

How has the cooperation between the EU and the Republic of Moldova contributed to environmental sustainability at a local level in R.Moldova “Case-Study – Cantemir”

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Department of History

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## Abstract

This research examined how cooperation between the European Union (EU) and R.Moldova has contributed to environmental sustainability at the local level, focusing on Cantemir, Republic of Moldova. Through analysis of the "Thermal Rehabilitation of Educational Buildings in Cantemir - CanTREB" project, this study investigated the mechanisms of knowledge and technology transfer from EU initiatives to local implementation. The research employed a qualitative methodology through a case study of Cantemir. Data was collected through semi-structured interviews with five key stakeholders. This analysis was complemented by document analysis of EU policies, national frameworks, and local implementation reports. The research showed how the EU-R.Moldova contributed to improved environmental regulations and practices at the regional level while identifying challenges in implementation capacity and financial sustainability. Analysis revealed three critical factors for effective implementation: clear alignment of objectives across governance levels, robust knowledge transfer mechanisms, and strong local engagement. These findings have implications for future EU-transition country environmental cooperation, suggesting the need for sustained technical support, flexible adaptation of EU standards, and enhanced community engagement mechanisms. The study highlights the crucial role of intermediary organizations in bridging EU objectives and local implementation, contributing to the understanding of multi-level environmental governance.

*Keywords:* Sustainable Development, Environmental Sustainability, EU-R.Moldova Cooperation, Multi-Level Governance, Local Implementation

## Resumo

Esta investigação examinou como a cooperação entre a União Europeia (UE) e a República da Moldávia tem contribuído para a sustentabilidade ambiental a nível local, focando-se em Cantemir, República da Moldávia. Através da análise do projeto "Reabilitação Térmica de Edifícios Educacionais em Cantemir - CanTREB, este estudo investigou os mecanismos de transferência de conhecimento e tecnologia das iniciativas da UE para a implementação local. A investigação utilizou uma metodologia qualitativa através de um estudo de caso em Cantemir. Os dados foram recolhidos através de entrevistas semiestruturadas com cinco intervenientes-chave. A análise foi complementada pelo estudo documental de políticas da UE, quadros nacionais e relatórios de implementação local. A investigação mostrou como é que a cooperação UE-Moldávia contribuiu para as melhorias nas regulamentações e práticas ambientais a nível regional, identificando simultaneamente desafios na capacidade de implementação e sustentabilidade financeira. A análise revelou três fatores críticos para uma implementação eficaz: alinhamento claro de objetivos entre níveis de governação, mecanismos robustos de transferência de conhecimento e forte envolvimento local. Estas conclusões têm implicações para a futura cooperação ambiental entre a UE e países em transição, sugerindo a necessidade de apoio técnico continuado, adaptação flexível das normas da UE e mecanismos reforçados de envolvimento comunitário. O estudo destaca o papel crucial das organizações intermediárias na ligação entre os objetivos da UE e a implementação local, contribuindo para a compreensão da governação ambiental multinível.

*Palavras-chave:* Desenvolvimento Sustentável, Sustentabilidade Ambiental, Cooperação UE-R.Moldova, Governança Multinível, Implementação Local

## Glossary of acronyms

AA	- Association Agreement
AEER	- Alliance for Energy Efficiency and Renewables
CanTREB	- Thermal Rehabilitation of Educational Buildings in Cantemir
CEE	- Central and Eastern European
CO <sub>2</sub>	- Carbon Dioxide
CoM	- Covenant of Mayors
EaP	- Eastern Partnership
EAP	- Environmental Action Programme
EBRD	- European Bank for Reconstruction and Development
ECJ	- European Court of Justice
EEA	- European Environment Agency
EEC	- European Economic Community
ECSC	- European Coal and Steel Community
EIB	- European Investment Bank
ENP	- European Neighbourhood Policy
EU	- European Union
IHP	- Individual Heating Points
IUCN	- International Union for Conservation of Nature
LED	- Light-Emitting Diode
LPA	- Local Public Authority
MDGs	- Millennium Development Goals
MLG	- Multi-Level Governance
NEEAPs	- National Energy Efficiency Action Plans
NGO	- Non-Governmental Organization
PCA	- Partnership and Cooperation Agreement
QCA	- Qualitative Content Analysis
REAPs	- Renewable Energy Action Plans
SDGs	- Sustainable Development Goals

SEA - Single European Act

SEAP - Sustainable Energy Action Plan

UN - United Nations

USSR - Union of Soviet Socialist Republics

WCED - World Commission on Environment and Development

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# INTRODUCTION

Environmental sustainability has emerged as a critical global challenge, particularly in the context of international cooperation and development. The European Union (EU) has positioned itself as a leader in promoting environmental sustainability within its borders and neighboring countries. This dissertation examines if and how the cooperation between the EU and R. Moldova has contributed to environmental sustainability at the local level, focusing specifically on the case of Cantemir, Republic of Moldova. The concept of sustainable development, as defined by the Brundtland Report (1987), emphasizes development that meets present needs without compromising future generations' abilities. This principle has become increasingly relevant in the context of EU-R. Moldova cooperation, particularly as R. Moldova seeks to align its environmental policies and practices with EU standards. The evolution of this cooperation, from the initial Partnership and Cooperation Agreement in 1994 to the Association Agreement in 2014, represents a significant progression in environmental policy implementation and sustainable development practices. The study pursues several key objectives. To assess the concrete contributions of EU-R. Moldova's cooperation with local environmental sustainability, this research examines the implementation and impact of the "Thermal Rehabilitation of Educational Buildings in Cantemir - CanTREB" project, which focused on improving energy efficiency in four educational facilities: two schools and two kindergartens. Through this specific case, the research aims to understand the mechanisms of knowledge and technology transfer from the EU to local implementation and contribute to the academic literature on international cooperation and environmental sustainability. The research employs a qualitative methodology centered on a detailed case study of Cantemir. This approach allows for an in-depth examination of how EU environmental policies and initiatives are interpreted, implemented, and experienced at the local level. The study draws on data from semi-structured interviews with five key stakeholders. The analysis of the interviews was complemented by extensive document analysis of EU policies, national frameworks, and local implementation reports. The research is grounded in the concept of multi-level governance, which provides a framework for understanding how different levels of authority - from the EU to local governments - interact in implementing environmental sustainability initiatives. This theoretical approach helps explain the complex relationships between supranational policies, national frameworks, and local implementation, particularly relevant in the context of EU-R. Moldova cooperation.

This dissertation is structured into several chapters, each systematically addressing the research objectives. Chapter 1 presents the theoretical foundations through a comprehensive literature review, beginning with an analysis of the evolution of sustainable development concepts, with particular emphasis on their application in environmental policy. Chapter 2 delves into the development of EU environmental policies, how environmental policies are implemented between the EU, what are the challenges of this implementation, and their extension to neighboring countries. Chapter 3 provides an analysis of the specific context of EU-Moldova cooperation since 1991, particularly concerning environmental policies. Chapter 4 examines the role of multi-level governance in environmental sustainability initiatives. Chapter 5 outlines the methodological approach adopted in this research. It provides a detailed justification for choosing Cantemir as a case study and explains the qualitative methodology employed. The chapter describes the participant selection process, data collection methods, and the approach to qualitative content analysis. Chapter 6 presents the analysis of the interview data, organized around key themes that emerged from the research. This analysis explores different stakeholders' perspectives on sustainable development, environmental policy implementation, multi-level governance, implementation challenges, community engagement, and project outcomes. Chapter 7 discusses the research findings concerning existing literature and theoretical frameworks, examining their contribution to understanding EU-R. Moldova environmental cooperation and its local-level impacts. The chapter integrates empirical findings with theoretical insights while addressing study limitations and proposing future research directions. Chapter 8 concludes the dissertation by synthesizing the key findings and insights derived from the research. This final chapter provides a concise overview of the main contributions of the study and their implications for both theory and practice.

# Literature Review

## Chapter 1 – The Concept of Sustainable Development

### 1.1 Historical Context of Sustainable Development

The concept of sustainable development has deep historical roots that can be traced back to various disciplines and historical periods. While the term itself first emerged in the field of forestry, being formally mentioned in the "World Conservation Strategy" by the International Union for Conservation of Nature (IUCN) in 1980, its conceptual foundations were established much earlier in the field of economics (Klarin, 2018; Baker, 2006). The idea of limits to growth due to resource scarcity originated in the 18th century, with Thomas Robert Malthus (1766-1834) being considered the first economist to predict these limitations. Malthus warned about population growth potentially exceeding the capacity of natural resources to sustain it (Mebratu, 1998; Mensah, 2019). Other classical economists, including Adam Smith, Karl Marx, David Ricardo, and John Stuart Mill, also addressed elements related to sustainable development, acknowledging development limits and environmental needs (Klarin, 2018). Later, in the 19th century, William Stanley Jevons expanded these concerns by warning about energy (coal) shortages (Baker, 2006). The Industrial Revolution marked a significant turning point, intensifying pressure on the environment and raising concerns about future generations' needs. This created a prerequisite for the rational and long-term use of limited resources (Klarin, 2018). By the 1950s, these concerns resurfaced through the writings of Fairfield Osborn & Samuel Ordway, though it wasn't until the 1960s and 1970s that public awareness significantly intensified, particularly regarding environmental health hazards caused by industrial pollution (Baker, 2006). A crucial milestone came with the formation of the Club of Rome in 1968 and their subsequent report, "The Limits to Growth" (1972). This report was instrumental in warning about the negative consequences of uncontrolled economic development, predicting that industrial society would exceed most ecological limits within decades if it continued promoting the type of growth seen in the 1960s and 1970s (Mebratu, 1998). While the report faced criticism for overlooking the potential of technological innovation in addressing resource efficiency and environmental challenges,

it sparked important discussions about different types of growth and the need for more nuanced development strategies (Baker, 2006). The 1972 United Nations Conference on the Human Environment in Stockholm marked the introduction of sustainable development concepts on the international stage. Although it didn't fully associate environmental problems with development, the conference emphasized the need for changes in economic development policies and proclaimed the importance of balancing economic development with environmental protection (Klarin, 2018). The publication of the Brundtland Report in 1987 by the World Commission on Environment and Development (WCED) represented a crucial turning point in the evolution of sustainable development. The report formalized and popularized the term, defining it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). This definition was groundbreaking because it explicitly connected social, economic, and ecological dimensions of development (Baker, 2006). The Brundtland Report's significance extends beyond its definition. It introduced a global perspective on sustainability, recognizing that fulfilling the basic needs of the world's poor and curbing excess consumption by the wealthy were both critical to achieving sustainability. The report argued that environmental degradation, economic inequality, and social injustice were interconnected challenges requiring an integrated approach (Baker, 2006). Moreover, the report presented an optimistic vision while acknowledging biospheric limits. It emphasized the potential for technological and societal changes to foster a new era of economic growth while recognizing the ultimate limitations imposed by the environment's capacity to sustain life. This framework was politically significant as it provided a way to integrate environmental policies with development strategies, breaking the traditional perception that environmental protection necessarily conflicted with economic growth (Baker, 2006). The report's impact was profound, marking the beginning of a new global socioeconomic policy where sustainable development became a central element in environmental management and other areas of human activity (Mebratu, 1998). By linking environmental, social, and economic dimensions of development, the Brundtland Report laid the groundwork for new patterns of global environmental governance and challenged the world to rethink growth in the context of ecological limits and social equity. Several subsequent international conferences and agreements were crucial to the evolution of the concept of sustainable development. The Kyoto Protocol of 1997 set binding targets for reducing greenhouse gas emissions for developed countries. In 2015,

the Paris Agreement was adopted to limit global temperature increases to well below two °C above pre-industrial levels, emphasizing the importance of global climate action and international cooperation.

The Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) have been central to advancing sustainable development. The Millennium Development Goals (MDGs), implemented in 2000, included MDG 7 (Ensure Environmental Sustainability), which focused on environmental protection. In 2015, the MDGs were replaced by the 17 Sustainable Development Goals (SDGs), which emphasize the interconnectedness of climate change mitigation and sustainable development. Among these, SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) are critical for achieving environmental sustainability, focusing on universal access to sustainable energy and urgent climate action, respectively.

Energy efficiency, as defined by Dunlop (2022), is a key component of Sustainable Development Goal 7 (Affordable and Clean Energy), focusing on reducing energy consumption while maintaining the same level of output. This is essential for promoting sustainable energy practices. Alongside energy efficiency, renewable energy sources like solar, wind, and biomass are crucial for achieving SDG 7's target of universal access to reliable and sustainable energy. Owusu & Asumadu-Sarkodie (2016) emphasize that renewable energy not only addresses the depletion of fossil fuels but also mitigates environmental challenges, further advancing the goals of SDG 7 and contributing to broader environmental sustainability. Scholars have identified several critical limitations in the SDGs' approach to sustainability and energy transition. Levenda et al. (2021) emphasize that while renewable energy is essential for decarbonization, these technologies can harm vulnerable communities, highlighting a crucial gap in environmental justice considerations. Hillerbrand (2018) points to a fundamental flaw in SDG7's framework, which oversimplifies sustainability by merely equating it with renewable energy while artificially separating environmental, human, and technological aspects. Building on these concerns, Menton et al. (2020) identify perhaps the most significant contradiction within the SDGs: the inherent conflict between promoting economic growth (SDG8) and achieving environmental sustainability, noting the lack of evidence for decoupling economic growth from environmental degradation.

### 1.1.1 Critical Analysis of the Concept of Sustainable Development

The concept of sustainable development has been widely criticized for its vagueness and lack of a clear, universally accepted definition. Connelly (2007) argues that, despite its central role in policy and planning, sustainable development is subject to ongoing debates due to its contested nature, which results in multiple and often conflicting interpretations. Baker (2006) supports this view, noting that since the publication of *Our Common Future*, various efforts to define the term have led to further ambiguity. However, this ambiguity has also been politically advantageous, enabling diverse stakeholders with competing interests to negotiate common ground. Baker (2006) further explores different approaches to sustainability, presenting a spectrum from weak to strong sustainability. Weak sustainability attempts to integrate environmental measures into existing economic growth models but is criticized for merely displacing global environmental issues rather than resolving them. In contrast, strong sustainability places environmental protection at the core of development, advocating for the preservation of natural capital and the application of the precautionary principle.

## 1.2 Dimensions of Sustainable Development: Economic, Social, and Environmental

### 1.2.1 Economic Sustainability

According to Mensah (2019), economic sustainability implies a system of production that satisfies present consumption levels without compromising future needs. The author argues that natural resources are not infinite, and not all of them can be replenished or are renewable. The growing scale of the economic system has overstretched the natural resource base, leading to a rethink of traditional economic postulations. The author emphasizes that economic sustainability requires decisions to be made in the most equitable and fiscally sound way possible while considering the other aspects of sustainability.



### 1.2.2 Social Sustainability

Mensah (2019) defines social sustainability as a comprehensive concept that encompasses several key elements: equity, empowerment, accessibility, participation, cultural identity, and institutional stability. The author particularly emphasizes the crucial connection between social conditions and environmental degradation, noting that poverty alleviation efforts should be pursued without compromising environmental or economic resources. The goal should be to address poverty within society's existing environmental and economic resource base. Baker (2006), drawing on Ekins (1999), approaches social sustainability from a different angle, defining it as the promotion of a sustainable society. This perspective focuses on two fundamental aspects: first, a society's ability to maintain the necessary means of wealth creation to reproduce itself, and second, the cultivation of a shared sense of social purpose that fosters social integration and cohesion.

### 1.2.3 Environmental Sustainability

According to Mensah (2019), environmental sustainability centers on the natural environment's capacity to remain productive and resilient in supporting human life. This definition emphasizes ecosystem integrity and the carrying capacity of the natural environment. The author argues that environmental sustainability requires natural capital to be used sustainably both as a source of economic inputs and as a sink for waste. Specifically, Mensah stresses that natural resources must not be harvested faster than they can regenerate, and waste must not be emitted beyond the environment's capacity to assimilate it. Baker (2006) approaches environmental sustainability from a more theoretical standpoint, highlighting its inherent ambiguity by presenting two distinct interpretations. The first interpretation focuses on the sustainability of natural environmental processes and systems, such as climate systems or forest ecosystems. The second interpretation emphasizes the need to address environmental issues to ensure the maintenance of social institutions and processes, highlighting the interconnected nature of environmental and social sustainability. Scholars have raised significant criticisms of the traditional three-pillar approach to sustainability (social, economic, and environmental). Kuhlman & Farrington (2010) argue that separating social and economic dimensions is artificial since both fundamentally relate to human well-being, and their

separation hinders effective policy-making. The authors contend that the three-pillar approach obscures the real tension between meeting present needs (well-being) and preserving resources for future generations (sustainability). They propose restructuring the concept into just two dimensions: well-being (combining social and economic aspects) and sustainability (focusing on resource preservation for future generations), arguing this would improve transparency in decision-making and better reflect the actual choices policymakers face. Mebratu (1998) presents a complementary critique, challenging the common view that treats natural, economic, and social systems as independent systems that merely intersect. Instead, the author emphasizes that these systems are inherently interconnected and interdependent, proposing that sustainability should be understood as a complex web of relationships. The author notes that environmental crises often result from neglecting these systemic interconnections, leading to feedback-deficient systems. Together, these scholarly critiques advocate for a more integrated understanding of sustainability that better reflects the complex reality of human-environment relationships.

This chapter has traced the evolution of sustainable development from its early economic foundations through to its contemporary conceptualization as a multi-dimensional framework. The Brundtland Report's definition marked a crucial turning point, establishing sustainable development as a cornerstone of global environmental governance. While the concept's ambiguity has drawn criticism, it has also enabled broad political consensus and policy development across different contexts. The three-pillar approach of economic, social, and environmental sustainability, despite its limitations, has provided a practical framework for policy implementation, though scholars increasingly advocate for a more integrated understanding of these dimensions. Moving forward, the European Union exemplifies how sustainable development principles translate into concrete environmental policies. The next chapter explores EU environmental policy evolution and institutional frameworks, examining implementation challenges and environmental policy adaptation in Central and Eastern European countries.

## Chapter 2 – The EU and Environmental Policies

### 2.1 The evolution of the EU's environmental policies

The European Union (EU) evolved from the European Coal and Steel Community (ECSC), founded in 1951, to foster economic cooperation and prevent conflict in post-war Europe. This was followed by the signing the Treaty of Rome in 1957, which established the European Economic Community (EEC), aiming to create a common market among member states. Over the years, the EU expanded its membership and deepened integration, most notably through the Maastricht Treaty in 1992, formally establishing the EU and introducing a common currency, the euro. The Treaty of Lisbon, adopted in 2009, further reformed the EU's institutional structure, enhancing its decision-making capacity and strengthening its role on the global stage. Today, the EU continues to evolve, balancing the interests of its member states while promoting economic, political, and environmental cooperation. The evolution of the European Union's (EU) environmental policies has been a multifaceted and dynamic process that mirrors the Union's broader political integration. Initially, environmental concerns were secondary to economic goals, but over the last few decades, the EU has become a global leader in environmental governance. Numerous treaties, external influences, and growing public awareness of environmental issues have shaped this transformation. In the early years of European integration, environmental protection was not a priority, as the focus was on economic cooperation and rebuilding after World War II. The Treaty of Rome (1957) did not include environmental provisions, with attention mainly on economic growth and security (Kulovesi & Cremona, 2013). By the 1960s, environmental concerns began to rise in Europe, reflecting global awareness of pollution and resource depletion, influenced by scientific findings and activism (Kulovesi & Cremona, 2013). The EU's environmental policy has grown from a limited focus, initially driven by market integration, into one of its most comprehensive governance areas. This expansion began in the 1960s and 1970s, when, lacking a clear legal basis for environmental action, measures were based on other treaty provisions like Article 100 of the EEC Treaty, which allowed for aligning member states' laws affecting the common market (Orlando, 2013). Initially, these measures aimed to harmonize regulations that could affect market

competition, with environmental protection secondary to economic goals. The EU's formal engagement with environmental policy began at the 1972 Paris Summit, which was influenced by global events like the United Nations Conference on the Human Environment in Stockholm. This summit marked the first time European leaders recognized the need to address environmental degradation, leading to the First Environmental Action Programme (EAP) creation in 1973 (Selin & VanDeveer, 2015). However, as noted by Baker (1997), environmental policy at this stage was still heavily influenced by economic imperatives, and environmental measures were often justified to prevent market distortions. A pivotal moment in the development of EU environmental policy came with the Single European Act (SEA) in 1986. This treaty introduced environmental protection into EU law, giving it a formal legal basis for the first time. The SEA recognized that environmental protection was essential for the success of the internal market (Orlando, 2013). The SEA also introduced qualified majority voting for certain environmental matters, streamlining decision-making and allowing the EU to adopt more proactive environmental measures. This marked a turning point, as environmental protection became increasingly important in the EU's broader governance structure. The 1990s saw a significant expansion of EU environmental legislation. By the end of the decade, the EU had adopted over 200 environmental laws (Orlando, 2013). The growing body of environmental legislation reflected the EU's commitment to embedding environmental concerns into broader policy objectives. The Maastricht Treaty of 1992 was a crucial step in embedding environmental protection within the EU's core objectives. It introduced the concept of sustainable development, recognizing the need to balance economic growth with environmental sustainability.

Despite early resistance to the term "sustainable development" due to its ambiguity, it gradually became central to the EU's environmental policies. Baker (1997) notes that while the inclusion of sustainable development was a significant achievement, early confusion arose from inconsistent terminology. The treaty also extended qualified majority voting, introduced the co-decision procedure, giving the European Parliament more influence in environmental legislation, and laid the foundation for the Fifth Environmental Action Programme to integrate environmental protection into various sectors (Baker, 1997). The 1997 Amsterdam Treaty further reinforced environmental protection as a key constitutional goal, aiming for a strong focus on ensuring a high level of protection and improving the overall quality of the environment, as noted by Kulovesi

& Cremona (2013). The treaty underscored that environmental protection was no longer a secondary or incidental concern, but a fundamental goal of the Union's policy framework. This shift aligned with the growing global recognition of environmental sustainability as an essential component of long-term development. The Treaty of Nice signed in 2001, aimed primarily at reforming the EU's institutions to accommodate the upcoming enlargement, particularly the accession of Central and Eastern European countries. While the Treaty did not introduce significant changes to environmental policies, it reinforced governance mechanisms that enabled more efficient implementation of EU policies, including environmental ones. The Lisbon Treaty, signed in 2007, further solidified the EU's role in environmental governance by formalizing environmental protection as a shared competence between the EU and its member states. This allowed both levels of governance to legislate on environmental issues, making it easier to coordinate actions across the Union. The treaty also reaffirmed sustainable development as a guiding principle of EU policy, embedding environmental sustainability into the heart of EU decision-making (Selin & VanDeveer, 2015). One of the most significant outcomes of the Lisbon Treaty was its emphasis on climate change as a central issue for the EU. The treaty provided the EU with the necessary legal tools to address climate change and work toward global sustainability goals, reinforcing its position as a global leader in environmental governance. Post-Lisbon, the EU has increasingly focused on climate change and broader sustainability goals, positioning itself as a global leader in climate action. The EU committed to implementing the UN's Sustainable Development Goals (SDGs), particularly aligning its policies with environmental and climate-related targets, such as SDG 7 (clean energy) and SDG 13 (climate action). At an international level, the European Union participated in both the Kyoto Protocol (1997) and the Paris Summit (2015), playing a pivotal role as a global actor in climate negotiations.

## 2.2 Process of implementation of environmental laws in the European Union

Implementing environmental laws in the EU involves multiple layers of governance, balancing powers between EU institutions and member states. While the EU sets overarching environmental goals, individual member states are responsible for detailed implementation and enforcement, following the principle of subsidiarity. This means that the EU intervenes only when member states cannot achieve environmental objectives on

their own (Orlando, 2013). Key actors in this process include the European Commission, European Parliament, Council of the European Union, and the Court of Justice of the EU (ECJ). Each plays a vital role in shaping and enforcing regulations. Additionally, a wide range of stakeholders, such as NGOs, regional authorities, and private sector actors, contribute to the implementation of policies. The European Commission drives the EU's environmental agenda, proposing new legislation, monitoring implementation, and ensuring member states' compliance. As Selin & VanDeveer (2015) highlight, the Commission often advocates for more ambitious EU-wide environmental goals over individual state interests. Within the Commission, the Directorate-General for the Environment plays a key role in coordinating and developing these policies. The European Parliament plays a key role in shaping environmental policy, particularly through its legislative power in the co-decision procedure, allowing it to amend and influence Commission proposals. It often advocates for stricter environmental standards, reflecting its proactive stance on sustainability (Selin & VanDeveer, 2015). As an elected body, the Parliament's influence underscores public concern for environmental protection and highlights its importance in balancing power between EU institutions and member states. The Council of the European Union, representing member states, plays a crucial role in EU environmental governance by reviewing, negotiating, and approving legislation through qualified majority voting. This system balances diverse environmental priorities and economic interests across the Union, enabling consensus on objectives despite varying development levels. As noted by Selin & VanDeveer (2015), the Council ensures that environmental legislation is both ambitious and achievable, considering the political and economic realities of member states. The enforcement of environmental legislation is a critical component of the EU's governance model, and this responsibility falls primarily to the Court of Justice of the European Union (ECJ). The ECJ ensures the uniform application of EU environmental laws across all member states, resolving disputes when they arise and clarifying the legal framework within which environmental policies operate. As Orlando (2013) notes, the ECJ has been instrumental in reinforcing the principle of environmental integration within the EU's legal structure. Beyond the formal institutions of the EU, a range of additional actors contribute to the implementation of environmental policies. Baker (1997) emphasizes the importance of involving a broad spectrum of stakeholders in the policy process, reflecting the EU's commitment to shared responsibility.

In sum, the EU's environmental governance framework is characterized by a multilayered structure that balances the powers and responsibilities of its supranational institutions with those of its member states and various stakeholders. The European Commission acts as the initiator and overseer of environmental policies, while the European Parliament and the Council of the European Union shape legislation through democratic and intergovernmental processes. The ECJ ensures that these laws are applied uniformly across the Union, reinforcing the legal foundations of the EU's environmental objectives. Together, these institutions and actors work in concert to advance the EU's environmental agenda, promoting sustainability across a diverse and complex political landscape.

### 2.3 Challenges in the implementation of environmental policies in the European Union

The implementation of environmental policies in the European Union faces persistent challenges, particularly the "implementation gap," where ambitious EU-level policies do not always lead to uniform action across member states. Selin & VanDeveer (2015) highlight that this gap results in uneven environmental outcomes, with political will, administrative capacity, and economic conditions influencing how effectively countries enforce EU directives. Political conflicts between national and EU interests also arise, with stricter environmental standards sometimes seen as threats to economic growth. Member states often resist ambitious policies due to concerns about financial burdens and competitiveness. Baker (1997) notes that tensions between environmental goals and the EU's commitment to economic growth further complicate progress, as reliance on market forces and voluntary measures limits proactive government intervention. This conflict was evident in the Lisbon Strategy (Orlando, 2013), which prioritized economic growth. Additionally, the EU's complex governance structure, which involves multiple levels of decision-making, from the supranational to the national and local, adds another layer of difficulty. This multilayered governance can create inconsistencies in how policies are implemented, as regional and local authorities may have differing priorities and resources. Ensuring coordination and coherence across these various levels of governance is crucial but remains a significant challenge, as highlighted by Selin & VanDeveer (2015). Another major challenge is the divergence in the implementation of environmental policies across member states. Although EU environmental law sets

minimum standards, there is significant variation in how these laws are implemented and enforced. Some member states have more advanced environmental regulations, while others struggle to meet even the minimum requirements due to economic or political constraints. This has led to concerns about the uneven effectiveness of environmental policy across the EU (Orlando, 2013). One of the most significant challenges to the effective implementation of EU environmental policies has been the variation in how these laws are enforced across member states. While the EU sets minimum environmental standards, the responsibility for enforcement lies with individual countries, leading to significant disparities in compliance.

## 2.4 EU's Environmental Policy Beyond Their Borders – Central and Eastern Countries

The European Union (EU) has played a pivotal role in promoting environmental sustainability beyond its borders, particularly in Central and Eastern Europe. This chapter examines how EU environmental policies have influenced these countries, especially following the 2004 enlargement, and highlights the challenges and successes in aligning them with EU standards. It also explores the broader impact of the EU's external environmental governance in the region. Under communist regimes, environmental protection was overlooked in favor of industrial development. The transition to meeting EU standards required a major overhaul of environmental policies and governance (Carmin & Vandever, 2007). As part of the EU accession process, Central and Eastern European (CEE) countries were required to comply with the *acquis communautaire*, which includes strict environmental laws. This involved not only revising outdated legislation but also strengthening institutional capacity to enforce these regulations. The accession of Central and Eastern European countries to the EU has added complexity to environmental governance. These new member states face economic and infrastructural challenges that hinder full compliance with the EU's strict environmental standards. However, enlargement is also viewed as an opportunity to raise environmental standards across Europe, with the EU providing financial and technical assistance to help new member states comply with environmental regulations (Orlando, 2013). Additionally, while the EU pushed for harmonization with its environmental standards, the rapid adoption of these regulations in CEE countries sometimes led to policies that were not



well adapted to local conditions. This mismatch between EU expectations and the realities on the ground created further implementation challenges (Baker & Jehlička, 1998). Furthermore, institutional weaknesses were a major challenge. Many CEE countries struggled with enforcement due to underfunded regulatory bodies and inadequate infrastructure for environmental monitoring. Although new laws were adopted, the gap between policy and practice became evident as many countries lacked the resources to ensure effective implementation. Local governments were often ill-equipped to handle the demands of compliance with EU environmental standards (Carmin & Vandever, 2007). Moreover, the authors highlight the tension between the EU's environmental goals and its broader economic policies. While the EU pushed for high environmental standards, its encouragement of market liberalization and consumer-driven growth in CEE countries sometimes worked against these environmental objectives, leading to increased consumption and resource use (Carmin & Vandever, 2007). This contradiction complicated the environmental reform process, as countries sought to balance economic development with environmental sustainability. The 2004 EU enlargement was a pivotal moment for CEE countries in terms of environmental governance. While progress was made in aligning with EU directives, challenges such as financial limitations, weak institutional capacity, and balancing economic development with environmental sustainability remained. These issues underscored the difficulties of shifting from the environmental neglect of the communist era to the stricter demands of EU membership.

In the next chapter, a more detailed exploration will be conducted of how the cooperation between the European Union and R.Moldova has contributed to environmental sustainability. The analysis will cover the evolution of R.Moldova's environmental policies and the development of EU-R.Moldova relations from 1991 to the present. Additionally, it will examine the various agreements signed between the two parties and how these have facilitated the transposition of EU laws into R.Moldova's legal framework.

### Chapter 3 - R.Moldova and EU Cooperation regarding environmental policies

The Republic of Moldova declared its independence from the Soviet Union in 1991, following the collapse of the USSR. Since gaining independence, R.Moldova has faced political and economic challenges. Over the years, R.Moldova has sought closer ties with Europe while navigating internal political divisions between pro-European and pro-Russian factions. Since 1991, relations between the EU and R.Moldova have steadily grown, with the EU supporting R.Moldova's democratic reforms and economic development

### 3.1 The period of 1991-2000

R.Moldova began addressing the concept of sustainable development in the 1990s, aiming to promote environmental protection and align with more sustainable practices. However, the initial focus was limited, excluding broader social issues and failing to make a significant impact on governmental policies at the time. According to Manić (2002), although the Republic of Moldova took its first steps toward sustainable development in 1995 through the implementation of a National Strategic Program and a National Action Plan for environmental protection (1995-1998), these initiatives proved to be limited. The author argues that these measures failed to adequately address social and human challenges in their entirety, did not have the desired impact on government policies, and ultimately failed to achieve their proposed objectives. Building upon these early lessons, R.Moldova introduced a more comprehensive environmental framework in 1995 with The Concept of Environmental Protection. This policy marked a significant shift, specifically addressing environmental challenges within the country's transition to a market economy. The framework was soon enhanced by the National Environment Strategic Action Programme, which was later refined into the National Environmental Action Plan in 1996, aligning with broader regional initiatives through the Environmental Action Programme for Central and Eastern Europe (Government of Republic of Moldova, 2014). While developing its domestic environmental framework, R.Moldova also began establishing formal ties with the European Union. A pivotal moment in this relationship came with the signing of the Partnership and Cooperation Agreement (PCA) in 1994, which came into effect in 1998. This agreement laid the groundwork for a comprehensive cooperation framework that would shape R.Moldova's environmental and energy policies for years to come. The PCA established multiple layers of cooperation, with Article 1

outlining its fundamental objectives: strengthening political dialogue, promoting trade and investment for sustainable economic growth, and enhancing cooperation across legislative, economic, social, financial, and cultural domains. Particularly significant for R.Moldova's environmental development were Articles 60 and 61, which specifically addressed energy and environmental cooperation. The energy provisions in Article 60 demonstrated a forward-thinking approach to environmental sustainability, emphasizing minimizing ecological damage from energy production and consumption, enhancing energy supply quality and security through sustainable source diversification, developing comprehensive energy policies aligned with European standards, creating favorable conditions for energy trade and investment, promoting energy efficiency and conservation, and modernizing energy infrastructure across various sectors. Complementing these energy provisions, Article 61 established a framework for environmental cooperation focused on implementing effective pollution monitoring systems, establishing comprehensive environmental information systems, promoting sustainable energy production and use, addressing global climate change challenges, enhancing environmental education and public awareness, and harmonizing R.Moldova's environmental legislation with EU standards. (EU-R.Moldova ,1994)

### 3.2 The period of 2000-2010

As R.Moldova approached the new millennium, the country recognized the need for a more integrated approach to sustainable development. This recognition culminated in the drafting of the National Strategy for Sustainable Development in 2000, marking a significant evolution in R. Moldova's environmental policy thinking. According to Stelian Manic (2002), this strategy represented the first time R.Moldova adopted a hierarchical perspective on the natural environment, fundamentally reshaping the relationship between society and environmental concerns. The strategy's significance lay in its comprehensive approach, aiming to enhance population well-being, health, and education, protect and restore natural resources for future generations, boost national competitiveness through sustainable economic growth, and strengthen socio-economic frameworks to meet EU integration criteria. A pivotal moment in R. Moldova's European integration journey came in 2004 with the launch of the European Neighbourhood Policy (ENP). As Crudu et al. (2021) explain, the ENP represented a strategic framework designed to bring neighboring countries closer to the European Union while maintaining

stability in the region. For R.Moldova, this policy offered a structured pathway for European integration, even without immediate membership prospects. Building upon the ENP framework, the "EU - R.Moldova Action Plan" of 2005 marked a concrete step in R.Moldova's European integration process, focusing on aligning R.Moldovan legislation with EU standards, facilitating economic integration through trade and economic rules, promoting sustainable development policies, and integrating environmental protection into economic and social development. In the EU-R.Moldova Action Plan, a dedicated section focused on sustainable development. The plan outlined several key objectives aimed at promoting sustainability within the country. These goals included initiating the implementation of R. Moldova's national long-term strategy for sustainable development, as well as establishing the necessary administrative structures and procedures to ensure effective strategic planning and coordination among relevant stakeholders. Additionally, the Action Plan emphasized the importance of integrating environmental considerations into other key policy areas, such as industry, energy, transport, regional development, and agriculture. In the long term, the primary objective was to fully implement R. Moldova's national strategy for sustainable development (European Union & Republic of Moldova, 2005). Approaching the end of the decade, R.Moldova's European integration efforts gained additional momentum with the launch of the Eastern Partnership (EaP) in 2009. This partnership was launched in 2009 to foster closer political, economic, and societal ties between the EU and Eastern European countries like R.Moldova, without necessarily offering the prospect of EU membership. One of the key objectives of the EaP is to promote political and economic reforms in R.Moldova. These reforms are designed to align the country with EU norms, such as governance, the rule of law, and human rights standards, which are crucial for creating stability and democratic governance in R.Moldova (Morari, 2016). The decade concluded with R. Moldova's accession to the Energy Community in 2010, marking a crucial step in the country's energy sector reform and environmental protection efforts.

### 3.3 The period of 2010-2020

The period from 2010 to 2020 marked a significant evolution in R.Moldova's environmental cooperation with the European Union, building upon the foundation established through the Energy Community membership. The Covenant of Mayors initiative, launched by the European Union in 2008, became particularly relevant for

R.Moldova during this period. In 2012, the initiative's extension to Eastern Partnership countries through the CoM East program provided R.Moldova with new opportunities for environmental cooperation. R.Moldova's participation in the Covenant of Mayors demonstrated its commitment to reducing greenhouse gas emissions, focusing on modernizing energy infrastructure and enhancing efficiency across public buildings, municipal systems, and housing sectors (Gabrielaitiene et al., 2017). Following its Energy Community commitments, R.Moldova developed comprehensive action plans to align with EU energy and climate objectives. The implementation of National Energy Efficiency Action Plans (NEEAPs) demonstrated a systematic approach to energy efficiency improvements. The First NEEAP (2013-2015) established initial targets, in the Second NEEAP (2016-2018) expanded the scope to include residential sectors and public lighting. The Third NEEAP (2019-2021) introduced more sophisticated monitoring and reporting mechanisms. Parallel to these efforts, R.Moldova's commitment to renewable energy development was manifested through its Renewable Energy Action Plans (REAPs). The First REAP (2013-2020) focused particularly on biomass utilization in rural areas and the promotion of solar and wind projects through feed-in tariffs. A watershed moment in R.Moldova's European integration journey came with the signing of the Association Agreement (AA) with the European Union in 2014, which entered into full effect in 2016. As Speranța Olaru (2014) highlights, this agreement represented a comprehensive framework for advancing both economic and political objectives. The Association Agreement (AA) between R.Moldova and the European Union not only serves as a framework for economic and political alignment but also plays a crucial role in advancing R.Moldova's energy security and environmental protection. Through this agreement, R.Moldova seeks to diversify its energy sources, align with the EU's internal energy market, and contribute to global environmental sustainability efforts. In the area of energy cooperation, Article 76 emphasizes the importance of promoting energy efficiency, market integration, and regulatory convergence in line with the Energy Community Treaty, ensuring competitiveness, secure energy access, and environmental sustainability. Furthermore, Article 77 outlines specific objectives, including the promotion of energy efficiency, renewable energies, and the reduction of greenhouse gas emissions through energy-efficient and environmentally sound projects. The exchange of scientific and technical information is also encouraged, with a particular focus on developing energy-efficient technologies (EU & R. Moldova, 2013). On environmental protection, Article 86 highlights the cooperation between the parties to achieve long-term

sustainable development goals, particularly in greening the economy. Article 87 further specifies that cooperation shall aim at preserving and improving the environment, protecting human health, and promoting the sustainable utilization of natural resources. This cooperation includes activities at both regional and international levels, as outlined in Article 88. Moreover, Article 89 calls for the development of an overall environmental strategy, ensuring the implementation of environmental legislation, promoting green economy measures, and fostering eco-innovation (EU & R.Moldova, 2013). By focusing on energy efficiency, renewable energy, and environmental protection, the Association Agreement reflects R.Moldova's efforts to transition to a low-carbon economy while meeting its international climate commitments and aligning with EU standards.

The Environmental Strategy 2014-2023 of R. Moldova emerged within the framework of the Association Agreement (AA) signed in 2014, focusing specifically on addressing the country's environmental issues and aligning with international standards, particularly those of the European Union. This strategy was a key step in R. Moldova's European integration process and aimed to integrate environmental policies across various development sectors. The strategy's primary objective focused on ensuring citizens' rights to a clean, sustainable, and healthy environment while balancing economic growth with social welfare (Government of the Republic of Moldova, 2014).

### 3.4 The recent years 2020-2024

The period from 2020 to 2024 represents a phase of accelerated environmental cooperation between R. Moldova and the European Union. During this period, R.Moldova's commitment to environmental protection and energy efficiency gained renewed momentum through the implementation of its Fourth National Energy Efficiency Action Plan (NEEAP 2022-2024). This plan marked a significant evolution in the country's approach to energy efficiency, placing particular emphasis on the modernization of energy infrastructure and building renovations. Complementing the energy efficiency initiatives, R.Moldova's updated Renewable Energy Action Plan (REAP 2021-2030) demonstrated increased ambition in the transition to renewable energy sources. The granting of EU candidate status to R.Moldova in June 2022, following its March 2022 application, has significantly deepened cooperation between both parties.

In brief, the evolution of R.Moldova-EU cooperation since 1991 reflects a progressive expansion in how environmental and energy matters were addressed in bilateral agreements. From the initial environmental provisions in the Partnership and Cooperation Agreement to the European Neighbourhood Policy and EU-R.Moldova Action Plan, each new framework expanded the scope of environmental cooperation. The Association Agreement of 2014 marked a significant advancement, where environmental sustainability and energy efficiency became central elements of the cooperation framework. This progression demonstrates how environmental, and energy considerations evolved from basic provisions to comprehensive policy frameworks in R. Moldova-EU bilateral agreements.

The next chapter explores Multi-Level Governance (MLG) theory and its application in environmental policymaking, examining interactions between European Union institutions and local authorities in Cantemir. This analysis reveals how environmental policies are implemented across different administrative levels.

## Chapter 4 – The Concept of Multi-Level Governance: From EU to local implementation

### 4.1 Multi-Level Governance Concept

The concept of Multi-Level Governance (MLG) has emerged as a crucial framework for understanding and implementing environmental and energy policies across different governmental tiers. As Castro & Mouro (2011) emphasize, many environmental changes emerge from multilevel governance tools, which commonly involve coordination between global treaties, national laws, and locally implemented actions. This framework has become particularly relevant in addressing complex environmental challenges that require coordinated action across multiple jurisdictions and stakeholders. Multilevel Governance represents a sophisticated model that facilitates both vertical and horizontal interactions within governance structures. As Dobravec et al. (2021) explain, this framework promotes vertical interaction between different levels of government—national, regional, and local—while simultaneously encouraging horizontal cooperation within the same governance level. This dual approach creates a comprehensive network that includes non-governmental organizations, civil society, and interest groups, establishing a non-hierarchical distribution of power that enhances coordination across

various policy domains. The effectiveness of MLG lies in its ability to balance top-down and bottom-up approaches to policy implementation. While national governments and supranational bodies like the European Union provide directives, frameworks, and funding through top-down mechanisms, the bottom-up approach empowers local governments and communities to tailor policies to their specific needs. This dynamic creates an essential feedback loop between governance levels, where local initiatives and energy planning can drive transition efforts while working within broader national frameworks. As noted by Betsill & Bulkeley (2006) and Melica et al. (2018), this integration of state and non-state actors in policy formulation and implementation creates a more effective governance framework.

However, this complex system of governance is not without its challenges. Gupta (2007) highlights that implementing multi-level governance strategies often faces difficulties in coordinating responsibilities among various governance levels, leading to potential gaps in policy implementation. The challenge becomes more pronounced when local environmental concerns and actions are not fully integrated into coherent national strategies, potentially hindering the overall effectiveness of climate policies.

## 4.2 From the European Union to Local Implementation

The European Union is a pivotal supranational actor in this multi-level governance framework, establishing comprehensive policies and providing essential funding for energy efficiency and sustainability projects. The EU sets overarching environmental sustainability goals through strategic initiatives like the Covenant of Mayors (CoM) and various energy and climate action programs, particularly focusing on greenhouse gas emission reduction and renewable energy expansion. These policies are carefully implemented through coordinated efforts with national and local actors, ensuring alignment between regional needs and broader EU climate objectives. At the national level, R.Moldova plays a critical role in translating EU directives and initiatives into practical policy frameworks. The country's alignment with EU sustainability objectives represents a key component in its broader energy transition and environmental protection efforts. Through the adoption of policies aligned with the EU's National Energy Efficiency Action Plan (NEEAP) and Renewable Energy Action Plan, R.Moldova ensures coordinated action across different governance levels. This national-level coordination



allows R.Moldova to adapt EU goals to its specific context while maintaining coherent strategies for energy efficiency and renewable energy deployment.

The Covenant of Mayors serves as a crucial bridge between EU supranational policies and R.Moldova's national and local sustainability initiatives. As Palermo et al. (2020) emphasize, the CoM functions as a transnational initiative that effectively connects European Union objectives with local authority actions. This connection is particularly valuable for smaller communities, providing them with structured frameworks for climate action through Sustainable Energy Action Plans (SEAPs) and methodologies for developing mitigation strategies. The relationship between the CoM and EU demonstrates a system of mutual support, where EU climate and energy targets are effectively translated into local action through CoM signatories. This arrangement enables small communities to align themselves with EU climate objectives while maintaining focus on local needs and capabilities. The CoM's role as mediator extends beyond simple policy translation, providing essential technical support and capacity-building tools while fostering collaboration between local governments and international bodies. As Bertoldi (2018) notes, this mediation role strengthens multilevel governance by enabling local authorities to engage in climate actions while maintaining productive relationships with national and international actors. The resulting transnational network promotes the sharing of successful climate policies among cities with similar characteristics, reinforcing the vital connection between EU directives and local implementation. The evolution of NGOs in environmental governance since the 1990s marks a significant transformation in their role and influence. As Nasiritousi et al. (2016) observe, these organizations have progressed from being mere policy implementers to becoming influential actors in international policy formulation. Their effectiveness stems from their fundamental characteristics - being voluntary, non-profit, and typically apolitical - which allows them to operate independently from government constraints. Modern NGOs are distinguished by their formal governance structures, self-management capabilities, and freedom from political or religious motivations, as noted by Abiddin et al. (2022). This independence enables them to respond swiftly to community needs and innovate in their approaches to environmental challenges. In the R.Moldovan context, the Alliance for Energy Efficiency and Renewables exemplifies this evolution, serving as a critical intermediary between policy frameworks and local implementation. The Alliance works collaboratively with both the R.Moldovan government and local authorities, including Cantemir, to implement

energy efficiency projects and promote renewable energy adoption. By providing technical support, capacity building, and advocacy services, the organization ensures that local projects align with national and EU energy goals while addressing specific community needs. The case of Cantemir demonstrates the practical application of multilevel governance in local sustainability efforts. The municipality's decision to join the Covenant of Mayors on May 28, 2013, represents a significant commitment to supporting EU climate change initiatives and promoting sustainable energy at the local level. This commitment manifested through the implementation of the Sustainable Energy Action Plan (SEAP), which focuses on concrete projects such as modernizing heating systems in public buildings, implementing energy efficiency renovations, and promoting renewable energy sources. Cantemir's local government works at the intersection of various governance levels, collaborating directly with the Covenant of Mayors, the R.Moldovan national government, and local NGOs like the Alliance for Energy Efficiency and Renewables. This positioning allows the local government to ensure that sustainability projects meet community needs while adhering to broader EU and national objectives. The case of Cantemir's participation in multilevel governance structures demonstrates the vital importance of collaboration between supranational, national, local, and non-governmental actors in advancing sustainability objectives. Through this framework, the European Union's overarching climate and energy targets are effectively translated into local action, while R.Moldova's national policies provide the necessary adaptation to local contexts. The Covenant of Mayors serves as an essential mediator in this process, while local NGOs provide the technical expertise and advocacy needed for successful implementation.

The Multi-Level Governance framework in environmental and energy policy illustrates a clear process of policy implementation from EU to local level. European Union environmental directives and climate objectives flow to national frameworks, where R.Moldova adapts and integrates them into national policies. These are then channeled through the Covenant of Mayors, acting as a mediator, to local implementation. At the local level, NGOs like the Alliance for Energy Efficiency and Renewables and local governments such as Cantemir transform these policies into concrete actions through specific initiatives and projects. This process demonstrates how environmental and energy policies cascade from supranational guidelines to local implementation through various governance levels and intermediary organizations.

## Chapter 5 - Research Objectives and Literature Review: A Synthesis

The literature review presented provides the theoretical foundation necessary to address the main research question of how EU-R.Moldova cooperation has contributed to environmental sustainability at the local level, specifically in Cantemir. The comprehensive examination of sustainable development concepts and their evolution establishes the fundamental theoretical framework required to understand environmental sustainability. The subsequent analysis of EU environmental policies and their development offers crucial insights into the institutional and policy mechanisms through which the EU influences environmental practices within the EU and beyond its borders. The examination of EU-R.Moldova cooperation, from general partnership to specific environmental sustainability initiatives, provides the context for understanding how international cooperation shapes local environmental practices. Furthermore, the analysis of multilevel governance demonstrates the complex interactions between various actors - from supranational to local - involved in the implementation of the "Thermal Rehabilitation of Educational Buildings in Cantemir" (CanTREB) project. This comprehensive review aligns with the research goals of assessing EU-R.Moldova cooperation's contribution to local environmental sustainability and understanding the mechanisms of knowledge and technology transfer. The theoretical framework established through this review will be used to respond to the research goal examining how cooperation between the EU and R.Moldova contributed for environmental regulations and policies at a regional level in Cantemir, which in turn resulted in more effective environmental protection measures and sustainable practices. The research will focus particularly on the local level experience and local actors' perspectives of implementing sustainable projects through a case study; an examination of policy documents will complement the analysis for a multilevel perspective. Building upon this theoretical foundation and to address the research goal presented above, the following chapter outlines the methodological approach adopted in this study.

## Chapter 6 - Methodology

This chapter describes the methodology used to investigate the impact of European Union-funded initiatives on environmental sustainability in Cantemir, R.Moldova. The choice of Cantemir as a case study is based on its significant participation in EU-supported sustainability projects, making it an ideal example to analyze the dynamics between supranational policies and local implementation.

### 6.1 Context of Cantemir (District)

Cantemir District, named after Dimitrie Cantemir, was established in 1977 in the Moldavian Soviet Socialist Republic. The district consists of 51 localities organized into 27 administrative units, including 1 city, 15 communes, and 11 villages, covering an area of 807 km<sup>2</sup>. With a total population of 62,447, the district has 5,967 urban residents and 56,480 rural inhabitants. Cantemir City serves as the district's administrative center.

For this research on how EU-R.Moldova cooperation has contributed to environmental sustainability at a local level, Cantemir was selected as a case study due to its significant role as a beneficiary of EU-funded environmental sustainability projects, particularly under the "Covenant of Mayors – Demonstration Projects" program. The town presents a unique case where the intersection of local governance, EU funding, and environmental sustainability efforts can be observed and analyzed, as demonstrated through the CanTREB project implemented in four educational facilities. This choice aligns with Martinson & O'Brien's (2010) perspective that case studies are particularly valuable when addressing "how" questions, which is central to this research's aim of understanding how EU-R.Moldova cooperation materializes in local environmental initiatives. The selection of Cantemir as a case study follows Martinson and O'Brien's (2010) methodological framework. This approach is valuable as it enables a detailed understanding of how complex initiatives develop in real-world contexts. In examining EU-R.Moldova cooperation, this methodology allows researchers to effectively trace how environmental sustainability policies transform into concrete local actions in Cantemir, capturing both administrative processes and practical outcomes. The specific project selected for detailed analysis, the CanTREB project, aims to improve energy efficiency in four educational

facilities in Cantemir: "D. Cantemir" High School, "M. Eminescu" Gymnasium, and Kindergartens no. 1 and no. 2. The project involves the installation of Individual Heating Points (IHPs) with advanced technologies such as pumps, heat exchangers, and sensors that adjust heating based on external temperatures. Additionally, the project includes other significant measures such as the installation of LED lighting, a biomass thermal power plant, photovoltaic systems, and solar collectors. The project was implemented from January 15, 2018, to January 14, 2021, with an EU contribution of €674,240 and a total budget of €842,800.

## 6.2 Justification for the Choice of Qualitative Methodology

The choice of a qualitative methodology for this research is fundamentally driven by the need to explore in-depth the complex dynamics between the European Union's initiatives and their impact on environmental sustainability in a specific local context—Cantemir, R.Moldova. Qualitative research is particularly suited to this study because it allows for a nuanced understanding of how policies and projects, designed at the supra-national and national levels, are interpreted, implemented, and experienced at the local level. By employing qualitative methods, this research seeks to capture the perspectives, experiences, and insights of key stakeholders involved in the EU-funded initiatives.

Interviews, as the primary qualitative tool used in this study, provide direct access to the thoughts and experiences of those who are directly involved in or affected by these projects. The semi-structured nature of the interviews enables a flexible exploration of topics, allowing the respondents to share their insights while also ensuring that the research questions are addressed comprehensively (Adams,2010). This approach is particularly valuable in understanding the subjective experiences and perceived impacts of the projects, which are crucial for evaluating the effectiveness of EU interventions in a specific locality. Additionally, document analysis and the review of various scientific articles complement the interviews by providing a broader, macro-level perspective on the policies and strategies that shape local actions. This dual approach enables a comprehensive examination of both the overarching policy framework and its local implementation, offering a holistic understanding of the research problem.

In summary, the choice of a qualitative methodological strategy, centered on the case study of Cantemir, is driven by the need to understand deeply the complex interplay

between EU environmental policies and their local implementation. The use of interviews and document analysis ensures a comprehensive approach, capturing both the micro-level experiences of stakeholders in Cantemir and the macro-level policy frameworks that guide these experiences.

### 6.3 Study Participants

The study included five participants: two representatives from the Cantemir local government (a political representative and an accountant) who were directly involved in the CanTreb project; an engineer from the NGO Alliance for Energy Efficiency and Renewables who also participated directly in the CanTreb project; an Energy Expert from the Energy Community; and a Technical Expert from the Covenant of Mayors (R.Moldova).

Interviewees	Position	Age range	Gender	E.Qualification
I1	Politician	35-45	M	Bachelor's degree
I2	Engineer	35-40	M	B.degree
I3	Accountant	30-40	F	B.degree
I4	Tecnhical Expert	30-40	M	B.degree
I5	Energy Expert	30-40	M	B.degree

### 6.4 Participant Identification Process

The participant identification process began by establishing contact with the political representative of Cantemir through existing connections. Prior to the interview, the research objectives were clearly communicated, and an interview guide was sent to allow for adequate preparation. At the beginning of the interview, consent was obtained for audio recording to facilitate subsequent data analysis. The interview was conducted in Russian via Zoom and lasted approximately one hour. Following this initial interview, the political representative of Cantemir provided a referral to an engineer from the NGO Alliance for Energy Efficiency and Renewables who had been directly involved in the CanTreb project implementation, particularly in its technical aspects. The same procedure was followed - the interview guide was sent beforehand to ensure thorough preparation. Before proceeding with the interview, permission to record was requested and granted.

The interview was conducted in Russian via Zoom. Through this snowball sampling method, the engineer then facilitated contact with a project accountant from the Cantemir local government who had been involved in the project's implementation. Following the established protocol, the interview guide was shared in advance. As with previous interviews, consent for audio recording was obtained at the start of the session. The interview was conducted in Russian via Zoom, lasting approximately one hour.

After completing these interviews, the research expanded to include organizational perspectives. Through the Covenant of Mayors (CoM) website, contact was established with a R.Moldova representative. After explaining the research objectives, a positive response was received, and an interview was scheduled. While maintaining the core questions from previous interviews, the interview guide was slightly modified to include specific questions about CoM's role in R.Moldovan initiatives. Before beginning the interview, consent for recording was secured. This interview was conducted in English and lasted approximately one hour.

Finally, to gain a broader understanding of the energy context, an interview was conducted with a representative from the Energy Community (R.Moldova). Contact was established through their website, and after receiving a positive response, an interview was scheduled. The interview guide was shared beforehand and included specific questions about the energy context, energy efficiency, and renewable energy in R.Moldova. As with all previous interviews, recording consent was obtained at the outset. The interview was conducted in English and lasted one hour.

## 6.5 Adoption of Qualitative Content Analysis for Analyzing Qualitative Data

In this research, Qualitative Content Analysis (QCA) was adopted as the primary method for analyzing the qualitative data collected through interviews, document, reports, and scientific articles analysis. The decision to use QCA stems from its ability to systematically categorize and interpret the content of textual data, thereby allowing the researcher to explore patterns, themes, and meanings within the data that align with the research objectives. Qualitative data analysis is essential for gaining insights that go beyond mere numbers and statistical inference. As Rogers & Goodrick (2010) emphasize, qualitative data provide insights that surpass simple numerical analysis and statistics, offering a richer, more comprehensive understanding of the topic. This is particularly

relevant in the context of this research, where the focus is not only on whether the EU-funded projects in Cantemir achieved their intended outcomes but also on how the stakeholders involved perceive these outcomes.

### 6.5.1 Data Collection and Analysis

The analysis process began with the transcription of audio-recorded interviews into text format. For interviews conducted in Russian, a translation into English was first necessary before proceeding with transcription. This step ensured consistency across all data for subsequent analysis. Following transcription, the qualitative content analysis method was employed, which is particularly suited for examining interview data as it allows for the systematic reduction of text material while preserving essential content (Mayring, 2000). The process involved a thorough reading of all transcripts to gain familiarity with the content, followed by the establishment of analytical categories based on research questions, interview guide themes, and emerging patterns from the data. These categories served as a framework for systematic coding and analysis. The analysis proceeded through systematic coding of the transcripts, where relevant text segments were identified and organized within the established categories. This enabled a structured cross-comparison of responses across different interviews within each category, facilitating the identification of patterns, similarities, and differences in perspectives. This methodological approach allowed for a comprehensive examination of the interview data while maintaining sensitivity to context and nuance, essential elements in understanding the multifaceted nature of international cooperation and local implementation of environmental initiatives. Through this systematic analysis process, key themes and patterns emerged, contributing to a deeper understanding of how EU-R.Moldova cooperation manifests in local environmental sustainability efforts.

In the following chapter, I will present and analyze the data collected through five in-depth interviews conducted with key stakeholders.

## Chapter 7 - Analysis of Data from Interviews

The analysis aims to compare and contrast the interviewees' responses across six main categories and their respective subcategories: Conceptual Understanding (including perspectives on sustainable development, environmental sustainability, and energy



efficiency), Policy Alignment and Cooperation (examining EU-R.Moldova cooperation and local implementation), Multi-level Governance and Organizational Cooperation (analyzing stakeholder roles and collaboration), Implementation Challenges (addressing both local and national obstacles), Community Response and Educational Engagement (focusing on school involvement and community awareness), and Project Outcomes (evaluating physical, health, economic, and social impacts). The main objective of this chapter is to analyze the interviewees' responses across these six categories to understand their different perspectives and experiences.

## 7.1 Analysis of Category 1 - Conceptual Understanding

### 7.1.1 Understanding of Sustainable Development

The Energy Community Specialist presented a future-oriented understanding, focusing on intergenerational responsibility: *"For me, sustainable development is development with our children and future generations' interests in mind, like development without a carbon footprint or without impacting the climate, nature."* Their understanding emphasized the long-term implications of current development decisions. The Politician demonstrated a comprehensive understanding encompassing multiple dimensions: *"Sustainable development probably depends on many in-depth factors, if we delve into all this including demographic parts, social parts, and economic"*. However, he particularly emphasized the ecological component as most pressing: *"Today, this is called one of the most, so to speak, in-demand topics, probably not only in Europe but also in R.Moldova"*. The NGO Engineer conceptualized sustainable development from a practical, project-based perspective: *"Sustainable development is about ensuring the achievements made as a result of the implemented project do not cease with the end of funding. They should not stop after some time but should continuously gain momentum"*. This understanding focused on the continuity and long-term viability of sustainability initiatives. The Project Administrator viewed sustainable development through an environmental lens, emphasizing its urgency: *"ecological sustainability is the most important and critical area of development right now... Our previous actions have led to the extreme deterioration of the habitat and its ability to self-recover"*. Her understanding

highlighted the critical nature of environmental protection within sustainable development.

#### Brief Analysis

The interviewees' understanding of sustainable development revealed both commonalities and distinct emphases shaped by their professional roles. While all acknowledged its importance, their conceptualizations differed notably. The Energy Community Specialist took a broad, future-oriented view focused on intergenerational responsibility, while the Politician balanced multiple dimensions (demographic, social, economic) with particular emphasis on ecological aspects. The NGO Engineer's project-based understanding contrasted with the Project Administrator's more urgent, environmentally-focused perspective. A notable pattern emerged: those working at policy levels (Energy Community Specialist) tended to emphasize longer-term, broader perspectives, while those working at local implementation levels (Project Administrator, Politician) focused more on immediate, practical aspects. The NGO Engineer bridged these perspectives by focusing on project sustainability. Despite these different emphases, all interviewees demonstrated an understanding of sustainable development that went beyond simple environmental protection to include broader societal implications.

#### 7.1.2 Understanding of Environmental Sustainability

The Technical Expert from CoM provided a temporal perspective, noting progress while acknowledging continued challenges: *"Environmental sustainability is crucial for R.Moldova... the situation has improved compared to 10 or 15 years ago, though it's far from ideal. At least we now have systems and mechanisms supporting environmental sustainability"*. The Project Administrator focused on specific local environmental challenges: *"water resources are the biggest problem at the moment, and our main task is to preserve the city's water resources. In Cantemir, this is the most important problem we want to solve"*. Her understanding was grounded in concrete local environmental issues. The Politician connected environmental sustainability to global challenges while emphasizing local action: *"It's a problem, not only in R.Moldova, but it's also a global problem, and it needs to be understood that its solution depends on every person, on every country... only altogether can feel, can change something"*.

#### Brief Analysis

The interviewees' perspectives on environmental sustainability revealed a multi-layered understanding that varied based on their operational level and role. A clear pattern emerged in how different stakeholders framed environmental challenges and solutions. The Technical Expert from CoM provided a macro-level view, focusing on systemic progress and institutional mechanisms, while the Project Administrator emphasized specific local challenges, particularly water resource management. The Politician uniquely bridged global and local perspectives, emphasizing both worldwide environmental challenges and the importance of local action. Notably, there was a hierarchical complementarity in their understandings: from the Technical Expert's broad systemic view, through the Politician's connecting role, to the Project Administrator's ground-level focus. This suggested that environmental sustainability was well understood at all levels of implementation, with each stakeholder's perspective complementing the others to create a comprehensive approach to environmental challenges.

### 7.1.3 Understanding of Energy Efficiency and Renewable Energies

The Energy Community Specialist emphasized the strategic approach: *"Specifically in R.Moldova, energy efficiency should come first, then renewable energy. You have to reduce consumption as much as possible, then replace fossil fuels with renewable energy"*. This showed a preoccupation with the sequencing of energy initiatives, highlighting that renewable energy alone will not resolve the overconsumption that depletes resources. The Politician demonstrated practical knowledge, particularly about local applications: *"Mainly for our region, for R.Moldova, it is, of course, the sun. It is solar energy, which today is developing by leaps and bounds... In our city, there is already not one, already many people who have calculated that it is more profitable for them to invest in renewable sources"*. The NGO Engineer provided a technical perspective, acknowledging both benefits and challenges: *"Despite all these disputes... solar energy, wind energy should be used, should be used wisely, preferably using other sources as well"*. His understanding included awareness of implementation challenges and the need for diverse energy sources. The Project Administrator showed understanding through concrete examples: *"The simplest are solar collectors, biomass, wind turbines, and geothermal energy. We have implemented almost all of these technologies in Cantemir"*. Her knowledge was based on direct experience with various renewable energy technologies.

This analysis revealed how different stakeholders understood and interpreted these key concepts based on their roles and experiences. While there was general agreement on the importance of these concepts, each interviewee brought unique insights shaped by their professional perspective and practical experience.

### Brief Analysis

The stakeholders' understanding of energy efficiency and renewable energies demonstrated a well-developed knowledge base across different operational levels, though with varying emphases on strategic, practical, and technical aspects. The Energy Community Specialist's strategic understanding of prioritizing efficiency before renewable energy implementation contrasted with yet complemented the Politician's practical focus on local applications and benefits. The NGO Engineer brought technical depth to the discussion, while the Project Administrator demonstrated how theoretical knowledge translated into practical implementation. A key pattern emerged in how different stakeholders approached the energy transition: higher-level officials (Energy Community Specialist) emphasized strategic planning and proper sequencing, mid-level stakeholders (Politician, NGO Engineer) focused on implementation challenges and technical considerations, while local-level implementers (Project Administrator) concentrated on practical applications and tangible results. The analysis revealed a well-integrated understanding among stakeholders at different levels across all three concepts (sustainable development, environmental sustainability, and energy efficiency/renewables). While each brought their perspective shaped by their role and experience, these viewpoints were complementary rather than contradictory.

## 7.2 Analysis of Category 2 - Policy Alignment and Cooperation

### 7.2.1 EU Policy Alignment and Cooperation

The Energy Community Specialist described how this cooperation had evolved: *"The association agreement itself increased the pressure on the government to move forward with the sustainable agenda... the energy sector in the association agreement has many cross-references to the energy community. Because the entire energy agenda is on the energy community's table"*. He emphasized the systematic nature of policy adoption:

*"R.Moldova committed to transpose and implement all European directives with a certain delay". The Technical Expert highlighted the EU's comprehensive support: "The European Union has played a significant role. It has supported the development of our legal framework and provided both technical expertise and financial support for a multitude of projects". The Politician acknowledged how international agreements had facilitated access to resources: "After signing the Paris Agreement... many directions in this area of financing have untied hands, including projects financed by the European Union... today it is one of the main directions that is financed".*

### 7.2.2 National to Local Implementation

The Energy Community Specialist noted the evolution of local implementation: *"Initially, years ago, communication was mainly through the government. In recent years, since 2014 or 2020, the EU started talking directly with local public authorities".* This indicated a shift toward more direct engagement with local authorities. The Politician provided evidence of local policy implementation through a specific example of EU requirements: *"...many technical parameters that were specified in our legislation did not reach the level required by the European Union. Let's say, at least one small example. Suppose, the mineral wool that we used for insulating walls, in our country are used at a maximum of 100 mm. Whereas the European Union insisted as the main investor that it be 150. This led to the fact that we had to request changes in laws"*

#### Brief Analysis

The interviews revealed how EU-R.Moldova cooperation had evolved from high-level policy alignment to direct engagement with local authorities. This cooperation established a comprehensive policy framework and provided crucial resources for environmental initiatives. The evolution toward direct EU engagement with local authorities represented an important development in this cooperation, as evidenced by specific technical requirements in local projects. The example of mineral wool thickness requirements illustrated how EU standards were directly influencing and improving local implementation practices.

## 7.3 Analysis of Category 3: Multi-level Governance and Organizational Cooperation

### 7.3.1 Role of Different Organizations

Covenant of Mayors as Mediator: The Technical Expert described CoM's purpose and scope: *"The Covenant of Mayors (CoM) is an initiative supported by the European Union that began around 2008 or 2009, with R.Moldova joining in 2012. It involves 28 to 30 local authorities developing sustainable action plans, which is an excellent strategic tool"*. The Engineer emphasized CoM's role in knowledge exchange: *"If you take it from the very beginning, then, probably, the most important role was played by the fact that R.Moldova joined this Mayor's Agreement initiative. It is entirely the merit of the European Union. This Mayor's Agreement appeared in R.Moldova. There was an opportunity to learn, exchange experiences, attract new people, attract new knowledge in improving people's lives"*. NGO Alliance Role: The Politician emphasized the NGO's expertise: *"It was implemented in partnership with a non-governmental organization, which today is one of the leaders in R.Moldova in promoting these technologies, in implementing projects to reduce CO2 emissions. Today, this organization helps implement projects in all areas, including for economic agents"*. The Engineer described their organization's comprehensive involvement: *"Our organization, including myself, we wrote the project proposal, that is, there was an idea... then wrote the project proposal. The project proposal won, and then we started implementing it. We implemented, we wrote all the tender documents, so we monitored the implementation stages"*.

Local Government Role: The Politician outlined their team's involvement: *"We created a team for the implementation of this project, which included our specialists at the local level... we learned a lot in the course of implementing this project"*. The Administrator described their coordination process: *"We worked according to the project development plan. We gathered once a month or more often depending on the project's progress. If problems arose, we met immediately to solve them. Monitoring was conducted by our partners and us"*.

### 7.3.2 Organizational Cooperation

The Administrator detailed the partnership structure: *"Besides the EU, our partners included the district council with financial contributions and the Agency for Energy Efficiency of R.Moldova. They provided financial help for the gymnasium because it is the largest building in the project. We also had smaller projects that were part of this big project as financial contributions but also as educational components"*. The Engineer outlined the collaborative framework: *"The main parts are first of all the employees of the Politician's office, we as an organization that administered the implementation of this project, actually, the EU delegation, technical experts who helped solve issues and implement this project"*.

#### Brief Analysis

The interviews revealed a structured multi-level governance system where each organization fulfilled specific roles while maintaining close cooperation. The Covenant of Mayors provided the framework and facilitated knowledge exchange between different municipalities. The NGO Alliance contributed technical expertise and project management capabilities, demonstrated through their involvement from proposal writing to implementation monitoring. The local government ensured coordination and implementation at the municipal level, with regular meetings and monitoring processes. This cooperation showed how different governance levels could work together effectively, each contributing their expertise to achieve environmental sustainability goals.

### 7.4 Analysis of Category 4: Implementation Challenges

#### 7.4.1 Local Project Implementation Challenges

The COVID-19 pandemic and regional conflicts significantly impacted project implementation. The Politician detailed these challenges: *"Metal prices increased by about 2-3 times, 100-200%, wood as well in those ranges. Therefore, especially towards the end of the project implementation, it was difficult to align everything in terms of finances"*. The Administrator confirmed: *"There were difficulties, especially due to the COVID-19 pandemic, but we managed"*. The Engineer described procurement difficulties: *"The second were difficulties with organizing some tenders, as still some*

*materials were not available to us. Other technologies, as we said, were not yet used in R.Moldova, especially in construction works, so some tenders had to be conducted several times".* The Administrator pointed out specific infrastructure challenges: *"... for example, the roofs of buildings. If we were allowed to replace the old roofs, it would improve the results. In some buildings, like kindergarten number one and the school, the old roofs remain and need to be replaced".*

#### 7.4.2 National-Level Challenges Resource and Capacity Constraints

The Energy Community Specialist identified broader systemic challenges: *"R.Moldova depends on resources provided by development partners in grants and similarly, in loans provided by our development partners, such as the EIB or the EBRD".* He also noted ongoing implementation capacity issues: *"Years ago, the capacity of LPAs to absorb resources was a problem. Today, it is still a problem, still quite difficult, a big challenge, but the situation has improved over the years".* The Technical Expert highlighted policy implementation gaps: *"While these policies have been established, many lack detailed implementation plans and sub-legal frameworks. So, while there is considerable progress in developing a robust legal framework, there's a lack of mechanisms to enforce these policies at the local level or penalties for non-compliance".*

##### Brief Analysis

The challenges identified by the interviewees revealed a multi-layered set of obstacles in implementing environmental sustainability projects in R.Moldova. At the local level, challenges ranged from practical issues like material costs and availability to technical compliance with EU standards. The impact of external factors such as the COVID-19 pandemic added another layer of complexity to project implementation. At the national level, the challenges were more systemic, relating to resource constraints, implementation capacity, and the need for better enforcement mechanisms. Despite these challenges, the interviewees' responses suggested that progress was being made, particularly in building local implementation capacity and adapting to EU standards.



## 7.5 Analysis of Category 5: Educational Engagement and Community Response

### 7.5.1 Educational Institution Involvement

The Politician described how technology was used for educational purposes: *"We installed TVs in schools and kindergartens, which can show in real-time the energy production from the solar panel... Today they measure not only the temperature in the class, they can measure the temperature in the walls, the temperature outside"*. This hands-on approach allowed students to directly observe and learn about energy efficiency. The Engineer highlighted the importance of staff engagement: *"Initially, very openly. In the high school, we worked a bit with directors and teachers to explain that the project is not only about thermal insulation of buildings but also about working with human resources"*. He further noted the role of educators as community influencers: *"Even from the point of view of pedagogical preparation, it probably became better because when a teacher, and even more so the director of a school, and this is especially in rural areas, and always these are the most respected people... they already spread the information to everyone else"*. The Project Administrator detailed specific environmental initiatives: *"Currently, our schools pay a lot of attention to ecology and renewable energy sources. For example, the most basic but very important thing is sorting batteries. Every school has a special box for collecting batteries. Throughout the year, schools sign contracts with companies or find projects to help collect electronic waste, which is then sent for recycling"*.

### 7.5.2 Community Awareness and Behavioral Change Educational Impact on Families

The Engineer described an interesting ripple effect: *"We even had a very interesting experience when children came to their parents and started telling them something new. And then it was very pleasant when parents, having learned some news from their children, came, clarified, and indeed began to participate differently in the life of their city"*. The Project Administrator described regular community engagement: *"Every year, on June 1, we celebrate International Children's Day along with Energy Day, where we*

*hold various competitions and information sessions. Children and parents actively participate. We also celebrate Water Day, Earth Day, and other environmental holidays".* The Politician emphasized the importance of tangible results: *"People see this firsthand, it is reality, it is a very big plus, because theory theories, books, books, but still when people come and see it with their own eyes, when children come from school kindergarten and tell about how warm it is".* The Project Administrator noted broader behavioral changes: *"The behavior of Cantemir's citizens is becoming more conscious in terms of sustainable development. Thanks to the projects we are implementing, people are starting to understand the importance of ecological sustainability".*

### Brief Analysis

The interviews revealed some investment in community engagement, with schools serving as primary catalysts for environmental awareness and behavioral change. The project successfully integrated educational components with practical demonstrations, using real-time monitoring systems and environmental activities to engage students directly. Teachers and school directors played crucial roles as community influencers, while students became effective agents of change within their families. The regular organization of environmental events and practical activities helped maintain community interest and participation. Most significantly, the project appeared to have triggered a broader transformation in community awareness and behavior regarding environmental sustainability, extending beyond the immediate scope of the school projects to influence wider community practices.

## 7.6 Analysis of Category 6: Project Outcomes

### 7.6.1 Physical Improvements

The politician emphasized the significant improvement in building comfort: *"Today all the heat that is heated, just does not go through the wall, not through the windows. This gave the opportunity that today we raised the contest in all classes. Not only where there was sun, where it was warm, today in the whole school".* The Engineer detailed the technical improvements and their impacts: *"The quality of the microclimate inside the premises improved significantly... now the temperature has become more uniform..."*

*Children get sick less. In kindergartens, a ventilation system has been installed, which also promotes air exchange and children's activity has increased".*

### 7.6.2 Health and Well-being Benefits

The Engineer highlighted specific health benefits: *"That is, there were very big, so to speak, indirect effects. First of all, it is, of course, affecting the health of children".* The improvement in building conditions had led to tangible health outcomes, particularly for students. The Politician emphasized the overall quality of life improvement: *"First of all, I can say that the effect, which is not measured neither in money nor in kilograms nor in tons, is probably the comfort that we created in our schools and kindergartens".*

### 7.6.3 Economic Benefits Cost Reduction:

The Politician provided concrete evidence of financial benefits: *"Last season, 22-23 year, even with the account that gas rose two, three, even four times in some periods, we paid for heating where we use biomass, no more than in previous periods".* The Project Administrator described innovative resource use: *"Before, when we cleaned parks in autumn and spring, we didn't have a place to dispose of branches and leaves. Now we use all these small branches and leaves for heating schools and kindergartens".*

### 7.6.4 Project Recognition and Replication:

The Project Administrator highlighted the project's broader influence: *"The success of our project is not only in the thermal insulation of buildings but also in the fact that it continues to be relevant and attracts the attention of journalists and specialists from other countries and cities".* The Engineer confirmed the project's replication potential: *"Of course, I'm telling you, at least once or twice a year they were taken to other examples, and we have a similar project in at least three localities".*

#### Brief Analysis

The project outcomes revealed multiple layers of benefits extending beyond the initial goals of energy efficiency. The immediate physical improvements in building comfort and climate control had led to significant health benefits for students and staff. Economic

benefits were evident through reduced heating costs, rising energy prices, and innovative use of local resources. The success and comprehensive nature of these outcomes made the project a model for replication in other communities, demonstrating the potential for local sustainability initiatives to have a wider regional impact.

Building upon this analysis, the following chapter will discuss these findings about the literature review to address the hypothesis established at the beginning of this dissertation.

## Chapter 8 - Discussion

This chapter discusses the findings from the analysis of interviews with key stakeholders involved in environmental sustainability initiatives in Cantemir, examining them within the broader theoretical framework of sustainable development and EU-R.Moldova cooperation. The analysis seeks to answer the research question: "How has the cooperation between the European Union (EU) and R.Moldova contributed to environmental sustainability at the local level in R.Moldova at a local level - Case-Study in Cantemir?" The findings are particularly significant in understanding how EU-R.Moldova cooperation translates into practical implementation at the local level, and in examining how this cooperation has led to improved environmental regulations and sustainable practices from the perspective of local actors involved in the implementation of sustainability projects.

### 8.1 Multi-level Governance in Environmental Sustainability

The findings reveal a complex but effective multi-level governance structure in implementing environmental sustainability initiatives in Cantemir. This structure aligns with Dobravec et al.'s (2021) conceptualization of multi-level governance as involving strategic engagement and collaboration across various governance tiers. The case of Cantemir demonstrates how different governance levels - from EU to local authorities - can work collectively toward shared environmental goals. The Covenant of Mayors (CoM) emerges as a crucial mediator in this governance structure, supporting Palermo et al.'s (2020) assertion about CoM's role in bridging the gap between EU objectives and local implementation. The findings show how CoM has invested in effectively translating EU environmental policies into actionable frameworks for smaller communities like

Cantemir, providing both technical support and capacity-building tools. The role of NGOs, particularly the Alliance for Energy Efficiency and Renewables, supports Nasiritousi et al.(2016) observations about NGOs' evolution from policy implementers to influential actors in environmental governance. The findings demonstrate how the involvement of NGOs can facilitate interactions across different scales, enhancing adaptive capacity within communities facing environmental challenges.

## 8.2 Evolution of Environmental Policy Implementation

The implementation of environmental policies in Cantemir reflects the broader evolution of EU environmental policy and its influence on R.Moldova's environmental governance. As discussed in the literature review, the EU's environmental policy has grown from a limited focus driven by market integration to become one of its most comprehensive governance areas (Orlando, 2013). This evolution is evident in Cantemir's case, where according to the local stakeholders the EU environmental standards have been successfully integrated into local project implementation. However, the research also reveals the ongoing challenges of policy adaptation in R.Moldova, reflecting Baker and Jehlička's (1998) observations about the complexities faced by Central and Eastern European countries in harmonizing with EU environmental standards. While the EU has pushed for higher environmental standards, the rapid adoption of these regulations sometimes creates implementation challenges at the local level, particularly regarding technical capacity and resource allocation.

## 8.3 Community Engagement and Sustainable Development

The strategies mentioned in the interviews regarding community engagement in Cantemir strongly align with the Brundtland Report's vision of sustainable development. The report's emphasis on meeting present needs without compromising future generations' abilities is reflected in the educational and awareness initiatives implemented in Cantemir's schools. This approach demonstrates how local initiatives can embody the global principles of sustainable development outlined in the literature. The role of educational institutions in promoting environmental awareness and sustainable practices in Cantemir supports Mensah's (2019) definition of social sustainability, which emphasizes equity, empowerment, accessibility, and participation. The findings suggests

schools have become catalysts for broader community engagement in environmental sustainability, creating a ripple effect that extends beyond the immediate school community. The observed behavioral changes in the Cantemir community, particularly regarding energy efficiency, reflect Baker's (2006) emphasis on the importance of social integration and cohesion in promoting sustainable development. The community's increasing environmental awareness and active participation in sustainability initiatives is an example of how local actions can contribute to broader environmental goals.

#### 8.4 Project Implementation: Achievements and Limitations

The implementation of the CanTREB thermal rehabilitation project in Cantemir demonstrates specific achievements and challenges of EU-supported initiatives in transition economies. The successful thermal renovation of educational buildings in Cantemir aligns with Selin & VanDeveer's (2015) findings about EU environmental governance effectiveness when supported by appropriate technical and financial resources. However, the findings also reveal implementation challenges that echo the literature's discussion of the "implementation gap" in EU environmental policy, where ambitious EU-level policies don't always translate smoothly into local action. The resource constraints identified in the research reflect the broader challenges faced by transition economies, as discussed by Carmin & Vandever (2004). While EU support has been crucial in overcoming some of these constraints, the findings suggest that sustainable long-term implementation requires continued capacity building and resource development at the local level.

#### 8.5 Implications for EU-R.Moldova Environmental Cooperation

The research findings have significant implications for the future of EU-R.Moldova environmental cooperation. They demonstrate how the theoretical framework of multi-level governance can be effectively operationalized in practice, while also highlighting areas requiring continued attention and support. The success of the Cantemir project supports Kulovesi and Cremona's (2013) assertion about the importance of embedding environmental protection within broader cooperation frameworks. The findings suggest that effective environmental cooperation requires sustained technical support, as demonstrated by the research showing the continuing need for technical assistance and

knowledge transfer, supporting Baker's (1997) emphasis on capacity building in environmental governance. The successful implementation in Cantemir illustrates how EU technical support can effectively bridge knowledge gaps and enhance local implementation capacity. Flexible implementation frameworks are also necessary, with the findings suggesting that successful implementation requires adaptation of EU standards to local conditions while maintaining high environmental standards - aligning with Orlando's (2013) discussion of the need for balanced approaches in implementing EU environmental policies in partner countries. Finally, strong local engagement is crucial, with the research supporting Gupta's (2007) emphasis on the importance of local government and community involvement in environmental initiatives. The Cantemir case demonstrates how local ownership and engagement can enhance the effectiveness and sustainability of environmental projects.

Looking forward, the findings suggest that future EU-R.Moldova environmental cooperation should:

- Continue strengthening local implementation capacity
- Maintain flexibility in adapting EU standards to local conditions
- Further, develop mechanisms for knowledge transfer and technical support
- Enhance support for community engagement and awareness-building

## 8.6 Critical Synthesis

The Cantemir case study demonstrates that EU-R.Moldova cooperation achieved specific local environmental sustainability outcomes through the CanTREB project (Thermal Rehabilitation of Educational Buildings) when properly supported and implemented. The research on this thermal rehabilitation initiative revealed concrete pathways to enhance environmental regulations and practices at the local level, while highlighting capacity-building needs in the area. The analysis of the CanTREB project provides detailed insights into EU-R.Moldova cooperation manifestations in this locality. The research demonstrates how EU environmental policies were specifically implemented through the thermal rehabilitation program, showing a shift from top-down approaches to a more collaborative form of cooperation in the territory. This local experience aligns with multi-level governance frameworks while offering tangible examples from Cantemir's

transition context. The findings emphasize how the Covenant of Mayors and local Cantemir NGOs served as key intermediaries, effectively translating EU policies into actionable steps within the locality. The research shows how the CanTREB initiative catalyzed community changes, with documented shifts in local behavior and awareness indicating that these specific thermal rehabilitation efforts extended beyond their technical goals. While the findings confirm the effectiveness of EU-R.Moldova cooperation in Cantemir's environmental progress through the CanTREB project, they also reveal particular challenges faced by the municipality, suggesting that successful implementation here required continuous support and local adaptation. Finally, the research illustrates how this cooperation and thermal rehabilitation project contributed to Cantemir's capacity development. These findings from the thermal renovation program suggest that successful environmental cooperation in this context depended on understanding local implementation conditions, maintained support, engaged intermediary organizations, active community participation, and flexible adaptation of EU standards to territorial realities.

## 8.7 Limitations and Future Research

This study faced several methodological limitations that should be acknowledged. The primary limitation was the relatively small sample size, with only five participants interviewed for the research. While these participants provided valuable insights, including additional experts and stakeholders could have offered a broader perspective on EU-R.Moldova environmental cooperation in Cantemir. Additionally, as this research focused on a single case study of Cantemir, which is considered a success story, the findings may not be generalizable to other regions or municipalities in R.Moldova. The research was also constrained by the limited availability of academic literature specifically addressing the Moldovan context, particularly regarding environmental sustainability initiatives in Cantemir, which made it challenging to build a comprehensive theoretical foundation for the local context. However, this limitation also highlights the significance of this dissertation, as it contributes to filling this gap in the literature by providing one of the few detailed academic analyses of environmental sustainability initiatives in the Moldovan context, particularly at the local level in Cantemir.



Future research could address these limitations and expand our understanding of environmental sustainability initiatives in R.Moldova in several ways. A particularly promising direction would be to investigate the perspectives of direct beneficiaries of the CanTREB project by conducting interviews with students and teachers from the schools and kindergartens involved in the thermal rehabilitation program. Such research could provide valuable insights into the project's impact on daily educational activities, comfort levels, and environmental awareness among the younger generation. Additionally, future studies could employ a comparative approach, examining multiple municipalities to identify patterns in the successful implementation of EU-supported environmental initiatives across different contexts in R.Moldova. This would help establish a more comprehensive understanding of the factors contributing to successful environmental cooperation between the EU and R.Moldova at the local level.

## 8.8 Brief Conclusion

This dissertation examined how EU-R.Moldova cooperation has contributed to environmental sustainability at the local level through the analysis of the perspectives of local actors involved in the implementation of the CanTREB project in Cantemir. The research findings indicate that effective multilevel governance structures are crucial for successful implementation of environmental initiatives through international cooperation. The analysis of interviews with key stakeholders revealed that the project's success was based on three main factors: clear alignment of objectives across different governance levels, effective knowledge and technology transfer mechanisms, and strong local engagement. While highlighting the processes through which EU-R.Moldova cooperation has led to improved environmental regulations and practices at the regional level, the study also identified key challenges, including the need for sustained capacity building and long-term financial sustainability. These insights contribute to both theoretical understanding and practical knowledge of how international cooperation influences local environmental practices in transition countries, offering valuable recommendations for future environmental cooperation initiatives.

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## Annex 1 – Interview Guide

1. What does sustainable development mean to you?
2. What is your opinion on environmental sustainability? Do you have specific concerns about it:
  - In your work?
  - In your daily life?
3. What has been the role of government laws and policies in promoting environmental sustainability? Do you know any examples?
4. Can you recall any situation in the country/this city/at your work where environmental conditions improved due to new laws or government intervention? Do you think investments in this area should be increased?
5. What comes to mind when you think about renewable energy?
6. In your view, how do renewable energy sources contribute to environmental sustainability? Do you think investments in this area should be increased?
7. What policies and initiatives of the Cantemir local government are aimed at encouraging sustainable practices among residents, businesses, and other public institutions?
8. How can individuals and communities contribute to environmental sustainability through their daily actions? Can you give examples from your community/workplace?
9. Do you think education and awareness are necessary to improve society's adoption of environmentally safe practices? Can you explain why?

Project-Specific Questions:

10. What do you know about this project? How would you describe it?
11. Why was it implemented, who was involved, and who funded it?
12. What do you think makes the project successful?
13. Are there aspects that you feel could be better?
14. What is your opinion on the cooperation agreement between the EU and Moldova on transitioning to renewable energy sources?
  - Do you think having this type of agreement is important?
  - Do you think this project was a relevant contribution for Moldova? And Cantemir?
  - In what dimensions - environmental, economic?
15. What main resources and support were provided by the EU for implementing this project?
16. What specific roles did the various organizations and structures play in implementing this project?
  - Were you personally involved in any part of the project?
  - What were the main reactions of your organization to this project?
17. How did different organizations collaborate to achieve the project's goals?
  - At what stage was your organization involved?
  - How was your organization involved in decision-making?
18. How did Cantemir's local government participate in:
  - Planning
  - Implementing
  - Monitoring the renewable energy transition in schools?
  - What was the impact of this participation on the project's success?

19. Were there any difficulties related to project implementation? Can you provide examples?
20. How does the transition to renewable energy in schools align with the city's environmental sustainability goals?
21. What specific measures were taken to ensure the implementation contributed to reducing carbon emissions?
22. What benefits has the local community noticed from the transition to renewable energy?
  - Economic benefits?
  - Environmental benefits?
23. Besides energy savings, what other benefits were noticed in Cantemir schools after implementation?
  - Changes in air quality?
  - Increased environmental awareness?
24. What plans exist to ensure the project's long-term sustainability?
25. How do participating schools manage and maintain the renewable energy systems?
26. Has this project served as a model for other communities in Moldova?
27. What next steps are planned for environmental and energy sustainability in Cantemir?
28. What recommendations would you give to other:
  - Schools
  - Cities
  - Countries wanting to implement similar renewable energy initiatives?
29. What other efforts is the local government making to promote environmental sustainability?

30. How does the local government engage citizens in promoting sustainable practices?
31. What future plans does Cantemir's local government have to strengthen environmental sustainability initiatives?
32. Would you like to add any additional information or comments on these topics?