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Public Participation Geographic Information Systems (PPGIS) in decision-making processes in spatial management

(summary of the doctoral dissertation)

Public Participation Geographic Information Systems are defined as a set of methods and online tools based on Geographic Information Systems (GIS) used to engage society to participate in decision-making processes in spatial management. The use of PPGIS in public consultations in spatial management is a complex and interdisciplinary process. It is grounded in the theory of spatial management, geoinformation, public policy, and management, as well as in the field of sociology with a strong focus on information society development and public participation. This work is devoted to the analysis of the use of Public Participation Geographic Information Systems in public consultation process and the usefulness of the results of their applications in decision-making. A study of the applications of these tools was conducted on the example of nine public consultation processes that took place in the Poznań Agglomeration.

The main purpose of the thesis is to assess the possibilities and effects of PPGIS use in decision-making in spatial management on the example of two tools: geo-questionnaire and geo-discussion and their influence on the public participation level. Geo-questionnaire combines a web-based questionnaire with a sketchable map, making it possible to respond to spatially oriented questions by marking a point location, sketching a linear feature, or drawing a polygon on the map. The second tool - geo-discussion, combines a discussion forum with an interactive map, allowing the participant to select map objects (e.g. parcels) and mark or sketch geometric objects on the map and link them with discussion posts. The discussion forum offers several standard functions such as adding a new thread, commenting on threads added by other participants, adding attachments, searching posts, and reacting to posts by selecting like or dislike button. The map interface of geo-discussion offers basic tools to measure distances and surfaces and search by address.

The thematic scope of the thesis includes four modules. The first one is devoted to the current state of knowledge about Public Participation Geographic Information Systems - their characteristics and theoretical foundations. This part focuses on the theoretical determinants of research and analyzed processes resulting from selected scientific disciplines. The issues on which it was decided to focus are devoted to space as a common good determined by the co-decision processes and the role of society in this process. Also, conditions related to the digitization of society and management processes were discussed. The last aim of this module is to discuss the genesis, evolution, and limitations of PPGIS. The second module is dedicated to the conditions of PPGIS use. This part focuses on presenting legal and social conditions for the use of PPGIS and reviews the current applications of PPGIS tools in Poland. The third module is an empirical study of the application of geo-questionnaire and geo-discussion methods in Poznań agglomeration.

The chapters gathered under this module include the presentation of the analyzed processes, public consultations' results, and an assessment of the use of tools. It summarizes the results in terms of institutional factors of using PPGIS tools and applying their results in decision-making processes. The part of the dissertation was devoted to presenting the challenges and further development directions of Public Participation Geographic Information Systems use in Poland and recommendations for their effective application in spatial management.

Summary of the results indicates the achievement of three levels of public participation in the analyzed cases. According to the adopted classification, in one case the level of partnership was reached four cases reached the third level of participation ladder - apparent participation, and in three cases - the second level - passive participation. None of the cases studied was classified at the highest levels - social control. This was mainly due to the lack of public participation in the decision-making phase of the planning process. Even if the results of the consultations were taken into account in the decisions, they were held behind closed doors, without the possibility of speaking at the final stage of the design process. Even if the results of the consultations were reflected in the decisions, they usually resulted from the similarity of the spatial and investment policy objectives of a given unit or from rational reasons. In the case of processes that were classified at the second level - passive participation, the decisive factor was the failure to take into account the results in decision-making processes, which was associated with the lack of information useful in the decision-making process or the lack of final decisions regarding the studies that were the subject of the consultations.

The only clear effect of using PPGIS was the increase in the number of residents participated in the public consultation process. However, that fact was used in most of the processes to legitimize decisions already made and to build argumentation, or as diagnostic material illustrating general trends. This suggests the need to take a critical view on the organization of the examined public consultations, as well as on the unclear objectives of residents' involvement that were not focused on specific project solutions. As a result, the tools were only used as an extension of the catalog of consultation methods and quantitative confirmation of the supposed (mostly) general opinions in the context of the subject of consultation. It should be noted that social involvement in the processes has not been fully utilized - this resulted from the already mentioned too general consultation goals (which resulted, among others, in biased or unnecessary questions in the questionnaire) and the lack of broader education of residents about the processes and their conditions, allowing to improve the quality of feedback from residents.