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DOCTORAL SCHOOL OF INTERNATIONAL RELATIONS AND
SECURITY STUDIES

Public perception of the state of the environment and climate change in
Romania: An analysis based on the empathy map and recommendations for
environmental governance

DOCTORAL THESIS SUMMARY

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Keywords

Environmental governance; environmental public policies; environmental security; public perception; empathy map; bibliometric analysis; interviews; civic participation; ecological education; social responsibility; climate change; climate adaptation; environmental factors (air, water, soil, biodiversity); air pollution; water quality; soil degradation; biodiversity conservation; forest exploitation; marine and coastal environment; Sustainable Development Goals (SDGs); sustainability; ecological transition; environmental policies; community engagement; environmental attitudes; environmental behaviours; social capital; ecological resilience; environmental justice.

Synthesis of the main ideas

Introduction

In a global context marked by the intensification of ecological crises and the amplification of the effects of climate change, environmental protection becomes a strategic and social priority. Pressures on ecosystems, the degradation of natural resources and the increase in climate vulnerabilities require a reconsideration of how the concept of environmental governance is understood and applied. The paper addresses the issue of environmental conditions and climate change in Romania, analyzing the interdependencies between ecological, social, economic and institutional dimensions. The role of environmental governance in ensuring the balance between economic development, protection of natural resources and social equity is highlighted, as well as its integration into the broader framework of environmental security. In this regard, environmental security is viewed as an essential component of national and European security, aiming to protect ecosystems, vital resources and public health. The study is based on an integrated methodological approach, combining quantitative analysis through bibliometric studies and qualitative research through semi-structured interviews and empathy maps. This methodological complementarity allows for a nuanced understanding of both public and academic discourse, as well as the emotional dimension of the relationship between citizens and the environment. The paper also highlights the importance of environmental public policies and the ecological transition in achieving the SDGs, emphasizing that effective governance requires cooperation between the state, the

private sector and civil society. The introductory chapter establishes the conceptual framework and the scientific relevance of the research, arguing that environmental protection can no longer be treated in isolation, but as an integral part of security and sustainable development.

Motivation and significance of the research

The motivation for this research is grounded in the context of the global ecological crisis and the profound socio-economic transformations that Romania is undergoing, which call for the development and implementation of coherent and effective environmental public policies. The degradation of natural resources, increasing climate pressures and the vulnerability of social systems highlight the need for environmental governance capable of integrating ecological, economic and social dimensions into a unified framework of action. The paper starts from the premise that the effectiveness of environmental policies depends not only on legislative or economic instruments, but also on the way they are understood and supported by citizens. The lack of trust in public institutions, fragmented perceptions of environmental issues and the low awareness of the link between individual actions and collective outcomes can reduce the impact of the measures adopted. Therefore, the research aims to make a significant contribution to understanding the relationship between environmental governance, social perceptions and ecological realities in Romania. It integrates the social dimension into the analysis of environmental issues and highlights the role of civic participation and collective responsibility in strengthening sustainability. The significance of the study lies in its interdisciplinary approach, which brings together perspectives from political science, environmental science, sociology and public administration. In this context, citizen involvement, institutional transparency and environmental education become essential conditions for building effective governance, capable of responding to ecological challenges and ensuring the transition towards genuine sustainable development.

Research objectives

The research pursues six main objectives: **O1.** To explore the current level of scientific knowledge regarding the state and evolution of the main environmental factors,

as well as perceptions related to environmental conditions, in order to identify trends, risks and implications for human health, the economy and ecosystem sustainability. **O2.** To identify, through an empathy map, the values, needs, behaviors, motivations and obstacles of the interview participants in relation to environmental conditions. **O3.** To analyze the co-occurrence of keywords associated with environmental perceptions, highlighting how the deductive and inductive codes derived from the thematic analysis of the empathy map are reflected and interconnected in the existing literature on environmental conditions in Romania. **O4.** To identify, through an empathy map, the values, needs, behaviors, motivations and obstacles of participants in relation to climate change. **O5.** To investigate the complex linkages between environmental factors and governance mechanisms, by analyzing how this interconnection influences Romania's performance in achieving the relevant SDGs (3, 6, 13, 15, 16, 17). **O6.** To identify, based on the obtained results, measures that can contribute to strengthening environmental governance by promoting effective public policies, increasing civic responsibility and stimulating sustainable environmental behavior. The exploratory questions are structured around the four components of the empathy map ("What do they think and feel?", "What do they see?", "What do they say and do?", "What do they hear?"), and the methodology combines document-based research, semi-structured interviews and bibliometric analysis, providing an integrated and multidimensional perspective.

Research methodology

The applied methodology is mixed, combining qualitative and quantitative methods. For objectives **O1**, **O5** and **O6**, document-based research was used, analyzing scientific literature, institutional reports and relevant official documents, such as those of the WHO, UN and the European Environment Agency. For **O2** and **O4**, 34 semi-structured interviews were conducted, based on the empathy map, intelligently transcribed and thematically analyzed through deductive and inductive coding. For **O3**, a bibliometric analysis was carried out in the Web of Science Core Collection, using VOSviewer to identify keyword networks relevant to environmental perceptions in Romania. The case study on the interconnection between environmental factors and

governance in relation to the SDGs was approached through a structured comparative analysis, combining global and national data to provide a contextualized perspective.

Personal contributions

The original contribution of the thesis consists in the use of the empathy map as a complementary qualitative analysis tool in studies on perceptions of environmental conditions in Romania, offering an innovative perspective on how individuals relate to ecological issues. The integration of this tool within the research allows the capture of emotional and symbolic dimensions associated with perceptions related to environmental conditions, complementing the quantitative analysis carried out through bibliometric studies. The combination of the two methodological directions (qualitative and quantitative) ensures a coherent articulation between the subjective and objective dimensions of the research, providing a more complex picture of the relationship between social representations, public discourse and environmental governance. The connection of the results with the Sustainable Development Goals (SDGs) and with relevant national strategies gives the work significant applicative value, by formulating useful recommendations for decision-makers, researchers, and hopefully also for the general public.

Thus, the thesis contributes to strengthening an interdisciplinary perspective on environmental governance in Romania and highlights the role of civic involvement and collective responsibility as determining factors of the effectiveness of public policies and ecological sustainability.

Synthesis of chapters:

Chapter 2 entitled “Current state of knowledge regarding environmental factors in Romania”:

Chapter 2 provides a comprehensive analysis of the main environmental factors air, water, soil, biodiversity and waste, by reference to strategic documents, European and national reports. The chapter highlights the degradation trends of certain environmental factors, the main anthropogenic pressures and the way environmental policies have adapted to European requirements. The importance of continuous monitoring and the

development of a unified database is emphasized, in order to support governance decisions.

Regarding air quality, high concentrations of particulate matter (PM₁₀, PM_{2.5}) are mentioned in major urban agglomerations, caused by traffic and residential heating. For water resources, issues of point and diffuse pollution, infrastructure deficits in rural areas and the impact of climate change on the hydrological regime are highlighted. Soil condition is affected by industrial activities, intensive agriculture and waste disposal, while biodiversity faces habitat fragmentation and species loss.

The chapter also emphasizes the role of governance and the institutional framework in managing environmental factors, showing that Romania has made progress in aligning with EU directives, but gaps persist between national policies and their implementation at the local level. The general conclusion is that although progress exists in data collection and legislative harmonization, environmental conditions remain vulnerable, and sustainability depends on strengthening monitoring mechanisms, public participation and interinstitutional cooperation.

Chapter 3 entitled “Legislative, technical and economic framework for environmental protection”:

This chapter analyzes the evolution, structure and functionality of the normative and institutional system regarding environmental protection in Romania. The chapter highlights the alignment of national legislation with the European *acquis communautaire* and the integration of sustainable development principles into public policies. The strategic role of the Ministry of Environment, Waters and Forests, the National Environmental Protection Agency and the National Environmental Guard in applying regulations and controlling compliance is mentioned.

At the legislative level, the main normative acts are presented: Emergency Ordinance no. 195/2005, Water Law no. 107/1996, Emergency Ordinance no. 92 of 2021 on waste regime, Law no. 292/2018, as well as EU directives on air quality, waste management, biodiversity conservation and circular economy. The importance of economic instruments such as taxes, subsidies, green certificates and European financing mechanisms (Environmental Fund, POIM programs, PNRR) in supporting the ecological transition is also highlighted.

On the technical component, the chapter presents environmental monitoring systems (for air, water, soil, noise), clean technologies and preventive measures applied in industry, agriculture and transport. It is shown that, although Romania has a complex framework aligned with European legislation, the efficiency of implementation remains limited due to reduced administrative capacity, lack of resources and insufficient interinstitutional cooperation.

An essential part consists of environmental policy instruments, classified into:

Voluntary and market-based instruments – eco-labels; Financial and European instruments - POIM programs, PNRR, structural funds and emission compensation mechanisms.

Economic instruments – environmental taxes, contributions to the Environmental Fund, support schemes for green energy, payments for ecosystems and fiscal incentives; Administrative and regulatory instruments – permits, approvals, environmental agreements, management plans and compliance mechanisms.

In conclusion, the need to strengthen environmental governance through real integration between legislative, technical and economic dimensions is emphasized, so that environmental protection becomes a central component of national sustainable development policies.

Chapters 4 and 5 entitled “Attitudes and perceptions regarding environmental conditions and climate change” and “Interconnection between environmental factors and governance with sustainable development goals: Case study Romania”:

Another central chapter (*Chapter 4*) investigates citizens’ attitudes and perceptions regarding environmental conditions and climate change. Subsequently, the paper integrates the perspective of the Sustainable Development Goals (SDGs), through a case study applied to Romania, highlighting the interdependence between environmental governance and global objectives. This case study adds an essential strategic dimension to the thesis, facilitating the transition from the analysis of individual perceptions of the environment and from the exploration of international scientific discourse towards a broader reference framework, that of the SDGs. The integration of this component responds to a methodological and theoretical need to correlate public perceptions and

concrete ecological conditions with institutional performance and the commitments assumed by Romania at the international level.

This is followed by the *presentation of the research results, both qualitative and quantitative*. These are complemented by the analysis of sustainable development indices and by an integrative discussion that correlates the obtained data with the implications for environmental governance, highlighting the limitations of the study and possible future research directions. The paper concludes with *general conclusions and recommendations, as well as the bibliography that supported the research*.

Research results

The qualitative research highlighted, at the level of public perceptions, a relatively high awareness of environmental issues, but also a discrepancy between declarations and concrete behaviors, likely influenced by lack of resources, insufficient environmental education and distrust in authorities. The identified values include responsibility towards future generations and personal commitment, while the major obstacles are lack of infrastructure and bureaucracy. The bibliometric analysis of 276 scientific documents identified nine thematic clusters, revealing a transition from technical concerns to topics related to individual behavior and governance. Perceptions of climate change show openness towards sustainable solutions, but also the existence of psychosocial barriers. The case study on the SDGs highlighted gaps in key areas such as biodiversity protection and institutional strengthening, emphasizing the need for stronger commitment and active citizen participation. Finally, strategic measures were proposed to strengthen environmental governance, focused on public participation, economic instruments, institutional capacity and social equity.

Research limitations

The doctoral research acknowledges the inherent limitations of qualitative methods, including the subjectivity of perceptions and the possibility of response distortion due to the desire for social conformity. Snowball sampling may reduce the diversity of opinions, and intelligent transcription may lead to the loss of certain expressive nuances. The bibliometric analysis is limited by the selection of documents indexed exclusively in

English in the WoS database, which reduces the representativeness of local studies in Romanian. Furthermore, the generalization of results is restricted, and the relationship between values and behaviors requires additional longitudinal research for a dynamic understanding over time. These limitations open perspectives for more extensive and diversified future research.

Conclusions

The paper highlights the importance of integrating public perceptions into the decision-making process in order to increase the effectiveness of environmental policies in Romania. The values and motivations that can support civic engagement are emphasized, as well as the significant obstacles that must be overcome, such as lack of infrastructure, bureaucracy and distrust in institutions. The existence of gaps between academic discourse and national realities regarding health and the environment is confirmed, as well as the need for closer collaboration between social actors in order to achieve the SDGs. The formulated recommendations aim at strengthening public participation mechanisms, developing economic instruments and increasing institutional capacity, all grounded in an interdisciplinary and integrative perspective. Thus, the ecological transition becomes possible only through an inclusive, equitable and sustainable governance framework.

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