hand the water pollution and depletion of water resources, are competing for the title of the most pressing environmental issue affecting the population, and this has remained constant for more than a decade. These indicators receive, comparatively to other issues, high scores throughout studies and years.

These are the environmental problems which are easier to understand and perceive by the population, this also being a reason why it continues to rank so high and have such a visibility. The persistence of the issue of waste has led to it being perceived more severely by the population throughout the years, its percentage increasing over time (Doru Petruți, 2017).

Next in the ranking come soil erosion and landslides, deforestation and illegal cutting of the trees (Bologan, 2010) (Mișcarea Ecologistă din Moldova, 2005).

The lack of information on waste disposal, the absence of an infrastructure and of a controlled process of waste management, are leading people to apply the easiest method, which is also the most inefficient and harmful.

As the data reveals, the waste management in households is minimal or absent. At both individual and community level, there are no waste separation and selection works, including of the pesticides and other dangerous pollutants (Mișcarea Ecologistă din Moldova, 2005, p. 15). In the majority of the localities there are no waste management services, the population having to solve the problem of transporting household waste with their own forces, by throwing the waste in authorized or non-authorized landfills.

The practice of burning solid waste is widespread, since this, in the opinion of the population, is the simplest way of destroying this type of waste in the absence of an alternative. Other reasons the respondents mentioned as the causes for the

persistence of the waste problem, next to inexistent conditions for waste management, are the low level of awareness among residents, indifference and the absence of a state policy regarding waste management.

The focus group method, used in a 2010 local study about waste management, revealed several solutions to the waste management problem, all pertaining to both individual and collective effort:

- more active involvement of the local authorities;
- local waste collection and transportation service for households;
- creation of a collection service for bottles and plastic from the population;
- setting up authorized landfills to meet the required sanitary-ecological requirements;
- installing separate containers for different types of garbage at the neighbourhood level (mahala);
- training an environmental protection local team made up of people with influence and respect from the community;
- informing and training of the population, which would also be accompanied by some constraints towards those who do not respect the ecological legislation;
- participation of the population in decision-making and problem-solving.

Respondents claim inadequacies of existing piped water supply (PWS), periodical shortages (mostly seasonal and in rural areas), while the main alternative water supply source for the households with or without PWS, the shallow wells, is polluted.

The water resource management and the depletion of water resources is a major concern for the population, also because future scenarios predict both increases in irrigation water demand and decreases overall water supply in the country (Nedealcov, Cotofana, & Baranciuc, 2014).

It should be noted that the source of water for the capital and other municipalities, including Tigina, Bălți, Soroca, and Orhei, is the Dniester river, while

the rural localities are supplied with the water mainly from underground sources.

Farmers and rural households, which rely of agriculture for subsistence, are some of the most vulnerable and sensitive segment of the population to the climate change effects.

A 2013 study of the World Bank, aiming at analysing climate change scenarios, effects and adaptation methods, performed nationwide extensive stakeholder consultations with farmers and farmer's associations. All stakeholders have showed awareness of climate change, by personally witnessing its impact on local farms. The farmers claimed to be taking adaptive measures, through means of educating themselves, actions which sometimes prove to have limited capacity (Sutton, Srivastava, Neumann, Iglesias, & Boehlert, 2013).

The main findings from the farmers' consultations will be reproduced below.

Farmers confirmed that they had already experienced changed-climate effects, particularly drought, high temperatures, frosts, and hail (which is a specific problem for orchards and vineyards), wider temperature fluctuations (including high summer and low winter temperatures), and wider variations in day and night temperatures.

Farmers were already taking the following adaptive measures in response to climate change and severe climate events, such as:

- Expanding water supply for irrigation by building small-scale storage reservoirs, harvesting rainwater, and making greater use of local water sources for irrigation, such as creeks and groundwater
- Applying protective measures such as moving vegetable production to greenhouses, using mulch or other plant protection on soil, installing plant protection belts, or using hail nets
- Changing agronomic practices, such as planting patterns, crop rotation and inter-cropping, chemical soil augmentation, using drought-resistant varieties.

Farmers also identified a number of impediments to adaptation, including a lack of timely meteorological information to respond effectively; limited access to alternative crop varieties (particularly seeds), and limited access to know-how through extension and other services to make the best use of these varieties;

and poor or limited access to irrigation water and to technologies to make the most efficient use of irrigation infrastructure. On-farm adaptation responses have been numerous and partially successful, but farmers believe that larger investments in infrastructure are needed. This includes improved water storage, and better drainage and irrigation systems, which likely need to be effectively coupled with farmer training to make the best use of enhanced infrastructure.

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