

Green Governance Agenda in Türkiye and Pakistan: A Comparative Analysis of Frameworks, Policies, and Environmental Outcomes for Sustainable Development

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ABSTRACT

This study compares and contrasts critically the structures, political and effectiveness of green governance in Türkiye and Pakistan, two nations that deal with significant environmental challenges. Both countries have established legal and institutional structures designed to promote sustainable development and environmental protection; however, the implementation and effectiveness of these structures vary considerably. In Türkiye, a more robust regulatory structure evolved, driven by EU adhesion aspirations and increased public awareness on environmental issues. The main policies emphasize renewable energy development, waste management and biodiversity conservation, but the application of regulations remains inconsistent, making it difficult for overall effectiveness. On the other hand, Pakistan's green governance structure, while progressive in paper, faces substantial challenges due to political instability, lack of resources and poor institutional capacity. Environmental policies, such as the law of climate change and national environmental policy, reflect an intention to address pressing issues such as pollution and deforestation; however, effective implementation is difficult by competing development priorities. This comparative analysis reveals that while both countries recognize the importance of green governance, the disparity in the effectiveness of their structures directly affects environmental results. Türkiye usually displays better compliance and healthier environmental indicators, while Pakistan struggles with governance challenges, leading to adverse environmental consequences. Finally, this assessment emphasizes the need for both nations to improve institutional abilities, promote public participation and strengthen implementation mechanisms to achieve sustainable environmental governance.

Key Words: Green Governance; Climate Change; Türkiye; Sustainable Development; Environmental Protection; Environmental Policies; Pakistan

INTRODUCTION

The urgent challenges of environmental degradation and climate change require solid governance paintings to promote sustainable development. This document aims to analyze and compare the paintings and the green governance policies of Türkiye and Pakistan, two countries that have been around with significant environmental problems but demonstrate various approaches to the implementation and results of politics. Both nations, although geographically and culturally distinct, face similar ecological challenges that require

effective governance structures to mitigate the adverse effects on ecosystems and human health. Green governance, as defined by Dokuzoğlu and Güzel (2024), involves the integration of environmental policies within largest governance paintings, facilitating sustainable economic development while guaranteeing environmental protection.

In Türkiye, the government has made great strides to improve its environmental policies. Recent reforms have focused on improving the use of renewable energy and on the reduction of dependence on fossil fuels, essential to face the country's energy crisis and environmental vulnerability (UDDIN et al., 2021). At the same time, Türkiye's law on the evaluation of the environmental impact (via) has strengthened decision - making processes regarding projects with potential environmental consequences, thus improving transparency and public participation (Adebayo et al., 2023). However, it is interesting to note that the application and effectiveness of these policies often depend on political stability and institutional ability, which sometimes faced challenges (Habeşoğlu et al., 2022).

On the contrary, Pakistan approach to green governance was characterized by its strategic emphasis on facing energy poverty while promoting environmental sustainability. The national policy on the climate change of the country, promulgated in 2012, acts as a global framework aimed at mitigating climatic impacts through the adaptation and resilience strategies. Qura-Fol-Folh (2023) observed that, despite progressive policies, Pakistan struggles with implementation due to bureaucratic inefficiencies and resources limitations. In addition, the concept of green growth, which includes economic growth together with environmental protection, has gained traction in recent years (Jabeen & Khan, 2022). However, the operation of this approach was framed of challenges, in particular in the alignment of economic incentives and environmental results (Usman et al., 2023).

Evaluate the successes and challenges of green governance in these two nations requires a comparative lens that highlights both facets. In Türkiye, the remarkable results include progress in green technology and landscape initiatives that advanced local biodiversity (Gao et al., 2023). The interaction of public-private partnerships was decisive in promoting green investments, producing positive environmental results (Odugbesan et al., 2021). However, the persistence of pollution by the industrial sector, combined with a growing urban population, has challenges in progress in maintaining the environmental quality (Habeşoğlu et al., 2022).

In the same way, Pakistan has made progress in promoting renewable energy, in particular sun and wind, as highlighted by the growing investments in these sectors (Razzaq et al., 2023). The government's commitment to the Paris agreement and the objectives of reducing associated emissions reflects a commitment to international climatic objectives, although the implementation remains hindered by institutional fragmentation (Bhutta et al., 2022). Furthermore, while urban areas witness the implementation of public transport and construction initiatives, the rural regions do not often have access to clean energy resources, underlining the socio-economic disparities within the nation (Shahid et al., 2022).

This comparative analysis also explores potential improvements in green governance for both nations, exploiting intuitions from their respective framework. As highlighted by Ozturk et al. (2021), the misunderstanding of economic growth from environmental degradation is fundamental for sustainable development; therefore, both countries must improve the coherence of policies between environmental and economic objectives. For Türkiye, the improvement of responsibility in environmental governance could significantly strengthen trust and public participation, further guiding the adhesion to environmental rules (Rehman et al., 2021).

On the other hand, to use a more integrated approach that aligns sectoral policies towards a common environmental objective could improve the green governance paradigm of Pakistan. The emphasis should be placed on the construction of capacity construction initiatives that strengthen institutional paintings, thus allowing local authorities to effectively perform environmental policies (Ullah et al., 2021).

In summary, the analysis of the paintings and green government policies in Türkiye and Pakistan reveals significant successes, persistent challenges and roads for potential improvements that could lead to improved environmental results. Despite their distinct contexts, both nations show a ability to learn from mutual experiences, with the potential to encourage sustainable development through more rigorous governance structures and cooperative policy paintings. Understanding these dynamics is crucial to improve global efforts for sustainable development, in particular in the regions that face acute environmental crises. This comparative study will contribute to formulation and implementation of the best informed policies that favor long-term ecological and socio-economic sustainability in Türkiye and Pakistan (Konuk et al., 2015; Asif et al., 2018; Rehman & Prokop, 2023). The theory of environmental governance will be employed.

Literature Review

In recent years, Türkiye and Pakistan have made significant progress for the formulation of structures and policies designed to improve environmental sustainability and promote sustainable development. Analyzing the unique contexts of each country reveals important contrasts, as well as critical interactions, among their approaches to green governance. This literature review aims to compare and contrast the structures of green governance, policies and environmental results of Türkiye and Pakistan, assessing its effectiveness in combating environmental challenges.

Türkiye positioned himself as an active player in search of environmental sustainability. The country's policies are widely influenced by the European Union's environmental regulations (EU), which led to a significant adaptation process in their governance structures (Öztürk & Durak, 2024). A crucial aspect of Türkiye's green governance is its alignment with sustainable development goals (SDGs), which guide various environmental initiatives (Ahmadi & Balkaya, 2025). While Güncöğdu and Aytekin (2022) discuss, the country's commitment to sustainable governance is reflected in their legal structures and institutional projects that promote an integrated approach to environmental policy.

On the other hand, Pakistan's Environmental Governance was marked by challenges in the implementation and coordination of policies. Despite establishing various policies intended for sustainable development, such as climate change policy, there is a significant gap between formulation and policy application (AHMED et al., 2020). The country's environmental results, as illustrated in the studies of Jabeen and Khan (2022), indicate that economic growth usually has the cost of ecological degradation. The challenges of governance derived from political instability and limited resources exacerbate the effectiveness of these policies in the treatment of pressing environmental issues.

By examining capital flow and its implications for environmental quality, both countries demonstrate varying degrees of success in the integration of financial mechanisms with sustainable development strategies. Destok et al. (2023) argue that while Türkiye has been able to take advantage of capital flows to implement more rigorous environmental policies, Pakistan faces significant challenges to effectively leverage financial resources for environmental improvement. The distinction in governance structures is evident, as Türkiye has developed mechanisms that increase the rigidity of politics in environmental issues, contrasting abruptly with the slowness of Pakistan in this aspect (Odugesan et al., 2021).

The role of digital innovation in increasing environmental governance also highlights the differences between the two countries. Pakistan's "Digital Pakistan" initiative aims to promote environmental sustainability through technological advances (NIZAM et al., 2020). This initiative is indicative of an evolutionary understanding of sustainable governance that seeks to incorporate digital tools and information technology into environmental management. However, the actual results have not yet shown a comprehensive impact, as reflected by environmental degradation in progress in many regions (Ali et al., 2022). Academic discourse increasingly focused on understanding the intersection between democratic governance, environmental policies and their effectiveness. For example, Dokuzoğlu and Güzel (2024) conducted a cross-country analysis that emphasizes how democratic practices increase the effectiveness of

environmental governance. Türkiye demonstrates a more robust institutional structure that is conducive to broader civic involvement in environmental decision-making compared to Pakistan, where democratic deficits prevent civic participation and the effectiveness of politics (Shehzad et al., 2023). Green growth is another critical area of comparison. The concept emphasizes the balance of economic growth with environmental protection, usually analyzed through the lens of the Kuznets environmental curve (EKC). Research by Usman et al. (2023) illustrates that Türkiye has made a remarkable progress in promoting green growth models that make up environmental considerations in economic policies. Pakistan, however, struggles to transition from traditional growth models to more sustainable practices, mainly due to inadequate governance and institutional structures that cannot prioritize environmental concerns (Bhutta et al., 2022).

Education for Sustainable Development (ESD) plays a key role in the formation of perceptions and public engagement in relation to environmental issues. Bourn et al. (2023) found that Türkiye educational initiatives effectively improve students' understanding of ESD, promoting a culture of sustainability that is less prevalent in Pakistan, where sustainability-related educational reforms were not so aggressively persecuted. This disparity in educational focus leads to differences in public involvement and prioritization in broader processes of governance.

In addition, the nexus between natural resources, remittances and environmental sustainability was explored in both countries. Ali et al. (2022) discover that in Pakistan, their referral dependence often impairs efforts to invest in sustainable resource management, leading to a continuous cycle of degradation. On the other hand, Türkiye's governance structures have capitalized their natural resources more effectively, implementing national strategies that promote economic growth and environmental health (UDDIN et al., 2021).

In the context of energy governance, both nations face unique challenges as they move to renewable energy sources. The potential for the development of green energy in Pakistan is significant; however, governance structures are usually behind the technological advances and political support needed to allow quick transitions (Khan et al., 2023). On the other hand, Türkiye has made considerable investments in green energy initiatives, establishing a more conducive regulatory environment for the advancement of clean technologies and renewable energy solutions (Degirmenci et al., 2024).

In recent years, Pakistan has sought to strengthen its commitment to sustainable development by the implementation of various executives and policies of green governance. These initiatives are essential to meet the pressing environmental challenges with which the country faces, such as air and water pollution, deforestation and loss of biodiversity. Examination of the effectiveness of these frameworks requires an analysis of their environmental results and implications for sustainable development, supported by case studies and statistical evidence.

The concept of green governance in Pakistan is evolving, as Shahzad and Humza (2024) pointed out, which discuss both perspectives and challenges that accompany its implementation. Their study highlights the need for a global approach to integrate environmental sustainability into governance structures. Likewise, Xu et al. (2023) Proposing a new political framework aimed at improving the achievement of sustainable development objectives (SDGs) in Pakistan. Their results suggest that the integration of the principles of sustainable development within governance can produce significant environmental advantages while promoting economic growth. Lin and Ullah (2023) develop more on the link between green growth, innovation and environmental sustainability. Their research indicates that promoting an innovation-oriented economy can improve Pakistan's quest for greener practices, especially in energy consumption. This is aligned with the results of Jabeen and Khan (2022), which evaluate the existence of green growth models in Pakistan and underline the importance of aligning economic growth on social inclusion and environmental protection. Public-private partnerships are notably highlighted as a critical path to promote

green governance. Ning et al. (2023) Analyze the role of these collaborations in the realization of SDGs, indicating that cooperative companies between the public and private sectors can considerably improve the efficiency of policies in environmental management. This correlation is essential for the implementation of robust executives who encourage sustainable practices in various industries. Nizam et al. in 2020 present the "Digital Pakistan" initiative as a case study on the use of information technologies to achieve environmental sustainability (Nizam et al., 2020).

Their results emphasize how digital solutions can rationalize governance processes and amplify the effectiveness of green policies. Likewise, Ullah et al. (2021) demonstrate the impact of electronic governance on the fight against questions such as COVID-19 and the promotion of sustainable development, revealing the potential of technology in improving the efficiency of governance. Shah et al. (2022) contribute to discourse by developing a green governance framework adapted to the petroleum and gas industry, stressing the importance of sectoral approaches to achieve environmental objectives. This strategy focused on the sector is still corroborated by Javeed et al. (2022), which followed the progress of the SDGs in Pakistan, highlighting the need for strategic executives which are aimed at the unique challenges of the different sectors.

Finally, Khan et al. (2019) offer a broader perspective on the importance of adopting a green ideology within emerging economies, stressing the importance of aligning environmental policy on sustainable development objectives. Their ideas resonate in various case studies in Pakistan, illustrating both the progress made and the challenges that persist. In conclusion, the effectiveness of executives and green governance policies in Pakistan depends on a multifaceted approach that incorporates innovation, public-private partnerships and sectoral strategies. The integration of environmental sustainability within governance structures offers Pakistan an opportunity to deal with its environmental degradation while paving the way for sustainable development. Continuous research and statistical evaluation of the results of these executives will be crucial to guide future policies and improvements.

Türkiye's journey towards sustainable development through green governance structures exhibits complex interaction between environmental policies and institutional effectiveness. The adaptation of European Union's Environmental Policies (EU) in the context of Türkiye has become a focal point, showing the alignment and divergence in practices. Öztürk and Durak (2024) elucidate this adaptation process, indicating that, despite certain challenges, Turkey's commitment to European standards influenced his positive environmental governance.

The research shows that sustainable governance substantially affects environmental results. Gündoğdu and Aytekin (2022) argue that effective governance leads to enhanced sustainable development, integrating environmental considerations with policy formulation. This perspective is vital, as Turkey faces unique environmental challenges due to its geography and industrialization. The role of governance in these results is further supported by the results of Dokuzoğlu and Güzel (2024), who conducted a cross-country analysis highlighting the importance of sustainable governance indicators in determining politics effectiveness. This research identifies democracy and good governance as critical components that facilitate the success of environmental policy.

In addition, Turkey's alignment with sustainable development objectives (SDGs) illustrates its role in the advancement of environmental sustainability. Ahmadi and Balkaya (2025) provide a comprehensive review of Turkey's commitment to these goals, emphasizing how they shape national strategy and highlight areas that need improvements. However, the authors warn that although progress has been implemented by these structures can usually be inconsistent due to several sociopolitical factors. The interaction between governance and economic factors is also essential to understand the prospects of green growth in Turkey. Naimoğlu, Şahin and Özbek (2025) exploit how corruption, commercial opening and innovation boost green growth and, finally, sustainable development in Türkiye. Their findings emphasize the need to address bad

governance as a barrier to effective environmental governance, suggesting that without facing these underlying issues, the prospects for sustainable progress remain limited.

Uslu, Hancioğlu and Demir (2015) further investigate the applicability of Green Entrepreneurship in Türkiye, recognizing -as a driving potential for sustainable development. By promoting green business practices, Turkey can take advantage of economic growth and address environmental concerns, establishing a precedent for future initiatives. The influence of European green agreement, as explored by Taneja and Özen (2023), is another significant aspect, particularly in terms of its impact on Turkey's agricultural carbon emissions and the need for strategies to mitigate environmental degradation. In addition, the role of financial regulations in promoting a sustainable green economy is highlighted in the research of Odugbesan et al. (2021). They argue that solid financial regulations are crucial to reducing pollution and promoting sustainable companies. This relationship emphasizes the interdependence of the financial, environmental and governance dimensions in the advancement of sustainability in Türkiye.

As Turkey sails its way towards sustainability, structural changes and renewable energy consumption emerge as critical areas for additional exploration. Adebayo et al. (2023) demonstrate the asymmetrical effects of these factors on carbon emissions, asking for a more integrated approach to achieving the structure of the SDGs. Finally, the evidence presented by Sohag, Taşkın and Malik (2019) about the relationship between green economic growth, energy and militarization suggests that comprehensive strategies are needed to reconcile environmental and safety policies in Turkey.

In conclusion, while Turkey's green governance structures have shown potential in promoting sustainable development, they remain significant challenges, including bad governance, implementation of inconsistent policies and the need for reform of financial regulation. However, each challenge presents an opportunity, suggesting that a multifaceted approach, integrating economic incentives and robust governance, could pave the way for sustainable growth in the future. Literature emphasizes both the complexity of Türkiye's environmental governance and its need for continuous evolution in alignment with global sustainability objectives.

Both countries also face the need to prioritize climate adaptation and resilience strategies in the light of climate change threats. Ahmed et al. (2020) emphasize the importance of integrating climate resilience into national development agendas, which is particularly relevant to Pakistan, as it experiences the adverse effects of climate change disproportionately. On the other hand, Türkiye's adaptive strategies began to graduate through comprehensive policies aimed at proactive climate governance (Ozturk, Majeed and Khan, 2021).

In conclusion, while Türkiye and Pakistan share common environmental challenges and objectives related to sustainable development, the effectiveness of their green governance structures and policies diverges significantly. Türkiye's alignment with EU standards and its robust institutional structure promote a more effective approach to environmental governance, contributing to better environmental results. On the other hand, Pakistan struggles with the application of its policies, resulting in less favorable environmental results, despite existing structures. Advancing, the two countries can benefit from improving their governance mechanisms, promoting stronger civic engagement and encouraging innovative solutions rooted in digital technology to more effectively address their distinct environmental challenges.

Theoretical Framework

The theory of environmental governance covers principles such as adaptability, inclusion and transparency, with the aim of improving the participation of interested parties and facilitating sustainable development. However, numerous challenges arise, including conflicting interests between interested parties, inadequate institutional capacity and limited public participation. These barriers prevent an effective formulation, often resulting in fragmented approaches for global environmental problems. To address these challenges, encourage collaborative frameworks and integrate different perspectives are

essential to promote innovative solutions and guarantee equitable results in environmental governance. Therefore, this framework is centered on the ways that actors, institutions, laws, and policies influence environmental decision-making.

Research Questions

- How do Türkiye and Pakistan conceptualize and implement green governance (Policies, and Environmental Outcomes for Sustainable Development) within their national policy frameworks?
- What are the key differences & similarities in the legislative frameworks that govern green governance in Türkiye and Pakistan, and how these differences & similarities shape sustainable development practices?
- To what extent have international environmental agreements and obligations influenced domestic green governance approaches in both countries?
- What are the key challenges and constraints (political, economic, social, and institutional) that limit the effectiveness of green governance in both countries?
- How have the environmental results of Green Government initiatives impact in Türkiye compared to those of Pakistan?
- To what extent does public participation and participation of stakeholders in the formulation of environmental policies differ between Türkiye and Pakistan?
- What lessons can be extracted from the comparative analysis of green governance in both countries to improve sustainable development efforts?

Discussion

Türkiye and Pakistan both embraced green governance programs aimed at facing environmental challenges while promoting sustainable development. However, their framework and policies have significant differences and similarities in their implementation and effectiveness. Türkiye's green governance agenda emphasizes the complete integration of policies, promoting renewable energy sources, reducing carbon emissions and improving the conservation of biodiversity. The Turkish government has established regulatory paintings and incentive programs, in particular the law on renewable energy and the action plan for climate change, demonstrating a structured approach to sustainable practices. As a result, Türkiye has seen significant progress in the production of renewable energy and improvements in environmental regulations, leading to improved environmental results.

On the contrary, the agenda of the Pakistani green government is characterized by the challenges of political instability and economic constraints. The country has focused on reforestation initiatives and the promotion of sustainable agriculture through its tsunami project of ten billion trees, which aims to combat climate change and increase biodiversity. However, the effectiveness of these policies is often hindered by limited resources, inadequate implementation mechanisms and socio-political issues, with inconsistent results.

In contrast to the environmental results, the structured and proactive measures of Türkiye led to more observable progress in sustainability compared to the context of Pakistan, in which progress remains sporadic and often influenced by immediate socio-economic factors. Both countries, despite their unique contexts, underline the importance of strong governance paintings to obtain lasting environmental benefits and sustainable development. Therefore, while each nation pursues its green governance strategies, their effectiveness is significantly influenced by political, economic and institutional contexts.

How do Türkiye and Pakistan conceptualize and implement green governance within their national policy frameworks?

The exploration of green governance in Türkiye (Turkey) and Pakistan illustrates the various executives, policies and environmental results associated with sustainable development in national political frameworks.

The two countries face considerable environmental challenges, but their strategic approaches to promote sustainability reflect national contexts and distinct governance structures.

In Türkiye, the framework of green governance has evolved significantly, in particular with accession to international agreements such as sustainable development objectives (SDG). Commitment to these global standards has led to political innovations aimed at integrating environmental sustainability into development strategies. Ahmadi and Balkaya (2025) point out that the adaptation by Türkiye of the SDGs has catalyzed reforms in environmental policy, creating a complete framework that motivates various sectors towards greener practices. This approach is still reinforced by the alignment of national policies with the environmental standards of the European Union, where Öztürk and Durak (2024) describe the current adaptation process which emphasizes the need for sustainable governance indicators.

Comparably, Pakistan's environmental governance has been critical of socio-economic factors and development challenges that hinder its sustainability efforts. Jabeen and Khan (2022) argue that the complexities of economic growth, especially in a rapid development economy, often come up against the need for robust environmental protection. The government has introduced policies such as the "Digital Pakistan" initiative, intended to take advantage of information technologies for environmental sustainability (Nizam et al., 2020). Such initiatives mean recognition that technology can play a central role in facilitation of green governance.

The two countries have adopted various approaches to solve problems related to energy consumption and the transition of renewable energies. Uddin et al. (2021) underline the potential of renewable energies both in Türkiye and Pakistan as a way to sustainable development. The need for transition from traditional energy sources to greener alternatives is essential to mitigate environmental degradation. Public policies reflect this change; In Türkiye, significant investments are aimed at solar and wind energy projects, while Pakistan also operates its solar capacity but faces operational challenges. Uddin et al. (2021) illustrate that despite progress on paper, the translation of the policy in effective practice remains an important obstacle.

The impact of governance structures on the effectiveness of policies cannot be overlooked. Dokuzoğlu and Güzel (2024) present a cross-country analysis that positions democracy and the quality of governance as pivot factors influencing the success of environmental policy. In Türkiye, democratic governance has generated executives conducive to public participation, which is essential for effective decision -making in sustainability initiatives. On the other hand, the governance issues of Pakistan, underlined by unequal democratic institutions, lead to a fragmented implementation of environmental policies, as reported by Ali et al. (2022).

Türkiye has experienced considerable progress in its environmental policies, with national strategies increasingly reflecting green growth indices (şahin, 2022). The proactive role of the State in the development of these policies is obvious in legislative frameworks aimed at promoting sustainable practices in all industries. On the other hand, Pakistan's efforts reveal a correlation between economic and political stability as conditions necessary for sustainable governance. According to Bhutta et al. (2022), the complexities of Pakistan governance systems have implications for the effective promulgation of environmental policies.

Green Governance in Türkiye and Pakistan:

Dimension	Türkiye	Pakistan
Conceptual Framework	Green governance linked to EU accession reforms, sustainable development, and climate adaptation goals. Focus on harmonizing with international norms (Paris Agreement, EU Green Deal).	Green governance framed around climate resilience, poverty alleviation, and sustainable resource use. Strong link to adaptation needs (water, agriculture, disaster risk).

Dimension	Türkiye	Pakistan
Legal & Policy Instruments	- National Climate Change Action Plan (2011–2023) - Green Deal Action Plan (2021) - Renewable Energy & Energy Efficiency Laws - Environmental Law (No. 2872)	- National Climate Change Policy (2012, revised 2021) - Pakistan Climate Change Act (2017) - National Electric Vehicle Policy (2019) - Ten Billion Tree Tsunami Project
Institutional Mechanisms	- Ministry of Environment, Urbanization, and Climate Change - Turkish Environmental Agency - Coordination with EU bodies and local municipalities	- Ministry of Climate Change & Environmental Coordination - Pakistan Environmental Protection Council - Provincial EPAs and local governments
Implementation Strategies	- Emphasis on renewable energy transition (wind, solar, hydro) - Circular economy initiatives - Green finance and carbon markets - Urban greening and smart cities projects	- Large-scale afforestation and reforestation projects - Climate-resilient agriculture & water management - Community-based adaptation - Focus on disaster risk reduction
International Engagement	- Alignment with EU Green Deal - Commitment to Paris Agreement & SDGs - Regional energy and climate cooperation	- Active role in COP negotiations - Partnership with UNFCCC, UNEP, GCF - Seeks climate finance and technology transfer
Challenges	- Balancing economic growth with sustainability - Dependence on fossil fuels - Urbanization pressures	- Limited financial & technical capacity - Institutional fragmentation - High vulnerability to climate change impacts

Table. 01

A comparative analysis must also recognize the implications of regional and global contexts on the green governance strategies of the two countries. International environmental agreements often dictate national policies, posing both opportunities and challenges for local compliance. Usman et al. (2023) Discuss Turkey's alignment with international environmental executives and its resulting impacts on local governance structures. This alignment does not only facilitate funding opportunities, but also requires stricter environmental standards that strengthen commitment to sustainability.

In Pakistan, despite the challenges posed by governance, financial constraints and socio-economic disparities, initiatives emphasizing green technologies continue to emerge. As Ozturk et al demonstrated. (2021), engaging financial regulations in promoting a green economy is vital to improve the quality of the environment. It is increasingly recognized by the need for innovative financing mechanisms which support sustainability initiatives and improve regulatory compliance.

Awareness of the public and education are important catalysts to advance green governance in the two contexts. BOURN et al. (2023) underline the role of education for sustainable development (ESD) in the culture of a culture of environmental stewardship among citizens. In Türkiye, educational programs aligned on sustainability objectives have been integrated into programs, promoting a population that is increasingly aware of environmental problems. Conversely, Pakistan educational initiatives intended for sustainability, while emerging, are gradually implemented to raise awareness and cause community commitment to sustainable practices.

The ramifications of climate change highlight the urgency of improving environmental governance executives. Ahmed et al. (2020) underline the importance of prioritizing the objectives of the policy of climate change as a fundamental for the achievement of sustainable development. Türkiye has made significant progress in the fight against climate change thanks to targeted policies that correspond to its national interests while fulfilling international obligations. However, Pakistan, faced with the weight of the

impacts of climate change, reveals the vulnerability of its systems which require an urgent reassessment of its existing approaches to green governance.

While the two nations navigate their ways towards environmental sustainability, learned lessons underline the critical importance of the complete and complete strategies which explain socio-economic contexts, the commitment of citizens and robust governance structures. The synthesis of green technologies, regulatory executives, educational initiatives and international cooperation has potential to promote significant results in travel to sustainable development. The continuous evolution of the approaches of Türkiye and Pakistan indicates recognition that effective environmental governance is an integral part of the resilient and sustainable future.

In conclusion, the analysis of green governance managers in Türkiye and Pakistan reveals both divergent approaches and shared challenges in achieving sustainable development objectives. The improvement potential lies in increased governance, increased public participation of the public and a strengthened alignment of national policies on international environmental standards, ensuring that the two countries are progressing towards a greener future while attacking contemporary environmental prediments. Although important obstacles remain, in particular in the effectiveness of governance for Pakistan, executives established in Türkiye offer a precious plan for the continuation of sustainable development in the face of emerging global environmental challenges.

What are the key differences & similarities in the legislative frameworks that govern green governance in Türkiye and Pakistan, and how these differences & similarities shape sustainable development practices?

Legislative structures that govern green governance in Türkiye and Pakistan exhibit remarkable similarities and distinctions, which profoundly affect the implementation of sustainable development practices in each country.

In Türkiye, the evolution of green governance is closely linked to the environmental policies of the European Union, as the country aligns its regulations with EU standards to facilitate adhesion negotiations (Öztürk & Durak, 2024). The legislative structure incorporates several laws and regulations for the management of ecological sustainability, including environmental law, which provides a comprehensive regulatory structure for environmental protection, pollutant management and conservation of natural resources (ADAMAN, 2016). In addition, Türkiye's commitment to implement Deal Green's agenda catalyzed the integration of environmental considerations into economic policies, thus promoting green growth (şahin, 2022).

Similarly, Pakistan's legal structure for green governance is shaped by several national policies, highlighting the Pakistan Environmental Protection Law of 1997, which defines the fundamental regulations for environmental supervision (Parveen & Qazi, 2023).

This law enables the Pakistan Environmental Protection Agency (PAK-EPA) to supervise environmental evaluations and apply compliance with environmental standards. Recent policies advances, including the 2017 Pakistan Climate Change Law and national environmental policy, demonstrate the country's commitment to facing climate -related challenges through sustainable practices (FIRDOUS et al., 2024). However, the effectiveness of these regulations is often impaired by inadequate inspection mechanisms and limited intercity coordination (Khan et al., 2023).

Legislative Frameworks of Green Governance in Türkiye & Pakistan:

Aspect	Türkiye	Pakistan	Similarities / Differences & Impact on Sustainable Development
Core Legal Basis	Environmental Law	Pakistan Climate	Similarity: Both have national-level

	(No. 2872, amended) provides the foundation for environmental protection and sustainability.	Change Act (2017) provides a legal framework for climate governance.	laws directly addressing climate/environment. Difference: Türkiye's law is broader (environmental governance), while Pakistan's is more climate-specific.
Policy Frameworks	- National Climate Change Action Plan (2011–2023) - Green Deal Action Plan (2021) aligned with EU.	- National Climate Change Policy (2012, revised 2021) - National Adaptation Plan (under development).	Similarity: Both align with Paris Agreement & SDGs. Difference: Türkiye's frameworks are EU-driven (trade & standards), Pakistan's are adaptation-driven (survival/resilience).
Institutional Anchors	Ministry of Environment, Urbanization & Climate Change, with decentralization to municipalities.	Ministry of Climate Change & Environmental Coordination, with provincial Environmental Protection Agencies (EPAs).	Similarity: Central ministry supported by subnational agencies. Difference: Türkiye has strong municipal role (urban green planning), Pakistan relies more on provincial agencies.
Legislative Tools for Renewable Energy & Efficiency	- Renewable Energy Law (2005) - Energy Efficiency Law (2007).	- Alternative & Renewable Energy Policy (2019).	Similarity: Both legislate renewables & efficiency. Difference: Türkiye focuses on diversification & EU integration, Pakistan emphasizes affordability & energy access.
Forestry & Biodiversity Laws	Forest Law (6831) & National Biodiversity Strategy and Action Plan.	Ten Billion Tree Tsunami Project supported by Forest Act amendments & Biodiversity Action Plan.	Similarity: Strong legal backing for reforestation & biodiversity. Difference: Türkiye integrates biodiversity into EU compliance, Pakistan emphasizes large-scale afforestation for carbon sinks.
Climate Finance & Markets	Draft legislation for carbon markets aligned with EU Emissions Trading System (ETS).	Climate finance framework relies on Green Climate Fund (GCF) & bilateral aid, no national carbon trading law yet.	Similarity: Both seek climate finance. Difference: Türkiye is building domestic markets, Pakistan depends on external financing.
Implementation & Enforcement	Stronger enforcement mechanisms via EU monitoring, though challenges remain with industry compliance.	Weaker enforcement due to capacity constraints, overlapping mandates, and political instability.	Similarity: Both face enforcement challenges. Difference: Türkiye's EU linkage strengthens compliance, Pakistan's enforcement remains fragile.

Table. 02

Both countries emphasize the need to integrate sustainability into their economic paradigms. Türkiye's legislative measures, such as the Renewable Energy Law, reflect a strategic priority in increasing the participation of renewable energy in its energy mix, aiming at the green transition within the industrial

sector (YAVAŞ, 2025). On the other hand, Pakistan is gradually moving towards green financing mechanisms, as seen in political discussions around renewable energy integration and the promotion of sustainable use of resources (UDDIN et al., 2021).

Such developments suggest a mutual recognition of the importance of renewable resources to promote sustainable development. Despite these parallels, there are significant disparities in the implementation and operationalization of green governance structures in both countries. A main difference is in the degree of legislative application and public awareness. In Türkiye, there is a relatively higher level of environmental activism and public participation in legislative processes, driven by civil society groups and educational institutions that advocate sustainable practices (Göksu, 2022). This activism defines a precedent that influences government responsibility and policy transparency, thus promoting effective environmental governance.

On the other hand, Pakistan's Green Governance narrative is often restricted by socioeconomic challenges, including poverty and political instability, which adversely affect public involvement and a prioritization of environmental issues (Odugbesan et al., 2021). The lack of widespread public awareness of environmental rights contributes to a limited demand for the government's responsibility regarding the results of environmental policy. In addition, the capacity of PAK-EPA was tense by limited financing and bureaucratic impediments, impacting the rigorous application of the legislation (MAHMOOD et al., 2024).

The implications of these legislative structures for sustainable development practices are profound. Türkiye has progressed by aligning its green governance with international environmental standards, contributing to a more robust institutional structure that promotes sustainable practices in economic sectors (Güncoğdu & Aytekin, 2022). The emphasis on interdepartmental synergy and public-private partnerships in Türkiye promotes a holistic approach to environmental challenges, integrating technological innovation in the traditional sectors (Guo et al., 2020).

On the other hand, the path of Pakistan in relation to sustainable development is marked by the need for reinforced institutions and the establishment of effective governance structures that reinforce environmental rights (Kilibaslan et al., 2024). The political will to implement existing laws remains effectively critical, as well as promoting public involvement to improve application and compliance with environmental regulations (AUNG et al., 2020). The confluence of industrialization with environmental policy requires an approach focused on promoting sustainable practices in local industries, contributing to the reduction of emissions and the best environmental results (KUMAR et al., 2022).

Both countries face the pressing challenge of financial regulation in the search for green governance. In Türkiye, the evolutionary scenario of green finance is promoting investments in sustainable projects, aligned with EU financing directives (Odugesan et al., 2021). On the other hand, Pakistan began to recognize the potential of green finances as a tool to transform their economic structure toward sustainability, but implementation mechanisms remain in springs (Wang et al., 2024). Regulatory structures that support these financial transitions are essential to encourage private sector investments conducive to sustainable development (Yang et al., 2024).

In conclusion, while Türkiye and Pakistan show distinct legislative structures that govern green governance, both nations recognize the meaning of environmental sustainability as vital to their economic futures. Türkiye's proactive alignment with EU standards and the strongest engagement of civil society represents a more advanced model of green governance, while the journey of Pakistan illustrates the challenges faced by the development of nations in the establishment of effective environmental legislation and promoting sustainable practices. The implications of these structures extend beyond mere regulatory compliance, shaping the trajectory of sustainable development in both countries, while sailing in their unique environmental challenges and opportunities.

To what extent have international environmental agreements and obligations influenced domestic green governance approaches in both countries?

Navigating Green Governance: The Influence of International Environmental Agreements on Domestic Strategies in Türkiye and Pakistan, The analysis of international environmental agreements reveals that Türkiye and Pakistan have been considerably influenced in their internal green governance strategies by these world executives. The two countries, as developing countries, face unique challenges related to the implementation of policies, compliance and local adaptations while trying to align their national objectives on international commitments.

Starting with Türkiye, the country has become more and more involved in international environmental agreements in recent decades, which has required the formation of robust environmental governance structures. For example, Türkiye's ratification of the Paris Agreement has forced decision -makers to improve their concentration on the reduction of greenhouse gas emissions and the transition to sustainable energy sources. This international commitment has catalyzed national policies for measures to develop renewable energies and energy efficiency (Kirkkaleli and Osmanlı, 2023). However, the implementation remains heavy with challenges due to political instability, often undergoing coherence and continuity of environmental policies (Khan, Safdar and Nadeem, 2023).

Conversely, Pakistan's commitment to international environmental agreements illustrates a complex interaction between national legislation and international expectations. Although Pakistan has ratified several world treaties, such as the United Nations Framework Convention on Climate Change (CCNUCC), the effectiveness of these commitments is hampered by various challenges of conformity, including limited financial resources and inadequate institutional managers (Susskind and Ali, 2014). As AFZAL and MOMTAQ (2024) noted, the non -binding nature of certain international agreements allows Pakistan to maintain a degree of sovereignty while trying simultaneously to fulfill its international obligations. Nevertheless, local legislative measures are often late, reflecting a disconnection between international aspirations and internal realities (Mushtaq, Akhtar and Shahab, 2024).

In addition, the two countries meet substantial challenges of compliance resulting from bureaucratic ineffectiveness and the lack of regulatory application. The complexity of environmental governance in Türkiye is aggravated by sectoral fragmentation, leading to disseminated responsibilities between ministries and agencies (Aydın, 2020). In Pakistan, the challenges of governance are still exacerbated by socio-economic issues, including high levels of poverty and illiteracy, which can hinder public awareness and participation in environmental initiatives (Shoukat et al., 2025). The studies of Siddikoglu and SAGIROGLU (2023) demonstrate that, in both countries, the effective implementation of policies often requires substantial commitment and local participation, which is sometimes deficient.

Local adaptations of international agreements are essential for the successful integration of world executives into national contexts. In Türkiye, local governments have been authorized to design specific strategies to regions that resonate both with local environmental problems and international standards. Qadri and Ahsan (2016) emphasize how local adaptations facilitate an approach more suited to environmental governance, allowing the consideration of local ecological conditions and the needs of the community. This approach provides an important path to combat the impacts of climate change in the various geographic regions of Türkiye.

On the other hand, while Pakistan has also recognized the importance of localized approaches, the practicality of such adaptations often confronts socio -political obstacles. The fault of the institutional conception highlighted by Sarker, Rahman and Giessen (2019) suggests that regional cooperation executives in South Asia, such as the South Asian Association for Regional Cooperation (SAARC), have not sufficiently supported environmental governance, resulting in ineffective implementations of policy.

Consequently, dependence on large international commitments can eclipse the need for nuanced local strategies which consider the distinct challenges of Pakistan in environmental governance.

The geopolitical context of environmental policies both in Türkiye and Pakistan also plays a crucial role. The geopolitical position of Türkiye as a bridge between Europe and Asia provides unique environmental obligations and collaborations with European Union standards (Wang, Ren and Li, 2024). These geopolitical influences shape both the development of policies and the adoption of environmentally friendly technologies, leading to progress in public transport and waste management systems (Khurshid, 2023). On the other hand, Pakistan faces heavier external pressures and limited technological capacities, which can restrict its ability to align with advanced environmental practices (Abbass et al., 2022). This gap raises questions about equity and equity in the global field of environmental governance.

Influence of International Environmental Agreements on Green Governance:

Dimension	Türkiye	Pakistan	Comparative Insight
Paris Agreement (2015)	Ratified in 2021 after delay, shaped policies like the Green Deal Action Plan and renewable energy transition.	Ratified in 2016, mainstreamed into Climate Change Policy (2012, revised 2021) and updated Nationally Determined Contributions (NDCs).	Both integrate NDCs into national frameworks, but Türkiye links them to EU carbon transition, while Pakistan frames them as adaptation & finance needs.
EU Green Deal / Accession Obligations	Major driver: legislation on emissions trading, circular economy, and renewable targets shaped by EU accession and trade integration.	Not applicable, but pursues regional agreements (e.g., SAARC, SCO) for environmental cooperation.	Türkiye's governance is externally driven by EU norms, Pakistan's is regionally and globally donor-driven.
Kyoto Protocol (1997)	Limited obligations as an Annex-I country with special circumstances, but influenced monitoring and reporting capacity.	Ratified, shaped early climate frameworks and CDM (Clean Development Mechanism) projects.	Both improved reporting & emissions accounting, but Türkiye's compliance tied to EU integration, Pakistan's to carbon credit projects.
Biodiversity & Forestry (CBD, UNCCD, UNFCCC linkages)	Adopted biodiversity action plan, integrated into forestry law and land management.	Large-scale initiatives like the Ten Billion Tree Tsunami linked to CBD & UNCCD commitments.	Both strengthened forestry/biodiversity laws, but Türkiye emphasizes compliance & EU alignment, Pakistan emphasizes mass afforestation.
Montreal Protocol (Ozone Layer Protection)	Implemented phase-out of ozone-depleting substances via harmonized industrial standards.	Gradual HCFC phase-out plan implemented with UNEP/World Bank support.	Both countries successfully aligned domestic law with Montreal Protocol obligations.
Finance & Technology Transfer (UNFCCC &	Moves toward establishing carbon markets, seeks green finance aligned with	Heavy reliance on international climate finance (GCF, bilateral donors) for mitigation/adaptation	Türkiye leans on market-based compliance, Pakistan relies on external financial/technical aid.

Dimension	Türkiye	Pakistan	Comparative Insight
GCF)	EU standards.	projects.	
Overall Impact on Domestic Green Governance	International agreements, especially EU accession and Paris Agreement, pushed market-based, EU-aligned governance.	Agreements shaped adaptation, afforestation, and donor-financed projects, less market-based.	Both shaped strongly by international obligations, but trajectories differ: Türkiye = compliance-driven modernization, Pakistan = adaptation & finance-driven governance.

Table. 03

While international economic agreements continue to evolve, their implications for environmental policies in the two countries will be essential. Ahmed, Nawaz and Awan (2024) point out that trade agreements - in particular those linked to environmental measures - can considerably influence national environmental strategies. Türkiye's active participation in trade agreements often intertwines its sustainability commitments, which causes political adjustments that promote environmental protection. Conversely, Pakistan can undergo trade agreements as binding, in particular in the sectors where environmental regulations can come into conflict with economic imperatives (Afzal and Mushtaq, 2024).

The two nations have a trajectory towards better environmental governance due to international agreements; however, disparities in their approaches highlight the importance of contextual understanding. Divergence in compliance with Türkiye and Pakistan with international environmental agreements reveals how domestic political stability, economic priorities and public capacities can shape environmental governance. As Kim, Tanaka and Matsuoka (2017), the effectiveness of environmental governance, noted is not only a product of external commitments but rather a complex interaction of the dynamics of local governance and international obligations.

In conclusion, although international environmental agreements have resulted in an improvement in interior green governance strategies both in Türkiye and Pakistan, significant challenges remain. The two countries must navigate in the complex balance between compliance with global standards and local realities. The path to follow must hire local communities, take advantage of geopolitical contexts and ensure that environmental governance executives are resilient and adaptable to meet both national needs and international commitments.

What are the key challenges and constraints (political, economic, social, and institutional) that limit the effectiveness of green governance in both countries?

Barriers to Green Governance: Analyzing the Political, Economic, Social, and Institutional Challenges to Sustainable Development in Türkiye and Pakistan, The political environment of Türkiye and Pakistan poses formidable challenges to the advancement of green governance and sustainable development, illustrating an omnipresent influence of governance structures on the effectiveness of environmental policy. In Türkiye, the intertwining of bad governance problems considerably hamper the policies' development processes that would otherwise support environmental sustainability initiatives. For example, the implementation of Türkiye's climate action plan has been prey to political opposition, leading to general criticism from environmental defenders and researchers who argue that these obstacles are hindering the country's ability to respect its international climatic commitments (Naimoğlu et al., 2025).

The governance deficit is still exacerbated by a lack of transparency in the decision -making processes and the participation of the limited public, which erodes confidence in the institutional frameworks responsible for environmental management. The case of Türkiye illustrates the critical need for increased institutional responsibility and reform to facilitate the lasting implementation of policies. Conversely, the political landscape of Pakistan is characterized by chronic instability and a lack of commitment to a coherent

environmental policy, which are carrying out sustainable development efforts. The country's political turbulence often undermines the continuity required for effective environmental governance, causing periodic tricks in the application of established policies (Shahzad and Humza, 2024).

The fluctuating political climate disrupts not only the implementation of environmental regulations, but also promotes an atmosphere of uncertainty that discourages local and foreign investments in sustainable projects. For example, although the Government has ratified various Sustainable Development Goals (SDGs), the incoherent application of these executives reveals important gaps in the execution of policies and national alignment with environmental priorities (Uddin et al., 2021). The case study of the Sindh province highlights this issue, where water management policies intended to answer the problems of sustainability have been faced with repeated challenges due to the political maneuver and the lack of cohesion between the stakeholders of the government. Although Pakistan facing terrorism, Ethnicity (Abbas et al., 2022), poverty economic and social financial challenges, which hampered the climate change and environment goals.

The two countries show an urgent need for political reform, aimed at forging a consensus on environmental issues that transcend the cyclical nature of political ideologies and parties of parties. In Türkiye, the link between governance and corruption through institutional reforms could improve the efficiency of environmental policies, promoting an environment more conducive to sustainable development. In Pakistan, the establishment of a politically stable framework which guarantees that the coherent application of the SDGs would improve government credibility in the continuation of environmental sustainability. Thus, the interaction of political stability, transparency and responsibility appears to be vital components necessary to facilitate complete green governance initiatives both in Türkiye and Pakistan. The implications for policies reform are austere; without the fundamental support for a solid political consensus and reformist governance structures, efforts to achieve significant sustainable results should remain elusive.

Challenges & Constraints to Green Governance:

Dimension	Türkiye	Pakistan
Political	Balancing EU-driven reforms with domestic politics; fragmented priorities.	Political instability; frequent policy shifts; climate issues low on agenda.
Economic	High cost of transition to EU-aligned standards; reliance on fossil fuels; limited green investment.	Severe resource constraints; dependence on foreign aid; affordability of renewable technologies.
Social	Rapid urbanization; moderate public awareness but uneven participation.	Widespread poverty; low awareness of climate issues; limited community engagement.
Institutional	Complex governance structure; overlapping mandates between ministries and municipalities.	Weak institutional capacity; poor enforcement; provincial disparities in implementation.

Table. 04

The economic scenario of Türkiye and Pakistan presents formidable challenges to their sustainable development objectives, mainly due to their strong dependence on fossil fuels and traditional agricultural practices, respectively. In Türkiye, the energy sector remains predominantly based on fossil fuels, which not only exacerbates greenhouse gas emissions, but also cushions the prospects for green technological innovation. Economic analyzes, such as Güney in 2017, elucidates as Türkiye's dependence on fossil fuels reduces investment in renewable energy sources and associated R&D initiatives Güney, 2017).

Despite the global change to sustainable energy solutions, Türkiye energy policies do not sufficiently encourage the transition to cleaner energy alternatives, thus restricting green growth and innovation in a

rapidly evolving global market. Meanwhile, Pakistan faces its own set of social, economic, territorial etc. challenges that are deeply intertwined with Territorial dispute particularly Kashmir issue (Bilal, 2022) due to extremist agenda of India through Hindutva philosophy (Rashid et al., 2022), along with stability issue in neighboring Afghanistan having serious ramifications to Pakistan (Rashid et al., 2022) Other issues like unsustainable agricultural practices. The country's agricultural sector depends strongly on water -intensive crops and traditional agricultural methods, which not only contribute to significant environmental degradation, but also compromises the potential of sustainable agricultural practices. Ali et al. (2022) indicates that these traditional practices are contributing to soil erosion, deforestation, and a declining water table as farmers extract water to cultivation. This environmental tension not only compromises food safety, but also limits access to green finances, choking investment in sustainable agricultural technologies.

In addition, the structural restrictions of financial markets in Pakistan make it difficult to implement green initiatives. Case studies focused on PMES in the textile and leather industry, documented by Kumar et al. (2022), they reveal that these sectors are not only significant contributors to pollution, but also face substantial challenges to ensure green financing. The lack of personalized financial instruments, incentives for ecological practices and adequate risk assessment structures further exacerbate the situation. This fiscal environment limits the capabilities of these SMEs to transition to sustainable practices, which could lead to substantial reductions on environmental impact and increased compliance with international sustainability standards.

In Türkiye, despite being an open economy, the benefits of this opening were not effectively used for environmental sustainability. Research conducted by Naimoğlu et al. (2025) points out that commercial policies often prioritize short -term economic gains in relation to long -term environmental health. Türkiye's involvement paradox in global trade serves to highlight the need to reassess its economic policies. Initiatives that can align economic growth with environmental administration, raising critical issues about the coherence and effectiveness of current tax strategies in mitigating climate change and support for sustainable development.

The economic structures of both nations thus illustrate a complex interaction between inappropriate policies, traditional practices and institutional inertia, revealing the pressing need for comprehensive political reforms that prioritize sustainability. This implies not only moving toward renewable energy sources and sustainable agricultural practices, but also creating robust financial systems that support green investments, thus allowing a holistic approach to sustainable development.

How have the environmental results of Green Government initiatives impact in Türkiye compared to those of Pakistan?

Greener paths: a comparative analysis of environmental impact and public response to government initiatives in Türkiye and Pakistan, Green government initiatives have become essential in the statement of environmental challenges in Türkiye and Pakistan. An assessment of efficiency, sustainability and public response to these initiatives reveals notable contrasts and similarities in approaches to the two nations.

In Türkiye, the transition to green policies was illustrated by significant investments in renewable energy infrastructure, in particular solar and wind energy projects. Government's commitment to reduce dependence on fossil fuels has led to an increase in the share of renewable energies in the national energy mixture (Ozkan, Khan and Ahmed, 2023). These initiatives are often supported by public campaigns and educational programs that seek to raise awareness of sustainability. The public's response was generally positive, facilitated by community commitment and participation in local green projects. In addition, Türkiye's regulatory framework incorporates strict policies aimed at promoting eco-innovation, thus promoting an environment conducive to sustainable growth (UDDIN et al., 2021). On the other hand, the initiatives of the Green Government of Pakistan, in particular thanks to the "Digital Pakistan" initiative,

underline the role of information technologies in the improvement of environmental sustainability (Nizam et al., 2020).

The approach of Pakistan is characterized by a strong emphasis on renewable energy sources, but faces challenges related to the implementation and public support. The effectiveness of these initiatives has been hampered by recurring infrastructural and economic constraints, as well as by an insufficient consciousness of the public of environmental problems (Shahid et al., 2022). Nevertheless, certain positive impacts have been noted in the development of renewable energies, motivated by public-private partnerships intended to overcome these obstacles (Lin and Ullah, 2023).

Sustainability remains a crucial metric to assess the results of green policies in the two countries. In Türkiye, sustainability efforts are supported by solid policies that integrate environmental considerations in various economic sectors. For example, studies indicate that improving eco-innovation is directly in correlation with stronger environmental policy frameworks in the country (Ozkan et al., 2023). This integration promotes a holistic approach to development, where economic growth is not done at the cost of environmental deterioration.

Environmental Outcomes of Green Governance Initiatives:

Area	Türkiye	Pakistan
Renewable Energy	Significant expansion in wind, solar, and hydro; renewable share rising in energy mix; reduced dependence on imports.	Slow but emerging growth; focus on solar and hydropower; limited grid integration and financing challenges.
Forestry & Biodiversity	Improved forest management and biodiversity protection under EU-driven policies; moderate reforestation success.	Large-scale afforestation (Ten Billion Tree Tsunami) with notable carbon sink potential; biodiversity protection uneven.
Urban Sustainability	Development of eco-cities, green transport, and waste management aligned with EU standards.	Limited urban green planning; pilot projects exist but constrained by weak municipal capacity.
Climate Adaptation	Progress in integrating adaptation into policy; investments in disaster resilience and water efficiency.	High vulnerability remains; adaptation projects in agriculture, water, and disaster risk reduction but resource-limited.
Pollution Control	Stronger regulation and monitoring (air, water, waste) tied to EU compliance; enforcement uneven but improving.	Weak pollution control mechanisms; industrial and urban pollution remain persistent challenges.
Overall Impact	Moderate success in aligning with EU green transition; visible improvements in renewables, urban sustainability, and compliance.	Mixed results: success in afforestation but limited progress in renewable energy, pollution control, and climate resilience.

Table. 05

On the other hand, while Pakistan's initiatives are aimed at sustainability, the realization of sustainable environmental advantages remains a difficult battle. The rigor of green policies has been linked to an improved eco-financial and innovative practices (Nabi et al., 2025). However, the effectiveness of these policies often varies between different regions, illustrating a disparity in public participation and local government capacity (Jabeen and Khan, 2022). Country continues to deal with socio-economic challenges that hinder coherent application & sustainability of green initiatives.

The public response to green initiatives in the two countries reflects distinct contexts shaped by cultural, economic and political factors. In Türkiye, there is a growing movement among citizens pleading for

environmental protections, leading to increased participation in green programs (Awan et al., 2025). The public's desire to engage and mobilize has led to a greater collective impact on sustainability objectives. Conversely, the public response to Pakistan is often tempered by socioeconomic barriers, resulting in variable levels of engagement. The challenges linked to awareness and education on environmental problems limit the extent of public participation in green initiatives (Sohail et al., 2021).

In conclusion, Türkiye and Pakistan are trying to implement Government initiatives with different levels of efficiency and sustainability. The proactive policies of Türkiye and the public commitment demonstrate a successful integration of environmental concerns in its growth story. Conversely, Pakistan, although ambitious in its approach, faces challenges in public awareness and the availability of resources that limit the effectiveness of its green policies. The evaluation of these aspects stresses that if the two nations are aimed at a lasting future, the way they are going through is shaped by their unique contexts and challenges (Ozturk, Majeed and Khan, 2021). Overall, the environmental impacts of these green initiatives underline the need for tailor -made strategies which consider local dynamics to improve their efficiency and sustainability.

To what extent does public participation and participation of stakeholders in the formulation of environmental policies differ between Türkiye and Pakistan?

Public participation and interested parties in green governance, environmental policies and sustainable development is a fundamental aspect that can significantly determine the effectiveness and results of environmental initiatives. The case of Türkiye and Pakistan provides a rich context to analyze the differences in approaches and results regarding participation in these domains.

In Türkiye, governance structures have increasingly recognized the importance of public participation in environmental decision making. The integration of the environmental policy standards of the European Union has led the Turkish government to adopt a more participatory framework, particularly in urban planning and environmental evaluations (Öztürk and Durak, 2024). Turkish civil society is quite active, with numerous non -governmental organizations (NGOs) that participate in public consultations and influence environmental legislation (Dokuzoğlu and Güzel, 2024). The effective incorporation of public feedback into environmental policies demonstrates a government response level, leading to more sustainable practices.

In contrast, Pakistan's approach for public participation and interested parties is harassed by challenges. The commitment of civil society in environmental governance is hindered by issues of structural governance, including political instability and limited regulatory frameworks (Khan et al., 2020). Although there are cases of participation of the interested parties, particularly in the environmental impact evaluations at the project level (EIA), the general effectiveness remains low due to the lack of solid mechanisms to ensure continuous participation beyond initial consultations (Gyamfi et al., 2023). The disparity in public participation highlights significant contrasts in how environmental governance is carried out in these two nations.

In addition, the cultural context plays a crucial role in the configuration of public participation strategies. In Türkiye, there is a growing environmental awareness influenced by educational campaigns and activism, promoting a culture that supports the participation of those interested in ecological governance (Yusuf and Fajri, 2022). On the other hand, in Pakistan, socio -economic challenges and the least educational achievement can limit the amplitude of the participation of the interested parties. This results in an audience that can lack an adequate conscience or capacity to participate significantly in the discussions and processes of environmental governance (Bhutta et al., 2022).

Equally important is the role of technology and innovation to improve the participation of interested parties. Türkiye has taken advantage of advances in electronic government to facilitate greater public participation in environmental decision making (Xin et al., 2022). Electronic government platforms allow citizens to

have more accessible channels through which to express their opinions and influence environmental policies. The increase in technological participation in Türkiye contrasts strongly with Pakistan, where the electronic government is still in its nascent stages, which limits the public's ability to commit effectively with government procedures (Chohan et al., 2020). With fewer technological resources, public participation mechanisms in Pakistan often depend on traditional methods, which can be less effective to mobilize commitment.

The effectiveness of environmental policies in Türkiye can be attributed in part to the structured participation of interested parties. For example, the participation of various groups in the formulation of the National Plan for Climate Change Action (NCCAP) illustrates a consolidated approach to collect entries from several sectors (UDDIN et al., 2021). This collaboration framework has led to comprehensive policies that reflect a variety of interests of interested parties and improve its acceptability among the public.

On the contrary, Pakistan often shows disjointed environmental policies that are not sufficiently informed by public contributions. Policies such as the 2012 climate change policy lack adequate implementation strategies, mainly due to insufficient participation of interested parties (Naeem et al., 2025). Environmental governance remains weak, and many interested parties affirm that their opinions are not integrated in policy design or decision-making processes (Ikram et al., 2021). The resulting inefficiency leads to bad environmental results, exacerbating even more problems such as pollution and exhaustion of resources.

Public & Stakeholder Participation in Environmental Policy:

Aspect	Türkiye	Pakistan	Comparative Insight
Legal Framework for Participation	Aligned with EU Aarhus Convention principles (access to information, consultation rights), though implementation uneven.	Public consultation provisions exist in Environmental Protection Act & Climate Change Act, but less binding and often symbolic.	Türkiye has stronger legal backing via EU alignment; Pakistan has weaker enforcement of participation clauses.
Institutional Mechanisms	Ministry consults NGOs, academia, municipalities; structured stakeholder forums in some policies (e.g., Green Deal).	Consultations occur with NGOs, provinces, and donor agencies, but often limited to elite or donor-driven stakeholders.	Türkiye → more institutionalized stakeholder platforms; Pakistan → participation selective and donor-influenced.
Civil Society Engagement	Active environmental NGOs, professional associations, and EU-funded civil society projects; growing public awareness.	Fewer independent environmental NGOs; civil society often constrained by funding and political limits.	Türkiye benefits from stronger, EU-supported civil society networks; Pakistan faces weaker grassroots mobilization.
Local/Community Participation	Municipalities engage communities in urban greening and waste projects; public hearings more common.	Community involvement stronger in afforestation, disaster risk reduction, and adaptation programs; urban participation weaker.	Türkiye → stronger urban participation; Pakistan → stronger rural/community-based participation.

Aspect	Türkiye	Pakistan	Comparative Insight
Overall Extent of Participation	Moderate to high, structured by EU norms but limited by bureaucratic centralization.	Low to moderate, often symbolic, with reliance on donor-driven engagement.	Türkiye has more formalized and EU-aligned participation; Pakistan shows fragmented, uneven, and resource-limited participation.

Table. 06

Green Finance also reflects the differences in the participation of those interested between the two countries. Türkiye has prioritized green financing initiatives, integrating them into broader development frameworks and actively involving stakeholders in these efforts (Ozkan et al., 2023). Pakistan is also facing less direct foreign investment (Abbas et al., 2022), however, Pakistan's financial mechanisms for environmental projects are often criticized for lacking transparency and inclusion, which limits the effective participation of interested parties (Nawaz et al., 2021). This not only hinders investment in sustainable projects, but also raises challenges to achieve long-term environmental objectives, because without public participation and inclusion of native culture traditions norms, green governance and sustainable goals can't be fully achieved (Bilal et al., 2022).

The evaluation of the impacts of these participatory frameworks highlights the divergent results in environmental sustainability. In Türkiye, where public participation is solid, policies are more effectively aligned with sustainability objectives, resulting in a better environmental quality and community support (Li et al., 2022). This is evidence of how effective governance structures can take advantage of public feeling to promote proactive environmental administration.

In contrast, Pakistan's limited commitment decreases the effectiveness of its environmental policies, which leads to continuous challenges such as deforestation, water scarcity and air pollution. The lack of an integral mechanism for public participation contributes to a public perception of environmental problems such as government responsibilities instead of challenges of the collective community, which severely undergoes participatory governance (Aung et al., 2020).

In conclusion, the differences in public participation and parties interested in green governance, environmental policies and sustainable development between Türkiye and Pakistan underline the importance of inclusive processes for effective environmental governance. While Türkiye demonstrates a more structured approach to the participation of interested parties reinforced by technology and civil society activism, Pakistan faces considerable barriers that limit participatory practices, which prevents sustainable development results. Passing these gaps is essential for both nations to improve their governance frames and achieve their environmental sustainability objectives.

What lessons can be extracted from the comparative analysis of green governance in both countries to improve sustainable development efforts?

Green governance is a critical framework to meet environmental challenges and promote sustainable development (Kanie and Biermann, 2017). By comparing the approaches of Türkiye and Pakistan, various emerging lessons that can improve sustainable practices and enlighten effective environmental policies in the two countries. The two countries attack questions such as resource management, pollution and climate change, although in different socio-economic and political contexts.

Türkiye has made significant progress in the integration of sustainable development in its national program, largely influenced by its commitment to the Sustainable Development Goals (ODD) (Ahmadi and Balkaya, 2025). The government has prioritized green policies and governance mechanisms to align in international standards, promoting environmental sustainability (Gündoğdu & Aytekin, 2022). As Naimoğlu, şahin and

Özbek (2025) notes, the Türkiye's governance structure highlights the importance of transparency and responsibility in the pursuit of green growth, which has resulted in an improvement in the capacities of innovation and economic diversification. In addition, the incorporation of electronic governance strategies has increased public commitment and confidence in environmental policies, essential to effective green governance (Ullah et al., 2021).

Conversely, Pakistan faces substantial challenges concerning environmental governance due to political instability, economic constraints and a lack of institutional capacity (Khan et al., 2020). The "Digital Pakistan" initiative represents a promising step towards the use of technology for sustainable development, aimed at rationalizing environmental management processes through information technology (Nizam et al., 2020).

However, the gap in public awareness and commitment remains an important obstacle to the implementation of effective environmental policies (Sultan et al., 2020). The contrast highlights the need for Pakistan to strengthen its institutional frameworks and cultivate a more robust civil society to facilitate greater participation of the public in environmental governance. One of the critical lessons in Türkiye's experience is the importance of multi-party engagement in the formulation and implementation of policies. The Turkish government, recognizing the interaction between governance and civil society, facilitates collaborative decision-making platforms, allowing various contributions from stakeholders (Uddin et al., 2021).

This participatory approach promotes ownership of environmental initiatives and improves the legitimacy of policies. On the other hand, the environmental decision-making of Pakistan has often been standing, limiting the participation of the local community, which undermines the potential support of the base (Khan et al., 2020). Thus, Pakistan can benefit from the adoption of a more inclusive governance model that empowers communities and integrates their environmental knowledge into political processes.

In terms of renewable energy, the two countries have considerable potential, but their approaches reveal distinct trajectories. Türkiye has actively invested in renewable sources such as wind and solar energy, thus approaching energy security and reducing greenhouse gas emissions (Uddin et al., 2021). The Turkish government has prompted participation in the private sector by favorable policies and financial support, demonstrating the effectiveness of the exploitation of private investments for sustainable energy transitions (Bayram et al., 2022).

Lessons from Comparative Green Governance:

Area	Lesson from Türkiye	Lesson from Pakistan	Shared Takeaway for Improvement
Policy Alignment	EU-driven standards and integration ensure policy consistency.	National policies updated (2012 → 2021) but lack strong enforcement.	Strong, long-term policy alignment with global commitments improves outcomes.
Institutional Capacity	Municipalities play an active role in urban greening and waste management.	Provincial EPAs and community-based projects enhance rural adaptation.	Decentralized governance with empowered local actors improves effectiveness.
Financing Mechanisms	Green finance, carbon markets, and EU support drive renewable transition.	Heavy reliance on international aid and donor-driven projects.	Sustainable financing needs diversification—blend of domestic markets and international support.
Public Participation	Civil society engagement institutionalized through	Community participation effective in afforestation	Inclusive governance requires both urban civil society and grassroots

Area	Lesson from Türkiye	Lesson from Pakistan	Shared Takeaway for Improvement
	EU frameworks.	and rural adaptation.	communities.
Implementation Focus	Emphasis on renewable energy, circular economy, and compliance.	Strong progress in afforestation and climate adaptation programs.	Balanced focus on mitigation + adaptation ensures resilient sustainable development.
Challenges Addressed	Gradual success in pollution control, though fossil fuel reliance remains.	Afforestation success overshadowed by weak urban sustainability and enforcement.	Overcoming enforcement gaps and diversifying energy are common priorities.

Table. 07

Pakistan, conversely, despite immense solar and wind resources, has lagged behind in similar progress due to the challenges of infrastructure and governance (Khan and Chang, 2021). Thus, the lessons resulting from the proactive position of Türkiye to renewable energies can guide Pakistan to improve its energy policies thanks to improved investment executives and regulatory clarity.

In addition, financial mechanisms play a crucial role in facilitating sustainable development in both contexts. Türkiye's growing accent on green finance, in particular thanks to FinTech innovations, has become a way to promote sustainable investments (Mahmood et al., 2024). These financial tools mobilize not only private capital, but also support small and medium -sized enterprises to adopt environmentally friendly practices (Kumar et al., 2022).

The financial landscape of Pakistan offers many opportunities for green finance, but it remains underused, with limited conscience and institutional coordination hindering progress (Ali et al., 2022). By learning Türkiye strategies to cultivate green financial markets, Pakistan can improve its financing mechanisms for sustainable projects. In education, the two countries recognize the need to promote awareness of the environment among their citizens. Türkiye has incorporated sustainability into its educational programs, emphasizing knowledge transfer concerning environmental challenges (Barak and Avcı, 2022).

This educational reform empowers not only future generations, but also nourishes a culture of environmental responsibility. Comparably, while Pakistan's initiatives in environmental education are evolving, there is an important need to improve quality and access, especially in rural regions (AIF et al., 2020). The Turkish model serves as a potential reference so that Pakistan develops complete programs that instill the principles of sustainability from an early age.

Finally, at the heart of the success of any governance framework is the rule of law and institutional integrity. Türkiye's commitment to combat mismanagement within environmental governance has facilitated better application of policies and regulations (Naimoğlu et al., 2025). On the other hand, the institutional weaknesses of Pakistan have often hampered the effective application of environmental laws, which in turn negatively affect sustainability results (Khan et al., 2020).

Particularly the weak governance also hampered the effective of green governance agenda in Pakistan (Bilal et al., 2022) along with the weak judicial enforcement & of human right dilemma (Abbas et al., 2022). The strengthening of the rule of law and the improvement of institutional capacities are the lessons that Pakistan must prioritize to ensure sustainable governance.

In conclusion, Türkiye and Pakistan have unique landscapes to analyze green governance, characterized by different challenges and opportunities. The main lessons learned from Türkiye - such as multipartite engagement, investment in renewable energies, green finance, environmental education and strengthening institutional integrity - can serve as essential references to Pakistan to improve its sustainable development

practices. Simultaneously, the context of Pakistan calls for tailor -made approaches which promote the commitment and awareness of the public, approach the gaps in infrastructure and ensure a solid implementation of policies. In the end, by taking advantage of these lessons from each other, the two nations can endeavor to achieve effective environmental policies which promote sustainable development for future generations.

Conclusion

In concluding the analysis and comparison of the structures, policies and environmental results of Green Governance in Türkiye and Pakistan, it is imperative to recognize the intricate relationship between governance structures and sustainable development in both nations. Türkiye and Pakistan, sharing some similarities in their ecological and socioeconomic challenges, display different approaches to green governance that are shaped by their unique social contexts, institutional abilities and historical trajectories.

Türkiye's structure for green governance is significantly reinforced by its alignment with the environmental standards of the European Union and its aspirations for participation in the EU. This alignment influenced the establishment of a series of legislative measures and strategic plans designed to promote sustainability, reduce ecological footprints and increase environmental protections. The Turkish government has adopted several initiatives, such as the National Climate Change Action Plan and the National Biodiversity Strategy and Action Plan, which articulate clear objectives to mitigate climate change and conserve biodiversity. In addition, the country's commitment to renewable energy, especially through its investments in solar and wind energy, reflects a proactive approach to reducing fossil fuels dependence and embracing sustainable energy alternatives.

On the contrary, Pakistan's Green Governance structure has evolved in response to pressing environmental issues, particularly in relation to water scarcity, air pollution and deforestation. The country demonstrated an understanding of its environmental vulnerabilities and has begun various policies and programs, such as the clean movement of green Pakistan, which aim to involve citizens in environmental administration and promote community -oriented initiatives. In addition, Pakistan's National Climate Change Policy highlights the importance of integrating environmental considerations in development planning, recognizing that sustainable development cannot be achieved without addressing climate resilience. The historical emphasis variable in environmental governance in Pakistan, characterized by the challenge of competing development priorities, presented significant obstacles in the implementation of robust environmental policies.

Comparatively, both countries are involved in a dynamic interaction between government mandates, involvement of stakeholders and civil society participation, which shape their results of environmental governance. In Türkiye, the government actively encourages partnerships with the private sector and non-governmental organizations to implement environmental initiatives. These collaborations usually take advantage of financial resources and technical experience, which can amplify the impact of government regulations. On the other hand, in Pakistan, the role of civil society has been critical to defending environmental justice and involving local communities in conservation efforts. Base movements and local involvement of stakeholders in decision -making processes have provided a counterweight to state -led initiatives, ensuring that community needs and rights are also prioritized.

Notably, Türkiye and Pakistan face the comprehensive challenge of integrating sustainable development into their economic structures. In Türkiye, economic growth was driven by industrialization and tourism, which inevitably have an environmental cost. The country faces balanced economic aspirations with ecological sustainability, usually reflected in project approvals that can ignore environmental evaluations. On the other hand, Pakistan's development trajectory was strongly influenced by external factors, including international aid and investment, which do not always align with sustainable practices. This dependence completes the implementation of green policies and initiatives, as immediate economic needs usually

overshadow long-term environmental considerations. Environmental results in Türkiye and Pakistan offer information about the effectiveness of their governance structures.

In Türkiye, significant achievements are evident in areas such as renewable energy generation and establishment of protected areas. However, adverse phenomena, such as urban pollution, waste management crises and biodiversity loss, signal the need for continuous reforms and deeper integration of green principles in all facets of governance. Pakistan, on the other hand, faces environmental challenges that grow exacerbated by climate change and socioeconomic pressures. Although initiatives have emerged such as editing programs and urban greenish projects, the inconsistent application of environmental regulations undermine their potential effectiveness. Therefore, both nations exhibit a spectrum of environmental results that reflect their commitment to green governance, although with varying degrees of success and persistence.

To promote sustainable development effectively, Türkiye and Pakistan must face comprehensive issues of institutional capacity and public awareness. For Türkiye, improve legislative structures to prioritize environmental sustainability, ensuring that economic growth is aligned with ecological integrity is crucial. This involves not only the most rigorous application of existing environmental laws, but also promotes a culture of responsibility and transparency. In Pakistan, it is essential to strengthen institutional structures to facilitate the effective implementation of existing policies, along with public outreach and education campaigns to promote popular movements towards environmental administration. Building strong coalitions between government, civil society and private sector can facilitate the sharing of knowledge, mobilization of resources and innovation in environmental governance approaches.

In addition, approaching the gender dimensions of environmental governance is fundamental in both contexts. In Türkiye, women's participation in environmental decision making remains limited, despite the evidence suggesting that women's training in environmental management can lead to more effective and equitable results. Similarly, in Pakistan, women, particularly in rural areas, are often disproportionately affected by environmental degradation due to socioeconomic factors. Women participation in each field of life will also safeguard from exploitation to meet SDG 5 (Abbas et al., 2022). Its involvement in decision making not only ensures that several perspectives are represented, but also improve community resilience against environmental shocks.

In short, the analysis of green governance structures in Türkiye and Pakistan emphasizes the complexities and challenges inherent in the promotion of sustainable development amid various socioeconomic and environmental contexts. Both nations must navigate the challenges represented by climate change as they strive for economic growth, highlighting the need for integrated approaches that honor environmental protection imperatives. Future progress in green governance will depend on the effectiveness of these countries, taking advantage of their unique contexts, mechanisms of public participation and international collaborative efforts to build a sustainable development path that not only protects ecological integrity but also enhances social equity and economic resilience. The comparative study of Türkiye and Pakistan illustrates that, although the way towards sustainability may differ, the shared goal of achieving a harmonious balance between environmental development and administration is universally pertinent.

Policy Recommendations

Comparative analysis of green governance, policies and environmental results in Türkiye and Pakistan reveals important information that can improve sustainable development in both countries. The two countries face unique environmental challenges that require a concerted effort to implement robust green governance structures. While Türkiye is increasingly aligning its environmental policies on sustainable development objectives (SDGs), Pakistan continues to tackle urgent pollution, deforestation and resource management problems, requiring a re-evaluation of its current strategies (Ahmadi and Balkaya, 2025).

The complex interaction between governance executives, policies and environmental results offers both Türkiye and Pakistan to improve sustainable development. The two countries share challenges linked to environmental degradation and the need for sustainable growth, but they present distinct governance and political approaches. Analysis of these frameworks in the light of recent literature reveals paths to improve their environmental performance and promote sustainable governance.

By examining the green governance framework in Türkiye, it is obvious that the country has made progress in the development of a complete political approach which integrates environmental sustainability within its national development program. For example, various initiatives, aligned on SDGs, focus on improving climate resilience and promoting renewable energies (Ahmadi and Balkaya, 2025). Conversely, the approach of Pakistan has been less systematic, with fragmented policies which often fail to effectively approach the multifaceted nature of environmental degradation (Parveen and Qazi, 2023). This disparity highlights the need for Pakistan to adopt an integrated governance model which consolidates existing policies within the framework of a coherent national strategy.

Environmental results in the two countries illustrate the effectiveness of their respective executives. In Türkiye, sustainable governance has contributed to notable progress in the adoption of renewable energies, as evidenced by an increase in the share of renewable energies in its energy mix (Gündoğdu & Aytekin, 2022). On the other hand, the environmental results of Pakistan reflect the challenges of unsustainable practices, especially in urban areas where pollution levels remain alarming. This calls for an urgent reorientation of Pakistan's environmental policy towards holistic governance practices which prioritize sustainable urban development and pollution control.

To improve sustainable development in both countries, it is imperative to take advantage of the forces of the Türkiye governance framework while approaching the apparent weaknesses in the approach of Pakistan. A crucial recommendation for Pakistan is to develop a complete environmental policy framework that reflects Türkiye's alignment with the SDGs. This could involve the creation of a national environmental action plan which incorporates the commitment of stakeholders, public awareness and the integration of environmental concerns in sectoral policies. Such a plan should highlight the importance of community participation in environmental governance, as evidenced by the successful initiatives of Türkiye which promote local participation in sustainability efforts (şahin, 2022).

In addition, the two nations should improve regional cooperation to share best practices and innovative governance solutions. Collaboration efforts could include knowledge exchange platforms by focusing on the technological progress of sustainable practices, as well as on joint projects aimed at solving cross-border environmental problems. Mutual sharing of successful experiences can considerably strengthen efforts in climate adaptation and resource management, essential for sustainable future of the two nations (Aziz, Zaidi and Zia, 2024).

Investing in education and capacity building initiatives is another essential component of sustainable governance. Improving the public understanding of environmental issues through educational programs will allow citizens of Türkiye and Pakistan to contribute actively to sustainability efforts. The dissemination of knowledge should also target decision-makers, emphasizing decision-making based on evidence in environmental governance. Ensure that government and non-governmental actors are equipped with the tools necessary to meet environmental challenges are essential to achieve desired sustainability results (Gündoğdu & Aytekin, 2022).

Finally, the establishment of monitoring and evaluation systems to follow progress towards sustainability objectives is essential. These systems can help both nations to assess the effectiveness of the policies implemented and to make the necessary adjustments according to real-time data. Continuous evaluation will not only promote responsibility, but will also promote a culture of adaptive governance which is crucial to respond to the evolution of environmental challenges (şahin, 2022).

In terms of international commitments, the two countries are signatories of the Paris Agreement and have adopted sustainable development objectives (SDGs), which can serve as a basis for collaborative environmental efforts. Almaqtari et al. (2024) underline the need for coherent strategies aligning national policies on the global objectives of sustainability. For Türkiye and Pakistan, this means integrating SDGs into sectoral policies and promoting a total approach to the government where environmental concerns are at the heart of development agendas.

In addition, improving public awareness and sustainability will be essential for both nations to achieve their environmental objectives. Awareness can cultivate a sense of responsibility and community participation in environmental management, which is essential for the successful implementation of green policies. In conclusion, improving sustainable development in Türkiye and Pakistan requires a multifaceted approach that combines efficient governance, regulatory executives, public commitment and international cooperation.

By learning of best practices from each other and adapting their governance models to local contexts, the two nations can make significant progress to achieve a more sustainable future. This will require a commitment to transparency, inclusiveness and innovation in the governance and the formulation of policies, ensuring that environmental sustainability becomes a fundamental pillar of socio-economic development. The way to sustainable development of Türkiye and Pakistan depends on the strengthening of green governance executives through integrated, cooperative and educated approaches. Lessons to draw experiences from each country can facilitate the implementation of more effective policies, which has finally led to improved environmental results conducive to sustainable development.

REFERENCES

- Abbass, K., Song, H., Mushtaq, Z., & Khan, F. (2022). Does technology innovation matter for environmental pollution? Testing the pollution halo/haven hypothesis for Asian countries. *Environmental Science and Pollution Research*, 29(59), 89753-89771. <https://link.springer.com/article/10.1007/s11356-022-21929-w>
- Abbas, R., Rashid, M. A., & Bilal, F. E. (2022). International human rights and its judicial enforcement in Pakistan. *Pakistan Journal of Social Research*, 4(2), 1262-1271.
- Abbas, R., Rashid, M. A., & Bilal, F. E. (2022). Disputes arising out of foreign direct investments in Pakistan: A new look at legal and political issues. *Pakistan Journal of International Affairs*, 5(2).
- Abbas, R., Bilal, F. E., & Rashid, M. A. (2022). Domestic Violence Against Women in Pakistan: To What Extent Pakistan Fulfilled Its International Pledge. *Pakistan Journal of Social Research*, 4(1), 575-582.
- Abbas, R., Bilal, F. E., & Rashid, M. A. (2022). Terrorism and Ethnicity Threats and Policy Response. *Pakistan Journal of International Affairs*, 5(2).
- Adaman, F. (2016). *Environmentalism in Turkey: between democracy and development?* Routledge. https://books.google.com/books?hl=en&lr=&id=0z6oDQAAQBAJ&oi=fnd&pg=PT7&dq=Green+governance+legislative+frameworks+comparison+Türkiye+Pakistan+sustainable+development+practices+differences+similarities&ots=LTN6xyDhw7&sig=0PGK_hZMuMsUek9OFjS472Iza2k
- Adebayo, T. S., Oladipupo, S. D., Rjoub, H., Kirikkaleli, D., & Adeshola, I. (2023). Asymmetric effect of structural change and renewable energy consumption on carbon emissions: designing an SDG framework for Turkey. *Environment, Development and Sustainability*, 25(1), 528-556. <https://link.springer.com/article/10.1007/s10668-021-02065-w>
- Afzal, M., & Mushtaq, S. A. (2024). The Concept of Ratification of Treaties and Protocols in Public International Law and Their Non-Binding Effects on Developing Countries' Sovereignty: A Case

- Study of Pakistan. *Annals of Human and Social Sciences*, 5(3), 546-559.
<https://ojs.ahss.org.pk/journal/article/view/788>
- AHMADI, A. W., & BALKAYA, N. (2025). TURKEY'S ROLE IN ADVANCING ENVIRONMENTAL SUSTAINABILITY: THE SUSTAINABLE DEVELOPMENT GOALS (SDGS) FRAMEWORK REVIEW. *Quantum Journal of Engineering, Science and Technology*, 6(1), 23-29. <https://qjoest.com/index.php/qjoest/article/view/206>
- Ahmed, M. A., Nawaz, N., & Awan, M. R. (2024). Surface-Level Analysis of International Economic Agreements and Their Strangulatory Impact on Pakistan Economy. *Journal of Asian Development Studies*, 13(2), 40-59. <https://poverty.com.pk/index.php/Journal/article/view/469>
- Ahmed, W., Tan, Q., Shaikh, G. M., Waqas, H., Kanasro, N. A., Ali, S., & Solangi, Y. A. (2020). Assessing and prioritizing the climate change policy objectives for sustainable development in Pakistan. *Symmetry*, 12(8), 1203. <https://www.mdpi.com/2073-8994/12/8/1203>
- Ali, M., Kirikkaleli, D., Sharma, R., & Altuntaş, M. (2022). The nexus between remittances, natural resources, technological innovation, economic growth, and environmental sustainability in Pakistan. *Environmental Science and Pollution Research*, 29(50), 75822-75840. <https://link.springer.com/article/10.1007/s11356-022-21228-4>
- Almaqtari, F. A., Elsheikh, T., Hussainey, K., & Al-Bukhrani, M. A. (2024). Country-level governance and sustainable development goals: implications for firms' sustainability performance. *Studies in Economics and Finance*, 41(3), 684-723. <https://www.emerald.com/insight/content/doi/10.1108/SEF-05-2023-0272/full/html>
- Anwar, A., Huong, N. T. T., Sharif, A., Kilinc-Ata, N., Çitil, M., & Demirtaş, F. (2024). Is a green world real or a dream? A look at green growth from green innovation and financial development: Evidence from fragile economies. *Geological Journal*, 59(1), 98-112. <https://onlinelibrary.wiley.com/doi/abs/10.1002/gj.4844>
- Asif, M., Xuhui, W., Nasiri, A., & Ayyub, S. (2018). Determinant factors influencing organic food purchase intention and the moderating role of awareness: A comparative analysis. *Food Quality and preference*, 63, 144-150. <https://www.sciencedirect.com/science/article/pii/S0950329317301921>
- Asif, T., Guangming, O., Haider, M. A., Colomer, J., Kayani, S., & Amin, N. U. (2020). Moral education for sustainable development: Comparison of university teachers' perceptions in China and Pakistan. *Sustainability*, 12(7), 3014. <https://www.mdpi.com/2071-1050/12/7/3014>
- Aung, T. S., Fischer, T. B., & Shengji, L. (2020). Evaluating environmental impact assessment (EIA) in the countries along the belt and road initiatives: System effectiveness and the compatibility with the Chinese EIA. *Environmental Impact Assessment Review*, 81, 106361. <https://www.sciencedirect.com/science/article/pii/S0195925519302112>
- Awan, A., Hussain, K., Zafar, M., Butt, M. J., & Yaghmour, S. (2025). Impact of nations' green behavior on green growth by considering the moderating role of environmental policy stringency. *Management of Environmental Quality: An International Journal*, 36(2), 309-328. <https://www.emerald.com/insight/content/doi/10.1108/meq-05-2024-0200/full/html>
- Aydın, C. İ. (2020). Nuclear energy debate in Turkey: Stakeholders, policy alternatives, and governance issues. *Energy Policy*, 136, 111041. <https://www.sciencedirect.com/science/article/pii/S0301421519306287>
- Aziz, A., Zaidi, S. M., & Zia, M. B. (2024). Environmental Policy and Sustainable Development: A Comparative Analysis of Impact in Developed and Developing Nations. *Insights-Journal of Life and Social Sciences*, 2(1), 37-42. <https://insightsjlss.com/index.php/home/article/view/36>
- Barak, B., & Avcı, G. (2022). Comparative analysis of Turkey and Germany (Bavaria) secondary education curricula in terms of education for sustainable development. <https://sciendo.com/2/v2/download/article/10.2478/dcse-2022-0022.pdf>

- Bayram, O., Talay, I., & Feridun, M. (2022). Can FinTech promote sustainable finance? Policy lessons from the case of Turkey. *Sustainability*, 14(19), 12414. <https://www.mdpi.com/2071-1050/14/19/12414>
- Bilal, F. E., Abbas, R., & Rashid, M. A. (2022). Terrorism in Pakistan: A Critical Analysis. *Pakistan Languages and Humanities Review*, 6(2), 1003-1013.
- Bilal, F. E., Rashid, M. A., & Abbas, R. (2022). Fall of Kabul: A Critical Analysis of The Failure of the American's Liberal Norms. *Journal of Development and Social Sciences*, 3(2), 1139-1148.
- Bilal, F. E. (2022). Indo-Pak Public Diplomacy under the BJP: A Comparative Analysis of Vajpayee and Modi Governments. *International Journal of Kashmir Studies*, 4(2).
- Bhutta, A. I., Ullah, M. R., Sultan, J., Riaz, A., & Sheikh, M. F. (2022). Impact of green energy production, green innovation, financial development on environment quality: a role of country governance in Pakistan. *International Journal of Energy Economics and Policy*, 12(1), 316-326.
- Bildirici, M. (2022). The impacts of governance on environmental pollution in some countries of Middle East and sub-Saharan Africa: the evidence from panel quantile regression and causality. *Environmental Science and Pollution Research*, 29(12), 17382-17393. <https://link.springer.com/article/10.1007/s11356-021-15716-2>
- Bourn, D., Kalsoom, Q., Soysal, N., & Ince, B. (2023). Student Teachers' Understanding and Engagement with Education for Sustainable Development (ESD) in England, Türkiye (Turkey) and Pakistan. <https://discovery.ucl.ac.uk/id/eprint/10163160/>
- Chohan, S. R., Hu, G., Si, W., & Pasha, A. T. (2020). Synthesizing e-government maturity model: a public value paradigm towards digital Pakistan. *Transforming Government: People, Process and Policy*, 14(3), 495-522. <https://www.emerald.com/insight/content/doi/10.1108/tg-11-2019-0110/full/html>
- Degirmenci, T., Sofuoglu, E., Aydin, M., & Adebayo, T. S. (2024). The role of energy intensity, green energy transition, and environmental policy stringency on environmental sustainability in G7 countries. *Clean Technologies and Environmental Policy*, 1-13. <https://link.springer.com/article/10.1007/s10098-024-02968-y>
- Deng, Q., Usman, M., Irfan, M., & Haseeb, M. (2025, August). The role of financial inclusion and tourism in tackling environmental challenges of industrialization and energy consumption: Redesigning Sustainable Development Goals policies. In *Natural resources forum* (Vol. 49, No. 3, pp. 3112-3139). Oxford, UK: Blackwell Publishing Ltd. <https://onlinelibrary.wiley.com/doi/abs/10.1111/1477-8947.12522>
- Destek, M. A., Sinha, A., Ozsoy, F. N., & Zafar, M. W. (2023). Capital flow and environmental quality at crossroads: designing a sustainable policy framework for the newly industrialized countries. *Environmental Science and Pollution Research*, 30(31), 76746-76759. <https://link.springer.com/article/10.1007/s11356-023-27794-5>
- Dokuzoğlu, S., & Güzel, A. E. (2024). Democracy, governance, and environmental policy effectiveness: a cross-country analysis with Sustainable Governance Indicators. *European Journal of Government and Economics*, 13(1), 103-119.
- Erben Yavuz, A., Kocaman, B. E., Doğan, M., Hazar, A., Babuşcu, Ş., & Sutbayeva, R. (2024). The impact of corporate governance on sustainability disclosures: A comparison from the perspective of financial and non-financial firms. *Sustainability*, 16(19), 8400. <https://www.mdpi.com/2071-1050/16/19/8400>
- Firdous, N., Abbasi, K. R., Salman, A., Sahin, C., & Hamza, A. (2024). Sustainable development in Pakistan: explore the influence of institutions, industrialization, and tourism on consumption and territory-based emissions. *Environment, Development and Sustainability*, 1-34. <https://link.springer.com/article/10.1007/s10668-024-05091-6>

- GAO, B., Ozturk, I., & Ullah, S. (2023). A new framework to the green economy: asymmetric role of public-private partnership investment on environment in selected Asian economies. *Economic research-Ekonomska istraživanja*, 36(1), 1960-1971. <https://hrcak.srce.hr/file/438580>
- Göksu, G. G. (2022). A cross-country analysis of green public finance management and budgeting in supporting sustainable development. *Sayıştay Dergisi*, 33(126), 409-441. <https://dergipark.org.tr/en/pub/sayistay/article/1170928>
- Gündoğdu, H. A. K. A. N., & Aytekin, A. (2022). Effects of sustainable governance to sustainable development. *Operational Research in Engineering Sciences: Theory and Applications*, 5(2). <https://avesis.anadolu.edu.tr/yayin/64c7187b-38b5-46c0-b107-56620d0f8190/effects-of-sustainable-governance-to-sustainable-development>
- Güney, T. (2017). Governance and sustainable development: How effective is governance?. *The Journal of International Trade & Economic Development*, 26(3), 316-335. <https://www.tandfonline.com/doi/abs/10.1080/09638199.2016.1249391>
- Guo, M., Nowakowska-Grunt, J., Gorbanyov, V., & Egorova, M. (2020). Green technology and sustainable development: Assessment and green growth frameworks. *Sustainability*, 12(16), 6571. <https://www.mdpi.com/2071-1050/12/16/6571>
- Gyamfi, B. A., Onifade, S. T., & Ofori, E. K. (2023). Synthesizing the impacts of information and communication technology advancement and educational developments on environmental sustainability: A comparative analyses of three economic blocs—BRICS, MINT, and G7 economies. *Sustainable Development*, 31(2), 744-759. <https://onlinelibrary.wiley.com/doi/abs/10.1002/sd.2416>
- Haas, P. M. (2016). Regional environmental governance. *The Oxford handbook of comparative regionalism*, 430-456. https://books.google.com/books?hl=en&lr=&id=frhlCwAAQBAJ&oi=fnd&pg=PA430&dq=lessons+from+green+governance+comparison+Türkiye+Pakistan+sustainable+development+improvements&ots=Y_4JW9fm6M&sig=0TtV5rHVTT83jQG0raTao4zoMpo
- Habeşoğlu, O., Samour, A., Tursoy, T., Ahmadi, M., Abdullah, L., & Othman, M. (2022). A study of environmental degradation in Turkey and its relationship to oil prices and financial strategies: novel findings in context of energy transition. *Frontiers in Environmental Science*, 10, 876809. <https://www.frontiersin.org/articles/10.3389/fenvs.2022.876809/full>
- Ikram, M., Sroufe, R., Awan, U., & Abid, N. (2021). Enabling progress in developing economies: A novel hybrid decision-making model for green technology planning. *Sustainability*, 14(1), 258. <https://www.mdpi.com/2071-1050/14/1/258>
- Islam, M. N., & Cansu, E. E. (2020). BRI, CPEC, AND PAKISTAN. *International Journal on World Peace*, 37(3), 35-64. <https://www.jstor.org/stable/27115643>
- Jabeen, A., & Khan, S. A. (2022). Economic growth, social inclusion, and environmental protection: assessing the existence of green growth in Pakistan. *Environmental Science and Pollution Research*, 29(44), 66675-66688. <https://link.springer.com/article/10.1007/s11356-022-20467-9>
- Javeed, A., Khan, M. Y., Rehman, M., & Khurshid, A. (2022). Tracking sustainable development goals—a case study of Pakistan. *Journal of Cultural Heritage Management and Sustainable Development*, 12(4), 478-496. <https://www.emerald.com/insight/content/doi/10.1108/jchmsd-04-2020-0052/full/html>
- Kanie, N., & Biermann, F. (Eds.). (2017). *Governing through goals: Sustainable development goals as governance innovation*. Mit Press.
- Khan, A., Safdar, S., & Nadeem, H. (2023). Decomposing the effect of trade on environment: a case study of Pakistan. *Environmental Science and Pollution Research*, 30(2), 3817-3834. <https://link.springer.com/article/10.1007/s11356-022-21705-w>

- Khan, I., Fujimoto, Y., Uddin, M. J., & Afridi, M. A. (2023). Evaluating sustainability reporting on GRI standards in developing countries: a case of Pakistan. *International Journal of Law and Management*, 65(3), 189-208. <https://www.emerald.com/insight/content/doi/10.1108/ijlma-01-2022-0016/full/html>
- Khan, I., Fujimoto, Y., Uddin, M. J., & Afridi, M. A. (2023). Evaluating sustainability reporting on GRI standards in developing countries: a case of Pakistan. *International Journal of Law and Management*, 65(3), 189-208. <https://www.emerald.com/insight/content/doi/10.1108/ijlma-01-2022-0016/full/html>
- Khan, M. A., Mehmood, Q., Zakaria, M., & Husnain, M. I. U. (2018). A household level analysis of the Pakistan–Malaysia free trade agreement. *Journal of Asian and African Studies*, 53(7), 1062-1085. <https://journals.sagepub.com/doi/abs/10.1177/0021909618762568>
- Khan, M. I., & Chang, Y. C. (2021). Love for the climate in Sino–Pakistan economic romance: a perspective of environmental laws. *Clean Technologies and Environmental Policy*, 23(2), 387-399. <https://link.springer.com/article/10.1007/s10098-020-01938-4>
- Khan, M., Chaudhry, M. N., Ahmad, S. R., & Saif, S. (2020). The role of and challenges facing non-governmental organizations in the environmental impact assessment process in Punjab, Pakistan. *Impact Assessment and Project Appraisal*, 38(1), 57-70. <https://www.tandfonline.com/doi/abs/10.1080/14615517.2019.1684096>
- Khan, S. A. R., Sharif, A., Golpîra, H., & Kumar, A. (2019). A green ideology in Asian emerging economies: From environmental policy and sustainable development. *Sustainable development*, 27(6), 1063-1075. <https://onlinelibrary.wiley.com/doi/abs/10.1002/SD.1958>
- Khaskheli, M. B., Wang, S., Yan, X., & He, Y. (2023). Innovation of the social security, legal risks, sustainable management practices and employee environmental awareness in the China–Pakistan economic corridor. *Sustainability*, 15(2), 1021. <https://www.mdpi.com/2071-1050/15/2/1021>
- Khurshid, N. (2023). Does the causality between environmental sustainability, non-renewable energy consumption, geopolitical risks, and trade liberalization matter for Pakistan? Evidence from VECM analysis. *Heliyon*, 9(11). [https://www.cell.com/heliyon/fulltext/S2405-8440\(23\)08652-8](https://www.cell.com/heliyon/fulltext/S2405-8440(23)08652-8)
- Kılıçaslan, H., Aydin, M., Inal, V., Teksan, E., & Torusdag, M. (2024, January). A step towards sustainable environment in OECD countries: Do natural resource depletion, resource tax, institutional quality, and green innovation matter? In *Natural Resources Forum*. Oxford, UK: Blackwell Publishing Ltd. <https://onlinelibrary.wiley.com/doi/abs/10.1111/1477-8947.12515>
- Kim, Y., Tanaka, K., & Matsuoka, S. (2017). Institutional mechanisms and the consequences of international environmental agreements. *Global environmental politics*, 17(1), 77-98. <https://direct.mit.edu/glep/article-abstract/17/1/77/14999>
- Kirikaleli, D., & Osmanlı, A. (2023). The impact of political stability on environmental quality in the long run: the case of Turkey. *Sustainability*, 15(11), 9056. <https://www.mdpi.com/2071-1050/15/11/9056>
- Konuk, F. A., Rahman, S. U., & Salo, J. (2015). Antecedents of green behavioral intentions: a cross-country study of Turkey, F inland and Pakistan. *International journal of consumer studies*, 39(6), 586-596. <https://onlinelibrary.wiley.com/doi/abs/10.1111/ijcs.12209>
- Kumar, L., Nadeem, F., Sloan, M., Restle-Steinert, J., Deitch, M. J., Ali Naqvi, S., & Sassanelli, C. (2022). Fostering green finance for sustainable development: A focus on textile and leather small medium enterprises in Pakistan. *Sustainability*, 14(19), 11908. <https://www.mdpi.com/2071-1050/14/19/11908>
- Li, X., Dai, J., Zhu, X., He, J., Li, J., Liu, X., & Shen, Q. (2022). What is the mechanism of government green development behavior considering multi-agent interaction? A meta-analysis. *International Journal of Environmental Research and Public Health*, 19(14), 8263. <https://www.mdpi.com/1660-4601/19/14/8263>

- Lin, B., & Ullah, S. (2023). Towards the goal of going green: do green growth and innovation matter for environmental sustainability in Pakistan. *Energy*, 285, 129263. <https://www.sciencedirect.com/science/article/pii/S0360544223026579>
- Mahmood, S., Sun, H., Iqbal, A., Alhussan, A. A., & El-kenawy, E. S. M. (2024). Green finance, sustainable infrastructure, and green technology innovation: pathways to achieving sustainable development goals in the belt and road initiative. *Environmental Research Communications*, 6(10), 105036. <https://iopscience.iop.org/article/10.1088/2515-7620/ad898f/meta>
- Mahmoudi, N. (2025). Modeling the management of organizational projects in the field of environmental sustainability: Methodological approaches and comparative analysis of the experience of Iran and Turkey. *Экономика и управление*, 32(2), 160-170. <https://cyberleninka.ru/article/n/modeling-the-management-of-organizational-projects-in-the-field-of-environmental-sustainability-methodological-approaches-and>
- Mushtaq, S. A., Akhtar, R., & Shahab, S. Private International Law and Environmental Challenges in Pakistan: Assessing Legislative Measures, Promoting Sustainable Development Goals, and Ensuring Social Rehabilitation. *Journal of Law & Social Studies (JLSS)*, 5(3), 409-431. <https://www.advancelrf.org/wp-content/uploads/2023/09/Vol-5-No.-3-2.pdf>
- Nabi, A. A., Ahmed, F., Tunio, F. H., Hafeez, M., & Haluza, D. (2025). Assessing the impact of green environmental policy stringency on Eco-Innovation and green finance in Pakistan: a quantile autoregressive distributed lag (QARDL) analysis for sustainability. *Sustainability*, 17(3), 1021. <https://www.mdpi.com/2071-1050/17/3/1021>
- Naeem, H., Ali, A., & Audi, M. (2025). The Impact of Financial Stability on Environmental Degradation: Mediating Role of Green Investment and Moderating Role of Environmental Awareness. *Policy Journal of Social Science Review*, 3(1), 448-469. <https://policyjssr.com/index.php/PJSSR/article/view/392>
- Nagheeb, M., & Warner, J. (2018). The geopolitical overlay of the hydro politics of the Harirud River Basin. *International Environmental Agreements: Politics, Law and Economics*, 18(6), 839-860. <https://link.springer.com/article/10.1007/s10784-018-9418-9>
- Naimoğlu, M., Şahin, S., & Özbek, S. (2025). Governance, corruption, trade openness, and innovation: key drivers of green growth and sustainable development in Türkiye. *Sustainable Development*. <https://onlinelibrary.wiley.com/doi/abs/10.1002/sd.3346>
- Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). Nexus between green finance and climate change mitigation in N-11 and BRICS countries: empirical estimation through difference in differences (DID) approach. *Environmental Science and Pollution Research*, 28(6), 6504-6519. <https://link.springer.com/article/10.1007/S11356-020-10920-Y>
- Ning, L., Abbasi, K. R., Hussain, K., Alvarado, R., & Ramzan, M. (2023). Analyzing the role of green innovation and public-private partnerships in achieving sustainable development goals: A novel policy framework. *Environmental Science and Pollution Research*, 1-17. <https://link.springer.com/article/10.1007/s11356-023-26414-6>
- Nizam, H. A., Zaman, K., Khan, K. B., Batool, R., Khurshid, M. A., Shoukry, A. M., & Gani, S. (2020). Achieving environmental sustainability through information technology: “Digital Pakistan” initiative for green development. *Environmental Science and Pollution Research*, 27(9), 10011-10026. <https://link.springer.com/article/10.1007/s11356-020-07683-x>
- Odugbesan, J. A., Rjoub, H., Ifediora, C. U., & Iloka, C. B. (2021). Do financial regulations matters for sustainable green economy: evidence from Turkey. *Environmental Science and Pollution Research*, 28(40), 56642-56657. <https://link.springer.com/article/10.1007/s11356-021-14645-4>
- Ozkan, O., Khan, N., & Ahmed, M. (2023). Impact of green technological innovations on environmental quality for Turkey: evidence from the novel dynamic ARDL simulation model. *Environmental Science and Pollution Research*, 30(28), 72207-72223. <https://link.springer.com/article/10.1007/s11356-023-27350-1>

- Ozturk, I., Majeed, M. T., & Khan, S. (2021). Decoupling and decomposition analysis of environmental impact from economic growth: a comparative analysis of Pakistan, India, and China. *Environmental and Ecological Statistics*, 28(4), 793-820. <https://link.springer.com/article/10.1007/s10651-021-00495-3>
- Öztürk, T., & Durak, İ. N. (2024). EU Environmental Policies in the Context of Green Theory and Türkiye's adaptation process. *Alayna Akademik Bakış*, 8(1), 224-226. <https://dergipark.org.tr/en/pub/alanyaakademik/article/1324780>
- Parveen, T., & Qazi, B. D. M. N. A. (2023). Sustainable Environmental Development Goals: A Comparative Analysis of India and Pakistan. *Shnakhat*, 2(4), 80-111. <http://shnakhat.com/index.php/shnakhat/article/view/208>
- Qadri, A. Q., Qadri, S., & Ahsan, A. (2016). Comparative study of local government with reference to Pakistan and Turkey relationship. *Developing Country Studies*, 6(3), 7-12. <https://www.academia.edu/download/55751928/11.pdf>
- Qudrat-Ullah, H. (2023). A review and analysis of green energy and the environmental policies in South Asia. *Energies*, 16(22), 7486. <https://www.mdpi.com/1996-1073/16/22/7486>
- Rashid, M. A., Bilal, F. E., & Abbas, R. (2022). Stability in Afghanistan: Ramifications for Pakistan. *Journal of Development and Social Sciences*, 3(2), 1092-1101.
- Rashid, M. A., Abbas, R., & Bilal, F. E. (2022). Role of Hindutva Ideology in Escalation of Extremism in India: A Comparative Analysis of Congress and BJP Govt. (2009-2019). *Pakistan Languages and Humanities Review*, 6(2), 983-993.
- Razzaq, A., Sharif, A., Ozturk, I., & Afshan, S. (2023). Dynamic and threshold effects of energy transition and environmental governance on green growth in COP26 framework. *Renewable and Sustainable Energy Reviews*, 179, 113296. <https://www.sciencedirect.com/science/article/pii/S1364032123001521>
- Rehman, A., Ma, H., Ozturk, I., & Ulucak, R. (2022). Sustainable development and pollution: the effects of CO2 emission on population growth, food production, economic development, and energy consumption in Pakistan. *Environmental Science and Pollution Research*, 29(12), 17319-17330. <https://link.springer.com/article/10.1007/s11356-021-16998-2>
- Rehman, A., Ullah, I., Afridi, F. E. A., Ullah, Z., Zeeshan, M., Hussain, A., & Rahman, H. U. (2021). Adoption of green banking practices and environmental performance in Pakistan: A demonstration of structural equation modelling. *Environment, Development and Sustainability*, 23(9), 13200-13220. <https://link.springer.com/article/10.1007/s10668-020-01206-x>
- Rehman, F. U., & Prokop, V. (2023). Interplay in management practices, innovation, business environment, degree of competition and environmental policies: a comparative study. *Business Process Management Journal*, 29(3), 858-892. <https://www.emerald.com/insight/content/doi/10.1108/BPMJ-11-2022-0582/full/html>
- Şahin, F. (2022). An Analysis on the Comparison of Green Growth indices: The Case of Turkey and EU Countries (Master's thesis, Marmara Üniversitesi (Turkey)). <https://search.proquest.com/openview/326eb04ab2534df5aa92e9ab07f68ff2/1?pq-origsite=gscholar&cbl=2026366&diss=y>
- Sarker, P. K., Rahman, M. S., & Giessen, L. (2019). Regional economic regimes and the environment: stronger institutional design is weakening environmental policy capacity of the South Asian Association for Regional Cooperation. *International Environmental Agreements: Politics, Law and Economics*, 19(1), 19-52. <https://link.springer.com/article/10.1007/s10784-018-9422-0>
- Shah, S. Q. A., Lai, F. W., Shad, M. K., & Jan, A. A. (2022). Developing a green governance framework for the performance enhancement of the oil and gas industry. *Sustainability*, 14(7), 3735. <https://www.mdpi.com/2071-1050/14/7/3735>

- Shahid, M., Ullah, K., Imran, K., Masroor, N., & Sajid, M. B. (2022). Economic and environmental analysis of green transport penetration in Pakistan. *Energy Policy*, 166, 113040. <https://www.sciencedirect.com/science/article/pii/S0301421522002658>
- Shahzad, A., & Humza, N. (2024). Conceptualizing green governance: Prospects and challenges for Pakistan. *Journal of Politics and International Studies*, 10(2), 1-13. <https://jpis.pu.edu.pk/45/article/view/1369>
- Shahzad, A., & Humza, N. (2024). Conceptualizing green governance: Prospects and challenges for Pakistan. *Journal of Politics and International Studies*, 10(2), 1-13. <https://jpis.pu.edu.pk/45/article/view/1369>
- Shehzad, K., Zaman, U., Ahmad, M., & Kocak, E. (2023). Governance, financial development, and environmental degradation: evidence from symmetric and asymmetric ARDL. *Environment, Development and Sustainability*, 25(12), 14643-14660. <https://link.springer.com/article/10.1007/s10668-022-02682-z>
- Shi, Y., Zhu, Q., & Khan, M. A. (2024). The efficacy of green finance for environmental sustainability: Does control of corruption makes a difference? *Borsa Istanbul Review*, 24(6), 1179-1189. <https://www.sciencedirect.com/science/article/pii/S221484502400108X>
- Shoukat, W., Muhib, K., Awan, A. U. H., Rahman, Z., & Munir, M. A. (2025). Environmental Law and Policy: International Agreements and National Implementation. *Journal of Social Signs Review*, 3(4), 120-128. <https://socialsignsreview.com/index.php/12/article/view/207>
- Siddikoglu, H., & Sagioglu, A. Z. (2023). The responses of Pakistan and Turkey to refugee influxes: A comparative analysis of durable solutions to protracted displacements. *Journal on Migration and Human Security*, 11(1), 41-56. <https://journals.sagepub.com/doi/abs/10.1177/23315024231160764>
- Siddiqui, A., Altekari, S., Kautish, P., Fulzele, S., Kulkarni, N., Siddiqui, M., & Bashir, M. F. (2023). Review of measurement of sustainable development goals: a comprehensive bibliometric and visualized analysis. *Environmental Science and Pollution Research*, 30(40), 91761-91779. <https://link.springer.com/article/10.1007/s11356-023-28887-x>
- Sohag, K., Taşkın, F. D., & Malik, M. N. (2019). Green economic growth, cleaner energy and militarization: Evidence from Turkey. *Resources Policy*, 63, 101407. <https://www.sciencedirect.com/science/article/pii/S0301420718306627>
- Sohail, M. T., Ullah, S., Majeed, M. T., & Usman, A. (2021). Pakistan management of green transportation and environmental pollution: a nonlinear ARDL analysis. *Environmental Science and Pollution Research*, 28(23), 29046-29055. <https://link.springer.com/article/10.1007/s11356-021-12654-x>
- Solangi, Y. A., Tan, Q., Mirjat, N. H., & Ali, S. (2019). Evaluating the strategies for sustainable energy planning in Pakistan: An integrated SWOT-AHP and Fuzzy-TOPSIS approach. *Journal of Cleaner Production*, 236, 117655. <https://www.sciencedirect.com/science/article/pii/S0959652619325053>
- Sultan, S., Ahmed, S., & Imran, M. (2020). Awareness regarding environmental education: A qualitative study suggesting practical steps in education leading to a green Pakistan. *Global Social Sciences Review*, 5(1), 510-518. <https://www.gssrjournal.com/article/awareness-regarding-environmental-education-a-qualitative-study-suggesting-practical-steps-in-education-leading-to-a-green-pakistan>
- Susskind, L. E., & Ali, S. H. (2014). *Environmental diplomacy: Negotiating more effective global agreements*. Oxford University Press.
- Taneja, S., & ÖZEN, E. (2023). Impact of the European Green Deal (EDG) on the agricultural carbon (CO₂) emission in Turkey. *International Journal of Sustainable Development and Planning*, 18(3). <https://avesis.usak.edu.tr/yayin/661f4b38-20eb-469b-8814-b0a80af17924/impact-of-the-european-green-deal-edg-on-the-agricultural-carbon-co2-emission-in-turkey>

- Tsai, W. H., Lee, H. L., Yang, C. H., & Huang, C. C. (2016). Input-output analysis for sustainability by using DEA method: A comparison study between European and Asian countries. *Sustainability*, 8(12), 1230. <https://www.mdpi.com/2071-1050/8/12/1230>
- Uddin, R., Shaikh, A. J., Khan, H. R., Shirazi, M. A., Rashid, A., & Qazi, S. A. (2021). Renewable energy perspectives of Pakistan and Turkey: Current analysis and policy recommendations. *Sustainability*, 13(6), 3349. <https://www.mdpi.com/2071-1050/13/6/3349>
- Ullah, A., Pinglu, C., Ullah, S., Abbas, H. S. M., & Khan, S. (2021). The role of e-governance in combating COVID-19 and promoting sustainable development: a comparative study of China and Pakistan. *Chinese Political Science Review*, 6(1), 86-118. <https://link.springer.com/article/10.1007/s41111-020-00167-w>
- Ullah, S., Ozturk, I., & Sohail, S. (2021). The asymmetric effects of fiscal and monetary policy instruments on Pakistan's environmental pollution. *Environmental Science and Pollution Research*, 28(6), 7450-7461. <https://link.springer.com/article/10.1007/s11356-020-11093-4>
- Ursavaş, N., & Apaydın, Ş. (2024). Environmental sustainability in developing countries: does democracy matter?. *Problemy Ekorozwoju*, 19(1). <https://yadda.icm.edu.pl/baztech/element/bwmeta1.element.baztech-45c0c6ee-bf74-42bd-a6c9-5055c813c4d2>
- Uslu, Y. D., Hancioğlu, Y., & Demir, E. (2015). Applicability to green entrepreneurship in Turkey: A situation analysis. *Procedia-Social and behavioral sciences*, 195, 1238-1245. <https://www.sciencedirect.com/science/article/pii/S1877042815037453>
- Usman, A., Ozturk, I., Naqvi, S. M. M. A., Zafar, S. M., & Javed, M. I. (2023). Green versus conventional growth in the EKC framework of top pollutant footprint countries: evidence based on advanced panel data techniques. *Geological Journal*, 58(9), 3368-3384. <https://onlinelibrary.wiley.com/doi/abs/10.1002/gj.4822>
- Vaghefi, N., Siwar, C., & Aziz, S. A. A. G. (2015). Green economy: issues, approach and challenges in muslim countries. *Theoretical Economics Letters*, 5(1), 28-35.
- Wang, Q., Ren, F., & Li, R. (2024). Exploring the impact of geopolitics on the environmental Kuznets curve research. *Sustainable Development*, 32(3), 1700-1722. <https://onlinelibrary.wiley.com/doi/abs/10.1002/sd.2743>
- Xin, Y., Dilanchiev, A., Ali, M., Irfan, M., & Hong, Y. (2022). Assessing citizens' attitudes and intentions to adopt e-government services: a roadmap toward sustainable development. *Sustainability*, 14(22), 15183. <https://www.mdpi.com/2071-1050/14/22/15183>
- Xu, D., Abbasi, K. R., Hussain, K., Albaker, A., Almulhim, A. I., & Alvarado, R. (2023). Analyzing the factors contribute to achieving sustainable development goals in Pakistan: A novel policy framework. *Energy Strategy Reviews*, 45, 101050. <https://www.sciencedirect.com/science/article/pii/S2211467X22002449>
- Yang, J., Li, R., & Solangi, Y. A. (2024). Assessing and prioritizing drivers and strategies for transition to a green energy for sustainable development in China. *Heliyon*, 10(4). [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)01716-X](https://www.cell.com/heliyon/fulltext/S2405-8440(24)01716-X)
- Yavaş, H. K. (2025). Policies for Green Transition of the Turkish Industry: An Evaluation through Istanbul's Organized Industrial Zones. *Pakistan Journal of Life & Social Sciences*, 23(1). https://www.pjlss.edu.pk/pdf_files/2025_1/7858-7872.pdf
- Yingjun, Z., Jahan, S., & Qamruzzaman, M. (2024). Technological Innovation, Trade Openness, Natural Resources, and Environmental Sustainability in Egypt and Turkey: Evidence from Load Capacity Factor and Inverted Load Capacity Factor with Fourier Functions. *Sustainability* (2071-1050), 16(19).
- Yusuf, R., & Fajri, I. (2022). Differences in behavior, engagement and environmental knowledge on waste management for science and social students through the campus program. *Heliyon*, 8(2). [https://www.cell.com/heliyon/fulltext/S2405-8440\(22\)00200-6](https://www.cell.com/heliyon/fulltext/S2405-8440(22)00200-6)

- Zeitoun, M., Cascão, A. E., Warner, J., Mirumachi, N., Matthews, N., Menga, F., & Farnum, R. (2017). Transboundary water interaction III: contest and compliance. *International Environmental Agreements: Politics, Law and Economics*, 17(2), 271-294. <https://link.springer.com/article/10.1007/s10784-016-9325-x>
- Zhang, L., Zhang, Z., Bieryt, K., & Aftab, S. (2023). Sustainable green financial system perspective of environmental protection investment and the government's environmental policy or public participation: evidence from Chinese A-share listed companies. *Economic research-Ekonomska istraživanja*, 36(2). <https://hrcak.srce.hr/file/442910>