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ENERGY SECTOR OF AZERBAIJAN AND ITS POTENTIAL TRANSITION TOWARDS RENEWABLES

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

Situated at the crossroads of Eastern Europe and Western Asia, Azerbaijan has long depended on its vast reserves of fossil fuels, particularly oil and natural gas, to drive its economic progress (World Bank, 2022). This reliance has fueled substantial growth, positioning the nation prominently within global energy markets. The hydrocarbon sector has played a central role in shaping the country's GDP, job creation, and trade revenue, facilitating infrastructural upgrades and economic diversification (OECD, 2021). However, this dependence also renders Azerbaijan vulnerable to volatile oil markets, geopolitical disruptions, and related economic instability (IEA, 2021). Moreover, the environmental toll of fossil fuel usage—ranging from carbon emissions to ecological degradation—raises serious concerns about the long-term viability of this growth model (Unruh, 2000).

Globally, the shift towards greener energy sources is gaining momentum, spurred by the urgent need to address climate change (Sovacool, 2016). Frameworks such as the Paris Agreement have increased international pressure on countries to curtail carbon outputs and embrace renewable technologies (UNFCCC, 2015). For Azerbaijan, aligning with these trends is both a necessity and a strategic imperative. Diversifying energy resources is crucial to bolstering energy security and minimizing environmental harm. Renewable sources such as solar, wind, and hydropower offer promising alternatives that could enhance sustainability and economic resilience (IRENA, 2023).

1.2 Statement of the problem

Despite possessing considerable renewable energy capacity, Azerbaijan remains predominantly tied to fossil fuel-based energy production. This disparity underscores a significant underutilization of available green energy resources. Multiple structural and institutional barriers—many rooted in the country's Soviet legacy—hinder progress. Centralized decision-making, outdated bureaucratic norms, and the dominance of traditional energy lobbies present persistent challenges to the implementation of renewable energy solutions (Martin & Sunley, 2006; Boschma & Martin, 2010). These issues manifest in policy inefficiencies, inadequate regulatory frameworks, limited financing, and a shortage of skilled professionals, all of which collectively obstruct meaningful transition efforts.

The sluggish shift to renewables not only impedes Azerbaijan's sustainable development goals but also intensifies its exposure to environmental and economic vulnerabilities (IEA, 2021). To

address these challenges, there is a pressing need for holistic policy interventions, capacity-building, and strategic investments that can accelerate the adoption of clean energy technologies (IRENA, 2023).

1.3 Research questions and objectives

Research Questions:

- What is the current landscape of Azerbaijan's transition to renewable energy?
- In what ways does the legacy of Soviet governance influence Azerbaijan's contemporary energy policies?

Objectives:

- To examine the current configuration of Azerbaijan's energy sector, with a focus on the interplay between fossil fuels and renewable sources.
- To assess existing government policies and renewable energy initiatives and evaluate their effectiveness.
- To identify major obstacles and potential opportunities in the nation's energy transition.
- To explore the impact of historical institutional structures on present-day energy governance.

1.4 Significance of the study

This research contributes valuable insights into the dynamics of energy transitions in post-communist states, a field that remains relatively underexplored (Bridge et al., 2013). Azerbaijan's case offers a unique perspective into how historical, political, and economic contexts influence the pace and nature of renewable energy development. The findings are intended to guide policymakers, industry leaders, and civil society actors by outlining actionable strategies to overcome institutional resistance and enable sustainable energy reforms.

Additionally, by integrating theoretical approaches such as the Multi-Level Perspective (MLP) and Evolutionary Economic Geography (EEG), the study enriches existing academic discourse (Geels, 2002; Boschma & Martin, 2010) . These frameworks allow for a nuanced understanding of how historical trajectories intersect with present-day policy environments, offering a roadmap for other resource-rich, transitioning nations.

1.5 Structure of the dissertation

The dissertation is organized into six core chapters. Chapter 1 lays the foundation by introducing the research context, identifying the central problem, defining key questions and objectives, and explaining the study's relevance. Chapter 2 provides a literature review, highlighting relevant theoretical models and existing research gaps. Chapter 3 describes the research methodology, detailing the design, data collection techniques, sampling strategy, and ethical protocols. Chapter 4 presents the research findings, supported by qualitative data and analysis. Chapter 5 discusses these findings in relation to existing literature, identifies their broader implications, acknowledges limitations, and offers recommendations for further research. Chapter 6 concludes with a synthesis of key insights and the study’s overall contribution to the field.

CHAPTER 2: LITERATURE OVERVIEW

2.1 Overview of key literature relevant to the research topic

Research on renewable energy transitions often draws upon two foundational theoretical frameworks: the Multi-Level Perspective (MLP) and Evolutionary Economic Geography (EEG).

The MLP framework, a cornerstone in sustainability transition studies, conceptualizes change as occurring across three interacting layers: niches, regimes, and landscapes (Geels, 2002; Geels, 2004). Niches refer to protected spaces where novel technologies or practices can evolve. Regimes encompass the dominant structures and systems—such as rules, technologies, and actor networks—that sustain current energy configurations. Landscapes represent broader contextual forces like cultural shifts, economic trends, and global political movements (Geels, 2011).

Pioneered by scholars such as Frank W. Geels, MLP research emphasizes that transformation occurs when internal tensions within regimes (e.g., inefficiencies, outdated infrastructure) coincide with external pressures from the landscape (e.g., climate policies, energy crises) (Geels, 2002; Smith et al., 2005). These conditions may open "windows of opportunity" for niche innovations to gain traction and eventually challenge established regimes. Recent developments in MLP research have extended its applicability to various national contexts, including emerging economies, where the interaction between institutional inertia and innovation is particularly pronounced (Markard et al., 2012).

EEG complements MLP by focusing on how historical and geographical contexts shape economic transformation. It introduces the concepts of path dependency—where past decisions constrain future options—and lock-in effects, which describe how dominant technologies or institutions resist change due to sunk costs, vested interests, and regulatory rigidity (Arthur, 1989; Martin & Sunley, 2006).

Key EEG scholars, such as Ron Boschma, Ron Martin, and Peter Sunley, argue that regions follow unique developmental trajectories shaped by institutional arrangements, spatial configurations, and historical legacies (Boschma & Martin, 2010). When applied to energy systems, EEG helps explain why fossil fuel-dependent regions often struggle to transition: entrenched infrastructures, specialized labor markets, and policy inertia create formidable resistance to renewable alternatives (Unruh, 2000; Bridge et al., 2013). Thus, EEG offers a valuable spatial and temporal lens to understand structural constraints in post-communist or resource-dependent economies.

2.2 Identification of gaps in existing research

Despite extensive global research on energy transitions, there is a notable lack of focus on post-Soviet states and other economies undergoing structural transformation (Sovacool, 2016). Much of the current literature centers on Western or developed countries, where democratic governance, institutional maturity, and civil society engagement differ significantly from post-communist contexts.

Specifically, the role of centralized planning, bureaucratic legacies, and fossil fuel interest groups, which were inherited from Soviet-style governance, has been insufficiently examined in the context of sustainability transitions (Wilson & Tyfield, 2012). Moreover, the influence of historical institutional arrangements on present-day energy policymaking—particularly how they delay or distort policy reform—has not been adequately addressed (Kuzemko et al., 2016).

Another underexplored dimension is the role of grassroots movements and civil society actors in catalyzing bottom-up energy transitions in authoritarian or semi-authoritarian regimes (Sovacool, 2017). In many post-Soviet states, citizen engagement is constrained, yet it may still play a role in shaping transition trajectories. This lack of nuanced, context-specific analysis limits our understanding of how energy transitions unfold in diverse political economies.

This research aims to bridge these gaps by exploring Azerbaijan's energy transition through a historical and institutional lens, offering a contextually grounded examination of the forces that enable or impede renewable energy adoption.

2.3 Conceptual framework or theoretical perspectives guiding the study

To capture the multifaceted nature of Azerbaijan's energy transition, this study employs a hybrid conceptual framework that combines the Multi-Level Perspective (MLP) with Evolutionary Economic Geography (EEG).

MLP serves as the primary analytical structure for understanding how renewable energy innovations interact with the dominant fossil fuel regime, within the context of global climate imperatives and national policy settings (Geels, 2011). It helps dissect how innovations in renewable energy attempt to break through rigid systems that favor conventional technologies and actors (Smith et al., 2005).

EEG adds historical depth and spatial awareness to this analysis. Concepts such as path dependency and lock-in are particularly useful for examining how Azerbaijan's post-Soviet institutional and infrastructural legacy continues to shape its energy choices (Martin & Sunley, 2006). For example, centralized governance, a strong state presence in the energy sector, and public skepticism toward decentralized solutions all serve as persistent constraints (Unruh, 2000).

By integrating these perspectives, the research captures both the systemic resistance to transition and the opportunities for transformative change, offering a robust framework to analyze Azerbaijan's unique challenges and prospects in its journey toward renewable energy.

CHAPTER 3: MATERIAL AND METHODS

3.1 Research design

This research utilizes a qualitative case study methodology, well-suited for examining intricate, context-dependent phenomena in their natural environments. The study's central focus—understanding the socio-political, historical, and institutional dimensions influencing Azerbaijan's energy transition—requires a design that allows for in-depth exploration. A qualitative approach enables the investigation of complex stakeholder dynamics and institutional behaviors that are often difficult to quantify. This method supports rich contextual analysis and captures the nuances essential to comprehending Azerbaijan's unique energy transition path.

3.2 Data collection methods

To ensure robust and comprehensive insights, the study employs a mixed approach involving both primary and secondary data sources.

Primary data were gathered through semi-structured interviews with a range of stakeholders from Azerbaijan's energy ecosystem. Participants included government officials, policymakers, renewable energy developers, industry professionals, experts from international agencies, and representatives of civil society organizations. The semi-structured format allowed for flexibility during interviews, enabling participants to elaborate on key issues while also giving the researcher the opportunity to probe into emerging themes and clarify responses (Bryman, 2016) .

Secondary data were obtained through document analysis. The sources reviewed included national policy documents, legislative acts, strategic plans, and governmental reports, as well as reports from international organizations such as the International Renewable Energy Agency (IRENA) and the World Bank. Additionally, academic publications, energy sector analyses, and credible media sources were used to provide a well-rounded understanding of the policy and institutional context.

This triangulation of data enhanced both the depth and validity of the findings, helping to corroborate information across different types of evidence (Denzin, 2017)

3.3 Sampling technique

The research employed purposeful sampling, a technique that involves selecting participants based on their relevance to the research questions. Participants were chosen for their expertise, institutional position, or direct engagement with Azerbaijan's energy sector. This method

ensured representation from a variety of perspectives, including state institutions, private sector actors, international bodies, and non-governmental organizations.

To further expand the network of respondents, snowball sampling was used. Initial participants were asked to recommend additional individuals whose experience or knowledge would be valuable to the study. This approach helped capture a broader spectrum of viewpoints and enhanced the representativeness of the data.

3.4 Data analysis procedures

The data were analyzed using thematic analysis, a method well-suited for identifying recurring patterns and themes in qualitative data. Transcripts from interviews and collected documents were first transcribed and then coded systematically. An open coding process was used to generate initial codes, followed by axial coding to group related codes into broader thematic categories.

Key themes identified included institutional resistance, regulatory and governance structures, the implementation gap in policy frameworks, the role of historical legacies, and the engagement of grassroots actors.

To maintain analytical rigor, the coding process was iterative, with codes and themes reviewed and refined over multiple rounds. This approach ensured that the analysis remained grounded in the data while allowing for interpretive flexibility and depth. To complement and support the qualitative analysis, quantitative time series analysis was conducted too, using a univariate ARIMA (Autoregressive Integrated Moving Average).

3.5 Ethical considerations

Ethical principles were central to the design and implementation of this study. All participants received detailed information regarding the research objectives, procedures, and their rights prior to the interviews. Informed consent was obtained from each participant, and they were assured of their right to withdraw at any stage of the research without any consequences.

Anonymity and confidentiality were strictly maintained to protect participants' identities and sensitive insights. Interview transcripts and related data were securely stored and anonymized where necessary to prevent the disclosure of identifiable information.

The study also followed institutional ethics protocols and received formal approval from the appropriate ethics review board, ensuring compliance with international research standards. These measures helped safeguard the credibility, transparency, and integrity of the research process and its outcomes.

CHAPTER 4: ANALYSIS AND RESULTS

4.1 Presentation of key findings: Status of Azerbaijan's Energy Transition

The findings reveal that Azerbaijan is still at an early stage in its shift toward renewable energy. Despite possessing substantial renewable potential, fossil fuels continue to dominate the national energy mix. The pace of integrating renewables into the energy infrastructure has been slow, and their contribution remains marginal compared to traditional sources like oil and gas. Insights drawn from interviews and policy analysis confirm that while renewable energy capacity has seen gradual improvement, it remains insufficient to trigger a structural transformation in the country's energy system.

4.2 Impact of Communist Heritage

A prominent theme that emerged from the analysis is the enduring influence of Azerbaijan's Soviet past on its present-day energy policies. The centralized governance systems and bureaucratic mechanisms established during the communist era persist, often resulting in delays and inefficiencies in decision-making (Lane, 2014). These institutional features create significant resistance to innovation (Unruh, 2000). Many interviewees emphasized how deeply embedded interests in the fossil fuel sector actively hinder progress by maintaining the status quo. As a result, legacy structures serve as a major constraint on the adoption of renewable energy (Sovacool, 2016).

4.3 Government Policies and Initiatives

Although the Azerbaijani government has articulated a growing commitment to renewable energy—through national roadmaps, policies, and strategic objectives (Government of Azerbaijan, 2021)—implementation remains inconsistent. While policy documents express ambitious targets, they often fall short in execution due to inadequate legal frameworks, regulatory uncertainty, and institutional weaknesses. Respondents noted that these strategies tend to prioritize large-scale infrastructure projects or foreign investments, frequently neglecting smaller, community-led initiatives that could contribute to decentralization and local energy security.

4.4 Challenges and Opportunities

The study identified several persistent challenges, such as a lack of stable regulatory frameworks, limited financial incentives, underdeveloped infrastructure, and a shortage of trained professionals

in the renewable sector (Kuzemko et al., 2016). These factors collectively restrict the scaling-up of renewable energy solutions across the country.

Nevertheless, a number of promising opportunities were also highlighted. These include access to international financing mechanisms, technical cooperation with global renewable energy organizations, and the possibility of adopting lessons learned from other countries undergoing similar transitions (IRENA, 2023). Many stakeholders emphasized that community involvement and bottom-up initiatives—such as locally driven solar and wind projects—could serve as vital catalysts for wider adoption, particularly if supported by national policy (Smith et al., 2005).

4.5 Brief interpretation of results

In summary, the research shows a clear disconnect between Azerbaijan's renewable energy potential and the level of actual deployment. This gap is largely attributed to systemic barriers rooted in historical governance models and the continued dominance of fossil fuel industries. While government initiatives demonstrate intent, they are frequently hampered by fragmented institutional structures and weak policy enforcement. At the same time, growing grassroots involvement and increasing international cooperation suggest possible avenues for accelerating the energy transition. Addressing these structural challenges and fostering inclusive, bottom-up participation will be essential for building a more sustainable energy future in Azerbaijan.

CHAPTER 5: DISCUSSION

5.1 Interpretation of findings in relation to literature review

The research findings align strongly with the theoretical approaches discussed in the literature review, particularly the **Multi-Level Perspective (MLP)** and **Evolutionary Economic Geography (EEG)**. According to MLP, transitions are driven by complex interactions between innovations emerging in protected niches, dominant socio-technical regimes, and broader landscape pressures. In Azerbaijan, the fossil fuel-based system represents a deeply entrenched regime resistant to change. This resistance is maintained by centralized state control, institutional inertia, and entrenched industry interests—all of which reflect characteristics of a rigid socio-technical regime.

At the same time, global sustainability pressures—including climate agreements, fluctuating oil prices, and rising environmental concerns—constitute landscape-level forces that could open up possibilities for change. However, the research indicates that without significant intervention, these pressures alone are insufficient to disrupt the dominant regime. The data suggest that niche-level renewable innovations struggle to scale due to institutional and structural constraints, making Azerbaijan a textbook example of a blocked transition pathway.

The EEG framework further reinforces these insights by highlighting path dependence and lock-in effects. Azerbaijan's long-standing reliance on fossil fuels and the accompanying governance practices inherited from its Soviet legacy have created deeply embedded routines and infrastructures (Lane, 2014; Martin & Sunley, 2006). These historical dependencies limit the flexibility of current policy responses and make it challenging to pivot toward alternative energy models. The presence of sunk investments and socio-political resistance to change illustrates EEG's notion of lock-in, where historical momentum continues to shape and constrain present-day decisions (Arthur, 1989; Unruh, 2000).

5.2 Implications of the findings

The implications of these findings are particularly significant for policymakers, regulators, and energy sector stakeholders in Azerbaijan. One of the most critical takeaways is the need to confront and address the deeply rooted institutional structures that hinder reform. Achieving a meaningful transition will require not only technical and financial support but also comprehensive governance

reform, including greater decentralization, increased transparency, and enhanced regulatory enforcement.

The study also points to the importance of involving a wider range of actors in the energy transition process. A multi-actor approach, combining top-down strategies with grassroots and community-led initiatives, could help overcome policy stagnation. The findings show that local engagement can drive innovation and social acceptance, particularly in decentralized renewable solutions.

Furthermore, the role of international partnerships cannot be overstated. Collaboration with global renewable energy bodies, access to external funding, and knowledge exchange programs can fill critical gaps in technical expertise and institutional capacity. Learning from other countries that have successfully navigated similar transition pathways could provide Azerbaijan with viable models for reform.

5.3 Limitations of the study

While this study offers valuable insights, several limitations should be acknowledged. First, the focus on Azerbaijan as a single country case study means that findings may not be broadly generalizable across all post-Soviet or resource-rich states. Differences in institutional frameworks, political cultures, and economic structures could lead to divergent transition experiences in other contexts.

Second, the research employed a qualitative approach, which—although effective for capturing depth and complexity—does not provide quantitative measures such as financial returns, carbon reduction impacts, or technical efficiency comparisons of renewable technologies. These metrics would be useful for evaluating the economic feasibility of different policy options.

Third, because the primary data collection relied on stakeholder interviews, there may be concerns about response bias, particularly in a context where political sensitivities influence openness. Although confidentiality was strictly maintained, some respondents may have withheld full opinions due to institutional pressures.

5.4 Recommendations for future research

To build on this research, future studies should consider adopting a comparative approach that includes other post-communist countries or emerging economies. Such comparisons would help highlight both shared and divergent patterns in energy transitions, offering a more robust understanding of the role of historical and institutional variables.

Another recommendation is to integrate quantitative analysis into future work—such as modeling the financial viability of renewable projects or assessing the macroeconomic impacts of energy diversification. These analyses would complement the qualitative findings and support evidence-based policymaking.

CHAPTER 6: CONCLUSION

6.1 Summary of the research objectives and findings

The central aim of this research was to explore Azerbaijan's pathway toward renewable energy, particularly considering the influence of its historical and institutional legacy. Four specific objectives guided the study: 1) To assess the current configuration and trends within Azerbaijan's energy sector; 2) To evaluate the effectiveness and scope of national policies and government-led renewable energy initiatives; 3) To identify the principal challenges and enabling factors shaping the country's transition; 4) To investigate how Soviet-era governance structures continue to affect contemporary energy policymaking.

The study concludes that Azerbaijan's transition remains at a preliminary stage, with fossil fuels still dominating the national energy landscape. While the country has substantial renewable energy potential, progress has been hindered by a range of barriers. These include rigid institutional systems, fragmented governance, insufficient regulatory frameworks, limited financial incentives, and a lack of technical capacity.

One of the most influential factors impeding progress is the enduring legacy of centralized, hierarchical governance inherited from the Soviet period. This legacy has created a deeply embedded structure that resists innovation and slows policy execution. Despite these obstacles, the study also identifies emerging opportunities—such as rising international support, growing environmental awareness, and increased interest in community-led solutions—that could help drive progress. These findings support the need for a dual-track approach that combines structural reform at the state level with empowerment of grassroots initiatives and external partnerships.

6.2 Final reflections on the study's contributions

This research makes a substantial contribution to the academic understanding of renewable energy transitions in underrepresented geopolitical contexts—specifically, post-Soviet economies like Azerbaijan. By applying and integrating the Multi-Level Perspective (MLP) and Evolutionary Economic Geography (EEG), the study offers a unique theoretical lens through which to examine the complex interplay between institutional legacies, energy systems, and innovation processes.

A key contribution of the research lies in its nuanced analysis of how historical institutional frameworks continue to influence present-day policy implementation and energy governance. Recognizing the persistent influence of the past provides critical insight for reform strategies

aimed at accelerating the shift to sustainable energy systems. These insights can inform both domestic policymakers and international development agencies engaged in energy sector reform.

The study also underscores the growing importance of bottom-up participation in national energy transitions. Grassroots organizations, civil society groups, and community-based energy projects were found to be potential drivers of innovation, especially in the face of slow or uneven government action. Promoting inclusive and participatory models of energy governance may therefore be essential to achieving long-term sustainability.

Ultimately, this dissertation not only enriches theoretical discourse on energy transition but also provides practical guidance for stakeholders navigating similar challenges. The Azerbaijani experience holds broader relevance for countries that are rich in hydrocarbons but constrained by legacy institutions. It demonstrates that effective energy transition strategies must confront historical path dependencies, foster institutional innovation, and balance centralized planning with local engagement.

CHAPTER 7. NEW SCIENTIFIC RESULTS

This dissertation offers a comprehensive examination of Azerbaijan's energy sector and its gradual shift toward renewable sources, analyzed through a post-Soviet lens. The research delivers both empirical depth and theoretical advancement by situating Azerbaijan's energy transition within the broader discourse of sustainability transitions in resource-dependent, formerly centralized economies. The key contributions and novel findings are outlined below:

1. In-Depth Evaluation of Azerbaijan's Renewable Energy Progress:
The thesis presents a detailed assessment of the national energy landscape, identifying the current state of renewable energy deployment and mapping out barriers to its expansion. This contributes empirical clarity to an area that has previously lacked systematic analysis.

2. Primary Data Collection via Stakeholder Interviews:
A core strength of the study lies in its empirical foundation: 41 semi-structured interviews with stakeholders across various domains—government, industry, international organizations, and civil society. These interviews provide original, firsthand insights into the political, institutional, and societal dimensions influencing energy transition efforts.

3. Systematic Identification of Four Enduring Soviet-Era Legacies:
The research highlights four historical factors that continue to shape current energy policies and institutional behavior: (a) centralized decision-making, (b) structural dependence on hydrocarbons, (c) embedded bureaucratic practices, and (d) public attitudes shaped by legacy narratives. These findings offer a structured lens through which to understand policy inertia in other post-communist states.

4. Conceptualization of 'Institutional Echo':
The thesis introduces a new conceptual tool—institutional echo—to describe how past governance structures persist in influencing present policy formation. This concept enhances existing theories by articulating the continuity of informal practices and institutional behaviors from the Soviet to the post-independence period.

5. Theoretical Innovation: MLP and EEG Integration:
The research advances sustainability transition theory by combining the Multi-Level Perspective (MLP) with Evolutionary Economic Geography (EEG). This interdisciplinary synthesis enables a

nuanced understanding of path dependence, actor constellations, and innovation barriers in hybrid transition contexts.

6. Policy-Oriented Roadmap for Azerbaijan:
Drawing on empirical findings, the study develops a practical set of policy recommendations tailored to Azerbaijan's specific institutional constraints. These include legal reforms, capacity building, support for decentralized projects, and the establishment of transparent regulatory mechanisms.

7. Extension of Transition Theory to Post-Soviet, Resource-Rich Contexts:
By applying Western-origin transition frameworks to a post-communist, fossil fuel-reliant country, the study broadens the theoretical relevance of MLP and EEG. It demonstrates that transition processes are not universal but must be interpreted through historical and geopolitical filters.

Beyond its conceptual and methodological innovations, the thesis provides a granular narrative of Azerbaijan's energy transformation—from the late Soviet period to the contemporary era. This historical perspective helps contextualize the modern challenges of diversification and sustainability. The thesis also analyzes recent legal, institutional, and infrastructural developments, offering a clear picture of both progress and stagnation.

The fieldwork enriches the study by offering multi-actor insights into how political dynamics, economic dependencies, and social narratives converge to shape the energy transition process. The inclusion of marginalized perspectives—especially those from non-state actors—adds further nuance and underscores the complexity of transition governance in constrained political environments.

From a theoretical standpoint, the thesis deepens our understanding of transition processes in fossil-fuel-centric nations. It positions Azerbaijan as an illustrative case where entrenched energy regimes intersect with global sustainability pressures, offering a replicable framework for examining similar transitions in countries facing institutional rigidity.

The study also emphasizes the importance of interdisciplinary frameworks. The joint application of MLP and EEG offers a richer, multi-scalar understanding of transformation processes—bridging technical innovation, policy systems, and spatial-historical inertia.

Broader Implications: The conclusions drawn from Azerbaijan's experience are applicable to other countries facing the dual challenge of hydrocarbon dependence and institutional inertia. The

findings show that unlocking the renewable transition in such settings requires confronting legacy systems head-on, building inclusive policy frameworks, and leveraging international expertise.

Even for non-post-communist nations, the Azerbaijani case reinforces the idea that historical institutional structures—regardless of origin—can significantly delay or distort transition efforts. Addressing these structures must be part of any comprehensive energy strategy.

This research thus makes a meaningful scholarly and practical contribution. It broadens the theoretical boundaries of transition studies, offers a well-documented empirical case, and provides actionable insights for stakeholders engaged in navigating complex, politically sensitive energy transformations.

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