



Article

Ecology Projects and Participatory Budgeting: Enhancing Citizens' Support

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Abstract: In contemporary times, a large number of ecology projects are put on the public agenda through participatory budgeting. There is variation in the support they receive from citizens, but until now we have not known what drives this support. This article aims to identify the factors that could determine the support for ecology projects in participatory budgeting. It includes all 36 projects on ecology, which passed the technical eligibility check, submitted to the participatory budgeting in Cluj-Napoca (Romania) between 2017 and 2019. We use quantitative analysis to test the extent to which five project characteristics have an effect on the public support for the ecology projects: the requested budget, the type of project, the number of arguments, the use of jargon, and images and videos in addition to text descriptions. The results show that citizens take the environmental matters seriously and do not vote for schematic projects that are limited in scope and which have limited contribution to the general welfare.

Keywords: participatory budgeting; ecology; local level; citizens; support; Romania



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1. Introduction

Topics related to the environment and its protection have gained momentum in the public agenda around the world over the last two decades. Decision makers and citizens are increasingly involved in actions directed towards addressing broad issues such as pollution, climate change, natural habitats or waste disposal [1,2]. To address current environment challenges, action is taken at the local, regional, or national levels both in terms of policies and projects. At the local level, one way to address environment issues is through participatory budgeting [3–5]. Earlier research provides evidence about participatory budgeting as an appropriate tool for the promotion and implementation of ecology projects [3,6]. Other studies show that ecology projects submitted to participatory budgeting are, in general, appealing to citizens compared to projects on other topics but that the competition is stiff [7,8]. This means that while many projects on ecological topics are submitted, few are voted on by citizens and implemented. To date, we know very little about why some ecology projects are supported by citizens while others are not.

This article seeks to address this gap in the literature and identifies the factors that could determine the support for ecology projects in participatory budgeting. Our analysis includes all 36 projects on ecology, which passed the technical eligibility check, submitted to the participatory budgeting in Cluj-Napoca between 2017 and 2019. We focus on Cluj-Napoca because it is the first city in Romania to use participatory budgeting, it is an example for many localities in the country, the city has fast growing economy, and there is continuity in terms of the local administration. We argue and test the extent to which five project characteristics have an effect on the public support for the ecology projects. These characteristics are the requested budget, the type of project, the number of arguments, the use of jargon, and images and videos in addition to text descriptions. Our quantitative analysis uses bivariate correlations and ordinal logistic regression.

The following section provides an overview about the relationship between ecology and participatory budgeting. The third section reviews the literature on ecology projects and public support. It outlines the reasons for which citizens may support ecology projects and formulates five testable hypotheses. From here, we present the research design of the article with emphasis on the case selection, variable measurement, and methods. The fifth section includes a general description of the participatory budgeting procedures in Cluj-Napoca. This is followed by a section that describes and analyzes the ecology projects submitted to participatory budgeting. The seventh section explains the potential determinants of public support and provides a discussion along theoretical and empirical lines of inquiry. The conclusions summarize the key findings, discuss the broader implications of our analysis, and outline avenues for further research.

2. Ecology and Participatory Budgeting

In the last decades, extensive attention has been devoted to explaining the impact of human activities on the environment [9–11]. Deforestation, depletion of natural resources, and industrialization generate ecological problems such as air pollution, climate change, destruction of natural habitats, and affect individuals' health and quality of life [3,12–14]. To address these problems, citizens and political actors engage in ecological action [9,15].

Earlier research discusses instances in which individuals were consulted by the political decision makers about how to address ecology issues. This is done to enforce the bonds between political actors and citizens, to raise the general awareness regarding the fact that ecological problems affect everybody, to help the citizens to become more environmentally friendly, and to increase the decision makers' accountability and legitimacy [1,2]. To increase citizens' involvement in decision-making processes related to the environment, governments could resort to e-participation practices. The latter employ specific information and communication technologies (e.g., blogs, discussion forums, e-mails, e-voting procedures) to increase citizens' willingness to engage in an inclusive decision-making process [16–18]. These practices are demanded and praised by the citizens and the governments that support them enforce the idea of good governance and create opportunities for citizens to advance solutions for city management and sustainable development strategies [19–21]. While these actions could be limited in scope and controlled to some extent by political actors, practices such as participatory budgeting could open effective avenues for citizens' engagement in ecology projects without political interference [3,22].

Participatory budgeting refers to an inclusive process in which citizens engage in a collective decision making where they can decide how a specific percentage of local funds should be spent [15]. It is usually praised for its potential to cure social injustices, to enforce democratization, and to invest more effectively the local finances [23,24]. Participatory budgeting increases the legitimacy and transparency of decision makers and provides the citizens with a tool through which they can promote their ideas [25–30]. In addition, earlier research has demonstrated the potential of participatory budgeting. The potential for participatory budgeting to advance ecology projects was emphasized both in theory and in practice. In theory, the process meets the necessary conditions for the deliberation and promotion of specific projects depleted by political interference. In practice, there were several instances in which participatory budgeting significantly contributed to the promotion of solutions to local ecology problems [3,4,6].

In Porto Alegre (Brazil) between 1989 and 2010, the environmental quality and citizens' willingness to engage in processes revolving around ecological preservation and protection increased through participatory budgeting [3]. Similarly, in the U.S. there were reported cases in which participatory budgeting advanced several effective solutions for increasing the quality of agriculture in specific areas—the projects were innovative even for the decision makers [4]. The ecology projects promoted via participatory budgeting have the potential to enhance the environmental quality and are highly supported by citizens who usually manifest an increased interest in engaging in actions concerning the environment [5].

Evidence from Poland shows that a relatively large share of participatory budgeting projects (i.e., up to 40% of the total) is reserved for ecology, and they are usually directed towards addressing air pollution and bringing back the ecological elements in highly industrialized areas [7,8]. Among the eight possible categories where one could submit a project (i.e., green infrastructure, blue infrastructure, protection of nature, air and atmosphere pollution, environmental education, pet care, waste management, and protection against noise), the ecology projects aiming at multiplying the green infrastructure's facilities and thwarting air pollution are the most appealing to citizens—especially in Western areas where pollution levels are high due to the intensified industrialization [31]. In addition, ecology projects usually score high when it comes to the implementation rate (which varies between 25–42.5% of the total number of the winning projects) [7].

3. Ecology Projects and the Public

The literature points in the direction of three main reasons for which ecology projects can be popular among citizens. They can (1) enhance the overall quality of life/individuals' welfare (i.e., a healthier environment/society), (2) increase the citizens' awareness and socially responsible attitudes, and (3) exert a positive influence in society. To begin with the first point, previous studies show a strong connection between the quality of ecology and individuals' welfare [32–34]. The heavy industrialization of many areas led to lower quality of life for citizens because of the high levels of pollution [35]. Air pollution increases the chances of health problems [11], generates respiratory and cardiovascular problems, affects the reproductive and nervous systems, and, in some cases, can produce cancer [36]. It could augment the severity of some diseases and hinder the healing process [37]. Local communities are highly affected by the increasing pollution of their water sources, which could cause diseases, complications in childbirth, or respiratory problems [38]. Since the desire to live a healthy life is common among many individuals, ecology projects are appealing [4,35].

Ecology projects can mobilize the masses, raise citizens' awareness towards environmental problems, and influence the formation of socially responsible attitudes [39]. The desire to contribute to a healthier environment is usually considered an act of social justice and general sense of fairness among citizens [40,41]. These beliefs are not about enforcing the relation between citizens and political factors that are usually perceived as actors that neglect the ecological issues for the sake of economic progress [35]. Instead, they refer to the cooperation among citizens who consider themselves the drivers for an eco-friendly society [39,40,42]. Citizens often engage in social activities aiming to solve environment problems such as marches or protests against actions/policies that affect the environment [42,43]. Ecology projects are considered manifestations of collective rights and examples of good practices [42,44]. The increased interest for environmental activities could be doubled by the citizens' desire to increase their awareness and levels of information regarding ecology problems [5,44].

Ecology projects can have a positive influence on society in several ways [6,35,43,45]. Ecology projects often provide strategies for sustainable development [10,41,46]. The latter is an effective way of valorizing the natural resources without the environment being endangered. It aims for shaping a maximized relation between individuals' needs and the means of attaining the latter, and its core aim is to create an environment in which the current and future generations' well-being to be enhanced and built within the ecological boundaries [15,33,35,41]. Sustainable development underlines a series of strategies in which the existing resources are to be better managed and become more effective [35,45]. For instance, recycling activities bring benefits to the environment and provide financial gains to those who use them [47] and valuable and non-pollutant energy resources [48]. Selective waste collection improves the environmental quality and the area's aesthetics and enhances the level of sanitation [49]. As a final point, ecology projects bring benefits for the overall image of the community/city in which they are implemented by making the

public spaces more attractive for leisure activities and by stimulating tourism, which could indirectly increase the local finances [7,32].

What Drives Public Support: Five Hypotheses

We suggest there are five factors that can increase the likelihood of the public to support ecology projects in participatory budgeting. This is important since the competition in this policy area is quite strong [7]. The most straightforward driver for project's support is the total value of its utility: the projects' potential to enhance the community's welfare [50] as emphasized above. In addition to this, we argue that five characteristics of the projects can foster public support for the proposal.

The budget (H1) and the type of project (H2) could increase their support among the public [5,51]. The sums of money demanded for the implementation of a specific project could determine its acceptance by the public because citizens may consider expensive projects as more important and impactful for their communities in comparison to others. As previous studies show, citizens are more likely to vote for more expensive projects [7,51]. Another potential determinant for the public support of an ecology project is its type or specific goal. For example, the projects that want to address a social problem faced by a specific community (e.g., access to electricity, food, sanitation, water) are more likely to gather support [51]. When a project targets a subject that raise citizens' interest, its success rate grows according to the degree of social interest towards the proposal [3].

The number of arguments used in the project proposal (H3) and the avoidance of jargon in proposals (H4) could increase public support for ecology projects. Those projects that are very detailed and provide multiple arguments about why they should be implemented are more likely to influence individuals' decision to cast a vote for them [5]. Ordinary citizens are not acquainted with the project outputs or with the steps to be followed for implementation; they might want to receive all the details concerning these elements before deciding which project to support [5]. A schematic description with few arguments could be associated with projects that do not bring many benefits to the community. Those projects using simple explanations, formulated in plain language, tend to be supported more by the public in participatory budgeting. The jargon may hinder the understanding the proposal's objectives [52].

Finally, projects that are accompanied by images and videos can gather citizens' support (H5). The information is processed and remembered easily when images are used. Citizens could be influenced by the presence of images and videos when deciding what project to support [53,54]. The information presented alongside images becomes more persuasive and suggestive for the public and as a result individuals' willingness to vote a project that contains images/videos could increase [54].

4. Research Design

To investigate the reasons for which ecology projects receive public support in participatory budgeting, we focus on Cluj-Napoca as the first city in Romania to use this practice. The city has fast-growing economy that places it well above the European average according to comparative statistics [55]. This financial situation means that the city is a favorable setting for an innovation in the local public management—including budget allocation—such as participatory budgeting. Moreover, there is continuity in terms of local administration: the mayor, who is a supporter of participatory budgeting, has been in office uninterrupted since 2012. Before that, he was elected as a mayor of the city in 2004 and re-elected in 2008, and then moved to a central level to serve as the country's prime minister between 2008 and 2012.

Our analysis includes all 36 projects on ecology submitted to participatory budgeting between 2017 and 2019, which passed the technical eligibility check (see the following section). In total, there were 86 projects submitted, but 50 failed to meet the required standards to enter the voting stage. Most of them (22 out of 36) were submitted to the 'green spaces and playgrounds' domain—which is reserved for this category of projects.

The rest of the 14 projects were placed in other domains (e.g., alleys, sidewalks, and pedestrian areas or mobility, accessibility, and traffic safety). This was possible due to the fact that the proposals met the necessary criteria to be submitted there, even though their end was to improve the environmental quality of Cluj-Napoca. The dependent variable of our study is an ordinal measure that has three values: rejected in the initial vote (coded as 1), rejected in the final vote (coded as 2) and accepted (coded as 3). This allows us to rank the 36 project proposals according to their degree of support by citizens. Our logic is that rejection in the initial phase means limited support for the proposal, rejection in the final vote shows medium support, while many votes that grant acceptance of the proposal for funding reflect major support in the population.

We have five independent variables: budget, type of project, number of arguments, use of jargon, and images and videos. The budget is measured on a nine-point ordinal scale to reflect the budget estimated by each project proposal in the submission phase. The values range between EUR 600 (coded as 1) and EUR 150,000 (coded as 9). The types of projects are divided into three categories according to their degree of generality: green areas, ecology infrastructure, and local innovations. The projects addressing green areas are very specific (green fences, tree planting, etc.), the ones targeting ecology infrastructure are more general (pollution sensors, solar panels, etc.), while those on local innovations are the broadest (community gardens, electric public scooters, plant sculptures, etc.). These three types are not different variables but are values of measurement reflecting the specific or general character of the project. Accordingly, this variable is coded on a three-point ordinal scale where green areas are coded as 1, ecology infrastructure is coded as 2, and local innovations are coded as 3.

The number of arguments is a count variable that reflects how many arguments are provided in the project proposal submission phase. The lowest value is 0 and the highest is 17; the latter is an outlier with only one project using so many arguments, the following value is 5. We consider one argument as one distinct reason for which a proposal should be implemented. For instance, a proposal about the necessity for smart garbage collection units was supported by four arguments: increasing waste collection capacity, lower costs/resource employment for the sanitation companies, the cultivation of an ecological spirit among citizens, and the chance for Cluj-Napoca to become the first city in Romania to implement smart waste collection. Looking at the number of arguments instead of the number of words is more appropriate because the arguments are likely to reflect the degree of persuasion. There are instances in which a proposal with a high number of words focused mostly on the description and not on the arguments.

The use of jargon is a dichotomous variable in which we code the absence (0) or the presence (1) of jargon in the project description at the stage of submission. The jargon includes words with a certain level of technicality that ordinary people do not use in their daily language. For example, we consider that jargon is being used when the proposal refers to 'photovoltaic panels' instead of 'solar panels'; the latter is a more common term, while the former is technical. Another example is the provision of specific explanations such as the way in which light pollution affects the production of melatonin, both concepts being difficult to grasp by ordinary citizens. The existence of images and videos in the project proposal is measured on a three-point ordinal scale that reflects the presentation of project proposals. Some proposals have text only (coded 0), others have images accompanying the project (coded 1), while others have both images and videos accompanying the text description (coded 2).

In addition to these variables, we also considered other variables such as the scope of the project (addressing needs of the entire city vs. those of specific neighborhoods), details about the implementation steps in the project description, or the number of words in the proposal. We did not report the results and do not include them in the analysis for two reasons: they either had no statistical relationship with the degree of public support for ecology projects (e.g., the scope) or correlated very highly with other variables that we already considered (e.g., the number of words correlates with the number of arguments).

We run two types of statistical analyses. The first is a bivariate non-parametric correlation between each of the five independent variables and the degree of acceptance by citizens of project proposals. This type of correlation is appropriate due to the ordinal measurement of almost all variables. The second is multivariate ordinal logistic regression. We tested for multicollinearity between the independent variables included in the model and the results indicate that the highest correlation is between the number of arguments and images and videos used in the text (0.48). Our discussion of results focuses more on the correlation because we are aware that there are some limitations for the regression analysis due to the low number of cases.

5. Participatory Budgeting in Cluj-Napoca

Cluj-Napoca is the fourth largest city in Romania by population, with over 300,000 inhabitants. It is located in the northwestern part of the country and is the main city in the historical region of Transylvania. It is one of the most important cities in the country in terms of economic development and quality of life. The participatory budgeting is implemented at the city level, and it was organized online between 2017 and 2019. In 2020, it did not take place because of the COVID-19 pandemic, but it was reinitiated in 2021. The Cluj-Napoca City Hall created in 2017 an online platform dedicated exclusively to the project and was open for its inhabitants of at least 18 years. It provides the participants with the opportunity to shape and observe the implementation of projects concerning their communities, to transfer their ideas into projects, to signal to the authorities the main concerns and shortcomings of their neighborhoods, to find solutions for their problems, and to take part in the process of setting priorities in spending local money.

The Cluj-Napoca participatory budgeting funds 15 projects annually with a maximum value of EUR 150,000 for each project. The City Hall provides EUR 2.25 million for this process, which is roughly 0.65% of the total municipal budget, which was approximately EUR 344 million in 2020 [56]. All those who live, work, or study in the city can submit projects or cast a vote on existing proposals. They must access the participatory budgeting platform, create an account, and proceed with the application or vote. Every citizen has the possibility to submit a single proposal for each category. The project competition includes six domains of submission: (1) alleys, sidewalks, and pedestrian areas; (2) mobility, accessibility, and traffic safety; (3) green spaces and playgrounds; (4) arrangement of public spaces (urban furniture, public lightning); (5) educational and cultural infrastructure; and (6) digital city. Unlike the Polish case where there are eight potential categories of ecology projects [31], in Cluj-Napoca the proposals concerning the environment could be submitted in the domain “green spaces and playgrounds”. Ecology projects are merged with playgrounds because, in most cases, playgrounds’ creation/renovation includes ecology or the expansion of green spaces [57]. Although most ecology projects are submitted to this domain, there are instances in which proposals about the environment are submitted to other domains. For example, some proposals about smart waste collection units, solar panels, or electric scooters were submitted to the domains of mobility, accessibility, and traffic safety or the arrangement of public spaces (urban furniture, public lightning). This happens because the projects include details that make them suitable for these domains.

The submission should meet the general objective of the participatory budgeting, must not be already included on the City Hall’s agenda or have any advertising and commercial character, and must meet the necessary criteria for being included in the program [57]. A project submitted to participatory budgeting is analyzed by the technical departments of Cluj-Napoca City Hall to check its eligibility. The latter includes, among others, if it can be implemented by the local authorities or does not surpass the limit of EUR 150,000. After this technical check, it will be placed in the competition. The standards imposed by the participatory budgeting in Cluj are not case-specific, and similar practices are encountered in other cities outside Romania. For instance, the participatory budgeting in Paris meets similar criteria when it comes to the projects’ eligibility check or voting processes. One major difference between the two cities is that, in Paris, citizens could vote both online and

in person [58], unlike in Cluj, where participants can vote exclusively on the participatory budgeting platform.

The projects that pass the technical check become eligible for being subjected to the voting process which is divided in two stages (i.e., the vote according to the domains and the final one). In the first stage, 30 projects are chosen from all domains, and every citizen has the right to vote on six proposals (i.e., one belonging to each domain). The top three projects according to the voting share go directly to the second stage, and the rest of them are selected based on the number of votes they gathered. In the second stage, every citizen could vote for 1 project (irrespective of its domain), and a total of 15 projects are selected. The project with the most votes in each domain will be automatically selected, and the rest of the winning projects will be decided according to their voting share [57]. The projects that gather the highest number of votes will be implemented by the City Hall. Those who wish to vote or submit projects but do not have access to the Internet or do not know how to use the platform can benefit from the help of City Hall's employees in specific locations in Cluj-Napoca during the process.

6. Ecology Projects in Participatory Budgeting

The total number of projects submitted to participatory budgeting in Cluj-Napoca decreases over time (Figure 1). In 2017, there were 338 projects, and their number goes down to less than half in 2018 and then increases to 200 in 2019. In terms of eligibility, there is a more steady and continuous decrease in the total number of projects: 126 in 2017 and roughly one third of that number in the following 2 years. By comparing these numbers, we also observe that the percentage of eligible projects of the total number of projects submitted decreases steadily. For example, in 2017, slightly more than one third of the submitted projects are declared eligible after the technical check. In 2019, only one fifth of the projects submitted are declared eligible. One would expect the percentage of eligible projects to increase over time because applicants become familiar with the process, they understand the rigor of the selection process, and submit when they stand a chance of surviving the technical check. Nevertheless, the opposite happens in the Cluj Participatory Budgeting, and this might be due to a reduced interest of citizens in the process, which provides limited funding and reduces the likelihood of producing a major impact in community. In addition, the process is advertised less by the municipality compared to its beginning in 2017.

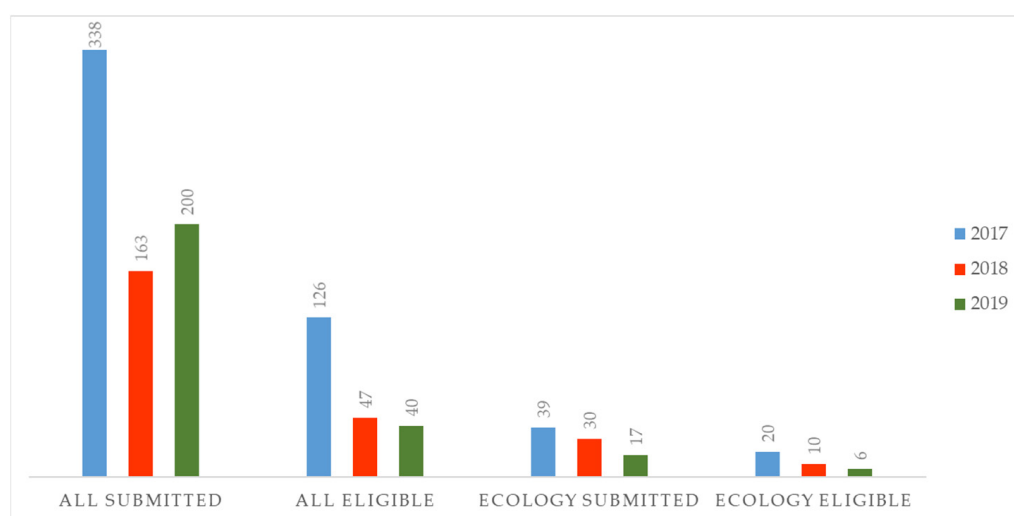


Figure 1. The projects submitted to participatory budgeting (2017–2019).

The projects submitted on ecology have a similar trend to the general ones: there are fewer applications every year and fewer eligible ones. Over time, the percentage of ecology projects of the total submitted projects also decreases from 11.5% in 2017 (39 out of 338) to

8.5% in 2019 (17 out of 200). However, the percentage of eligible ecology projects out of the total number of eligible projects is similar in 2017 and 2019, roughly 15%. This indicates a stable share of well-developed projects on ecology submitted to participatory budgeting. At the same time, we observe that 50 out of the 86 ecology projects submitted did not meet the minimum requirements to be voted and subsequently implemented. This means that people have many ideas related to ecology, and they submit project proposals related to them, but quite often, these are underdeveloped.

The 36 projects depicted by the last three bars in Figure 1 lie at the core of this analysis. They passed the technical check and were voted on by citizens. Figure 2 shows the distribution of acceptance and rejection rates for these projects in the three years covered by our analysis. The acceptance rates are between 30% in 2017 to 40% in 2018, with an intermediary value of 33% in 2019. In 2019, there were only two ecology projects that were accepted and implemented. In the three years, 12 ecology projects were accepted. The two successful projects in 2019 aimed to (1) reduce pollution through tree planting, green fences, and vertical hedges for buildings, and (2) redesign the concrete roofs from blocks of flats with the help of rooftop urban gardens and to promote the use of solar panels in the city. Two quite similar projects were rejected in the final vote: they aimed to install solar panels on the rooftop of schools and to create an urban garden between two neighborhoods where fruit and vegetables could be planted, and the crops could have been used for social meals. Two other projects were rejected in the initial vote, and they targeted lower intensity for city night lights and a higher and larger green fence in Central Park.

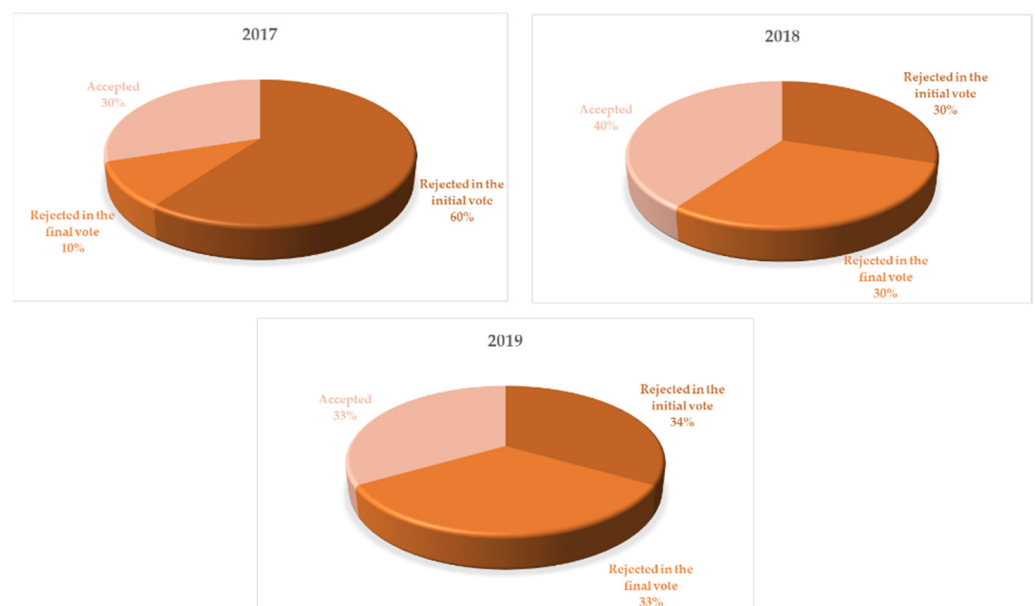


Figure 2. Level of public support for ecology projects (2017–2019).

These are recurrent themes among the projects submitted to ensure the city's ecological sustainability. For example, the three projects rejected in the final vote in 2018 were devoted to the use of sensors that could detect pollution in various city areas, the use of solar panels for the city's light poles, and tree planting in the largest neighborhood to lower pollution and expand the green areas of the city. In 2017, two of the accepted projects were about the planting of one tree for every third parking lot and the building of vertical hedges in specific locations in the city.

There are also two important differences between the ecology projects submitted from 2017 to 2019. The first refers to their scope: some of them are general, oriented towards the city's sustainability, while others focus on sustainable development within particular neighborhoods. For example, one of the successful projects in 2017 involved the creation of smart waste collection units in public spaces throughout Cluj. The same year, another

successful project aimed to rehabilitate a park (the Fraternity Park) in one of the city's neighborhoods. The acceptance of a project does not depend on its scope: city level and neighborhood-oriented projects are equally likely to be funded or rejected. The value of the correlation coefficient between the projects' scope—coded dichotomously—and the likelihood to become accepted for all 36 projects covered by our analysis is 0.01. A second difference is about the specificity of the proposed projects. Many are general and involve the creation, rehabilitation, or conservation of green areas and parks, tree planting and green fences, and the promotion of solar panels. There are also projects that propose very specific elements such as the acquisition of cars used to relocate trees with their roots from one location to another. Another example is the creation of plant sculptures to be placed throughout the city aiming to improve city's aesthetics and to promote eco-art.

7. Explaining Support for Ecology Projects

This section discusses in detail the results of the statistical analysis. The bivariate analyses (Table 1) indicate that the budget, the number of arguments and the presence of images and videos in addition to the written description of the project correlate positively and strongly with acceptance. All coefficients are statistically significant either at the 0.1 or 0.01 levels. All these are in line with the theoretical expectations derived from the literature and presented when we formulated the hypotheses. High sums requested by ecology project proposals are strongly associated with acceptance (0.53). All 12 projects that were accepted requested the maximum funding allowed of EUR 150,000. There are two possible explanations for this relationship. On the one hand, large sums correspond to large projects that aim to produce a broad impact in the community. Projects perceived to have a broad impact are more likely to attract citizens' votes than those that are perceived as having a limited impact. On the other hand, large sums can be a signal for citizens that the project proponents take the tasks seriously and are realistic about the resources required to accomplish them. For example, one project in 2015, rejected in the initial vote, asked for EUR 15,000 to demolish old garages in one particular area of the city and replace them with green parking lots. The costs for such an endeavor may sound unrealistic to many citizens since the procedures are quite expensive. Nevertheless, even if the costs are realistic, the impact of the project is limited since it targets a low number of garages.

Table 1. Correlation coefficients and ordinal logistic regression odds ratios.

	Correlation Coefficients	Odds Ratios
Budget	0.53 ***	2.30 *** (0.76)
Type of project	0.13	2.23 (1.30)
Number of arguments	0.51 ***	2.00 ** (0.65)
Use of jargon	−0.15	0.14 (0.21)
Images and videos	0.28 *	1.54 (1.07)
Pseudo R ²		0.34
Log likelihood		−24.57
N	36	36

Notes: Correlation coefficients are non-parametric. Standard errors are in parentheses for the ordinal regression analysis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A high number of arguments in the project description correlates highly and positively with their acceptance. This is intuitive since people are persuaded by the presence of details that illustrate the reasons behind the project, how the project will be implemented, and what the subsequent steps are. The projects differ greatly in terms of arguments provided to the audience: at one extreme there are four projects with no argument and eight with one argument, while at the other extreme there are 4 projects with 5 arguments and 1 with 17. The number of arguments is reflected very well in the length of the descriptions listed on the participatory budgeting website. There are projects with less than 100 words, which makes it difficult to include many arguments for its rationale because the goal of the

project already occupies extensive space. There are also projects with more than 400 words that allow for detailed explanations. All those with more than 400 words have 4 or more arguments explaining why the project is necessary.

The presence of additional images and videos is associated with higher acceptance of the ecology projects. The reason is similar to that outlined for the existence of arguments: images and videos increase the appeal of the project by providing a broader understanding of its content in addition to the text description. Only one out of the 12 ecology projects that were accepted did not have supplementary images and videos. The project was accepted in 2017 and targeted the demolition of 40 old garages throughout the city and their replacement with parking lots that included green areas or children's outdoor playgrounds. There are eight projects that included both images and videos, and three out of those were accepted.

More general types of projects devoted to ecological innovations as opposed to the specific ones about green spaces have slightly greater chances of being accepted. The value of the correlation coefficient is quite small. One possible explanation for the positive correlation is the perception that the general projects will contribute more to the sustainable ecological development of the city compared to the specific ones. The correlation is quite weak because, as noted above, there were several projects on green areas, fences, and tree planting that were voted by the citizens in Cluj. The use of jargon in the project description correlates negatively to the acceptance of ecology projects. Those project descriptions that use simple language, are easy to understand, and avoid technical details are more appealing to citizens. People understand easier things that are explained in plain language, and they are likely to express preference or vote for those projects that they understand.

The results of the ordinal logistic regression confirm and strengthen these observations. There is empirical support for all the hypothesized relationships, but the evidence is stronger for some of them. The effects are presented in Table 1 and visually in Figure 3. The high value of the pseudo R^2 indicates that the statistical model is a good fit to the data. The findings illustrate that high budget (H1) and the number of arguments (H3) have strong and statistically significant effects on the likelihood of ecology projects being accepted. A project proposal with a budget at the maximum level is 2.3 times more likely to be accepted compared to a low budget proposal. A proposal with many arguments is two times more likely to be accepted compared to projects with no arguments. Although not statistically significant, the effects are strong for the remaining variables. A general type of project is 2.23 times more likely to be accepted, while a project proposal that accompanies the text with videos and images (H5) is 1.54 times more likely to be accepted. The strongest predictor in the multivariate statistical model is the use of jargon (H4): a proposal with plain language is more than 7 times more likely to be accepted compared to one using jargon. Since the odds-ratio for the use of jargon is less than 1, we use the log odds for the simplicity of interpretation.

These results indicate that all five characteristics of an ecology project could influence the support provided by citizens in the voting phase of participatory budgeting. A high budget, a general type of project, and a large number of arguments appear to be the strongest predictors for support. All these are in line with earlier findings from the literature and indicate that citizens vote for those ecology projects that are likely to make greater impact in society. Equally important, the quality of the proposal can play a relevant role. In this way, citizens send the message that their involvement in the decision-making process is more than a rubber stamp and aim to make informed judgments.

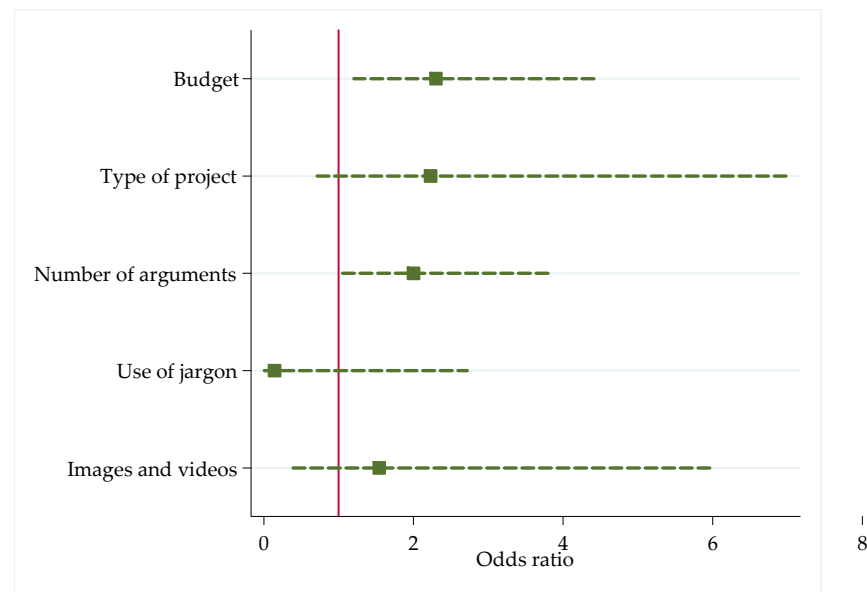


Figure 3. The effects on likelihood for public support of ecology projects.

8. Conclusions

This article aimed to identify the factors that favor the acceptance of ecology projects submitted to participatory budgeting. To our knowledge, this is the first analysis seeking to explain the variation in support for ecology projects submitted to participatory budgeting. The study focuses on the participatory budgeting practice in Cluj-Napoca (Romania) between 2017 and 2019. This practice includes two rounds of voting before generating the list of accepted projects. We analyzed 36 projects that were rejected in the initial vote, rejected in the final vote, and accepted. Our results show that the likelihood of public support for ecology projects depends greatly on the rigor of the proposals. While the total number of ecology projects submitted between 2017–2019 show general interest towards environmental matters, the projects are voted based on several characteristics. The empirical support for the five determinants (i.e., budget, type of project, number of arguments, use of jargon, and the presence of images/videos) indicates that citizens take environmental matters seriously and do not vote for schematic projects that are limited in scope and that do not pose any potential for contributing to the general welfare.

The implications of our results go beyond the single case study presented here. At a theoretical level, we propose an analytical framework that includes five project characteristics that could be tested in other settings. Since these characteristics are not context sensitive and the features of participatory budgeting in Cluj-Napoca are likely to be found in other contexts/cities (see the research design), further research could identify the extent to which they explain the public support for ecology projects elsewhere. In terms of methodology, our analysis uses an approach that can be replicated at a broader scale in the study area. The variables that we identified as potential drivers for popular support are available for projects submitted to participatory budgeting elsewhere. This methodology can set the grounds for comparative analyses covering several types of projects beyond ecology. At the empirical level, the study contributes to the literature by identifying the factors that could influence the success of ecology projects submitted to participatory budgeting. These results enhance our understanding about individuals' attitudes towards specific decision-making processes in local politics and what expectations they have. In this sense, the results could bear some societal relevance, especially for project submitters. They could learn that in order to gain support, a project must have a large budget, present clear arguments in plain language, and have attached images and videos in the proposal.

The number of cases for analysis represents a limitation of our study. While 36 cases are suitable for conducting bivariate analysis, they are not sufficient for providing robust

results in a multivariate test; the latter was only used to strengthen the findings of the bivariate analysis. Other limitations include the absence of a discussion about the legitimacy and representativeness of the participatory budgeting's voting process. These could influence the extent to which citizens engage and vote for projects. Our approach also disregards voters' characteristics that could influence their vote for a specific project such as the ability to use the online platform, belonging to vulnerable groups, awareness about specific projects, etc.

Starting from these limitations, further studies could test the effect of the five determinants in other cases with larger numbers of ecology projects submitted to participatory budgeting. The analyses could be applied to more cases from specific regions that pose a high interest in ecology. Since the methodology can be applied to most projects submitted to participatory budgeting worldwide, future studies could also compare ecology and non-ecology projects to understand how they differ. Other studies employing qualitative methods (e.g., interviews, focus groups) could be conducted to explain what determines citizens' desire to vote for a specific category of ecology projects (i.e., green areas, ecology infrastructure, and local innovations) or what factors influence the projects' submitters to advance a proposal belonging to one specific category in the expense of the others; this factor also influences the proposals' densities and frequencies. Further studies could also investigate if the citizens perceive the online voting format as being legitimate and representative for the entire population. The context presented here indicates that this may be an issue in the process of supporting projects to be funded through participatory budgeting.

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