



## **Navigating Environmental Challenges: Legal Strategies for Sustainability in Pakistan**

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### **Abstract**

This research involves the environmental legal framework of Pakistan and its effectiveness and sustainability. Using a series of case studies and analysis of legislation and scholarly literature, the study examines key themes such as strengths and weaknesses of the legal framework, its application, and obstacles to its implementation. The findings reveal serious weaknesses in the enforcement mechanisms, institutional capacities and legal provisions which make it difficult to fully deal with environmental issues satisfactorily. Notwithstanding impressive laws and regulatory bodies, there are gaping holes which remain unbridged, thus contributing to ongoing environmental degradation. The research lends further urgency to comprehensive legal reforms to address these challenges and strengthen enforcement, increase transparency, and build an environment of environmental stewardship. This research bridges the gap between theory and practice to yield important insights into the challenges of environmental governance in Pakistan and sets a basis for future research and policy responses for enhancing sustainability and conducting environmental interventions in Pakistan.

**Keywords:** Environmental Governance, Environmental Laws in Pakistan, Sustainability, Implementation Challenges, Policy Reforms

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## Introduction

From a legal perspective, environmental sustainability is the creation and enforcement of laws, regulations and policies that are regulating to protect the environment, protecting natural assets, and maintaining long-term ecological balance. Legal framework creation that helps drive and promote (or enable) the responsible use of resources, reducing environmental degradation, and for practices that contribute to the health of ecosystems and human beings. Controlling the delicate tension between economic development and ecological preservation requires effective environmental laws that give structure to environmental problems and drive sustainability.

Pakistan has numerous environmental challenges threatening its ecological stability as well as the welfare of its population. Environmental problems faced by the country include severe air and water pollution, deforestation, land degradation and impacts of climate change, including extreme weather events and rising temperatures. The World Bank (2021) ranks Pakistan among the top ten countries most affected by climate change over the last two decades. In addition, the Pakistan Environmental Protection Agency states that the urban population of Pakistan is exposed to air pollution levels that exceed WHO safe limits in over 90% of the country. The country also face serious water scarcity, with the Pakistan Council of Research in Water Resources (PCRWR) warning that Pakistan could run out of water altogether by 2025 if the trends continue. These statistics indicate that felt urgent the need for the use of efficient environmental governance and strong legal frameworks to combat the ill effects of these challenges.

Major sources of air pollution in cities such as Lahore and Karachi are vehicular emissions and industrial activities, according to recent reports which indicate that urban air pollution levels broadly exceed safe levels (World Bank, 2021). Other serious issues that are important to tackle are water scarcity and contaminants, deforestation and biodiversity loss, which is done to give the impetus to implement and enforce the environmental laws of Pakistan in a more effective manner and in time.

The strict legislative framework has not been effective because enforcement is very difficult. Therefore, there may be the ensuing query as to how the existing legal instrument has been utilised to grapple with particular environmental difficulties in Pakistan and the consequences endured to the sustainability. What are the differences in the legal strategies and frameworks in Pakistan with their counterparts in other nations facing similar environmental challenges, and how could we learn from that improvement? What can we specifically suggest as legal reforms and strategies to make Pakistan's environment sustainable from the perspective of policy change and public participation? Regulatory agencies typically have

limited resources or lack expertise in the required technical areas, and often an inability to coordinate across agencies (Nadeem et al., 2020). Corruption and political interference further weaken enforcement efforts so that there is extensive non-compliance with environmental standards. In addition, environmental awareness and community involvement in the issue of environmental protection is low.

To fill these gaps, a qualitative approach based on document analysis and case study is used to evaluate the efficacy of Pakistan's environmental laws. This is then compared to other countries to provide a wider perspective and thus highlight possible avenues for reform. Additional perspectives on environmental regulations are provided by interviews with policymakers, environmental experts, and community leaders. The study seeks to propose actionable legal reforms in the interest of improving environmental governance in Pakistan, based on drawing on the best national and international practices along with engagement with diversified stakeholders. The ultimate goal is to shape a more resilient and sustainable environmental framework that balances achievements of human development capability with the necessity of preserving the country's natural resources and the ecosystem for future generations.

## **Literature Review**

### **Legal Framework for Environmental Protection in Pakistan**

Scholarly work in Pakistan has identified and also critiqued, Pakistan's legal framework for environmental protection through the Pakistan Environmental Protection Act 1997 (PEPA) and other associated laws (Ilyas et al., 2019). Sohail et al. (2022) critically reviewed the effectiveness of PEPA as a key element in establishing environmental governance. The Act defines environmental national objectives with sustainable development and conservation of natural resources. The definition of implementation mechanisms is also criticised for being ambiguous and vague on the other hand. In many cases, the broad objectives of PEPA might make sense but at the same time they pose enforcement problems for regulators in attempting to understand and apply these objectives in the same way, writes Ullah et al. (2021).

Legalisation setup is made structurally in such a manner by establishing the Pakistan Environmental Protection Agency (Pak-EPA) and Environmental Tribunals which act as an oversight and dispute resolution mechanism. For instance, while these institutions exist, Nadeem et al. (2020) warn that they may fall chronically short in terms of having the capacity and resources to enforce environmental regulations. Air and water quality, hazardous waste management and an environmental impact assessment are discovered in PEPA as do some important provisions about these issues. Hassan et al. (2020) however, insisted that penalties

for non-compliance are rather lenient and highlighted that the lack of strong penalties in the legal framework weakens the deterrence of the legal framework. Environmental protection in Pakistan is based upon a built-in scheme for ecological problems under a legal framework, but this program failed due to incongruities in clarity and instrumentation capacity and due to its severe penalties.

### **Strengths and Weaknesses of the Current Legal Framework**

Several other studies on the existing legal framework of environmental protection in Pakistan point out its strengths and weaknesses. Also notable is the concession established by regulatory bodies and the laying of comprehensive environmental objectives. Pakistan Environmental Protection Act of 1997 (PEPA) is clear evidence of Pak EPA and Environmental Tribunals as legal guarantors of creation (Rehman et al. 2021). Additionally, PEPA points out the nation's environmental reference points such as sustainable development and pollution prevention (Nizam et al., 2020). However, the legal framework is positive, in that it has implemented successful environmental protection initiatives, including National Environmental Quality Standards (NEQS). This is how NEQS set up for all air and water pollutants are made to maintain quality. Murshed et al. (2021) considered NEQS an important monitoring and control tool for pollution, and the NEQS indicates a proactive variety of environmental regulations.

Despite these strengths, weaknesses are evident in critical evaluations of the implementation and playing of environmental laws. Ikram et al. (2019) observed a considerable variance between actual enforcement and institutional laws, and testify to the absence of resources, corruption and insufficiency of institutional powers as causes. Similarly, Chien et al. (2021) and Shahzad et al. (2020) noted that the absence of strict penalties for noncompliance lessens the deterrence effect, under a legal framework. This legal framework and other major sources such as agriculture and urban development are not included as sources of industry pollution. According to Sun et al. (2020), fair treatment to address the various causes of environmental degradation requires more than the current fragmented approaches. There have been great legislative efforts by the Pakistani government towards legalising abortion, but questions remain about whether the implementation and implementation of these legal efforts will take place. To improve the current legal framework even more, the supporting institutions' capacities have to be built further, penalty structures can be revisited, and environmental regulation has to be made more inclusive.

## **Application of Legal Framework and its Impact on Sustainability**

To determine the practical application of the legal framework in Pakistan, there is a need to examine specific environmental problems through case studies. For instance, the pollution of water in the Indus River Basin can help us to understand the comportment with which the legal regulatory framework responds to wastewater discharge and agricultural flow pollution (Fatima et al., 2021; Rana and Bhatti, 2018). Ilyas et al. (2019) argued for the use of case studies to uncover the complexities of environmental issues and scrutinise how environmental issues are legally responded to.

Review of actions taken, enforcement measures and results scrutinise the application of existing legal regulation to the real world. As stated by Sohail et al. (2022), environmental regulation exists, but implementation is not always backed by the enforcement machinery due to resource constraints and the absence of coordination. It shows that the basic implementation strategy based on the legal framework is not enough to exploit the critical perspective.

The effectiveness of the present legal framework should be evaluated in light of the ability of legal strategies to aid in meeting sustainability goals (Ullah et al., 2021; Nadeem et al., 2020). For example, Hassan et al. (2020) emphasise the need for outcome-oriented evaluation. The question is whether environmental indicators have responded by increasing over time in the presence of the law, and critical to the effectiveness of goals embedded within the legal framework of sustainable development. Finally, case studies and outcome-oriented evaluation find that despite its existence, the legal framework is inefficient as the planned sustainable development does not take place mainly driven by lack of enforcement or absence of coherent implementation strategies.

## **Challenges in Implementation and Opportunities for Legal Reforms**

The analysis of challenges to the implementation of environmental laws in Pakistan is complex with systemic and practical dimensions. Murshed et al (2021) indicated that the implementation is faced with a major challenge given a lack of resources, such as financial and human are among others. Moreover, many government agencies involved in the enforcement of the environment are disjointed and they do not coordinate very well. Ikram et al. (2019) reported that in the corruption of regulatory bodies, the laws are not being implemented and when they are attempted they fail. The problem with this lack of specificity in the law would be how to implement the law.

A better legal environment and effective reforms are needed to explore the opportunities that present themselves. The first component is to employ international best processes in legal reform. The key challenge for Pakistan is to adopt successful models from other countries to

obtain insights into how to address their specific problems. This includes some examples such as advanced monitoring technologies and transformative enforcement strategies that are present in successful international frameworks (Rana & Bhatti, 2018; Ilyas et al., 2019). The local context is important and international best practices are useful, but not blindly followed as a guideline. Sohail et al. (2022) cautioned against adopting foreign strategies in a unique socio-economic and political context as in the case of Pakistan. Any required legal reforms will depend on the nation's needs and challenges.

## **Theoretical Framework**

### ***Environmental Legal Theory:***

Barry Hills' environmental legal theory serves as a conceptual framework through which to understand the philosophical basis, principles and norms of environmental laws and regulations. Its primary aim is to provide a theoretical explanation of legal structures and their implication for environmental protection and sustainability (Hill, 2009). It serves as the basis of the theory of perception and of understanding the principles and goals written in the environmental laws (Abid et al., 2021). Also, it aids in decoding the intent behind legal provisions and validation of sustainability goals. Rehman et al., (2021) critically evaluated the conceptual underpinnings of the Pakistan Environmental Protection Act, 1997 and similar laws through the prism of environmental legal theory, thereby providing a theoretical basis to the latter analysis.

### ***Institutional Theory:***

John Meyer and Brian Rowan (1977) constructed an institutional theory which focuses on the organisations and institutions in the area of social behaviour. Environmental governance can be treated using institutional theory which relates to structures, rules and routines in organisations and regulatory bodies. This examines how these institutions influence decision-making, policy implementation and so on environmental management (Murshed et al., 2021). The application of this theory will shed light on the systemic problems and chances of reforms by analysing the efficiency of institutions like the Pakistan Environment Protection Agency (PEPA) and Environmental Tribunals. To offer concrete, locally appropriate improvements, it is necessary to understand how institutions affect, or are affected by, environmental laws (Chien et al., 2021).

### ***Diffusion of Innovations Theory:***

Everett Rogers and others developed the Diffusion of Innovations theory which explains how new ideas, practices, or technologies diffused through a social system. From an environmental standpoint, this theory allows us to assess how sustainable solutions policy and advanced technology are integrated into society (Rogers et al., 2014). It acts as a tool for the

quantification of the adoption of new environmental strategies and technologies (Shahzad et. al 2020). The theory is applied in the context of Pakistan to analyse how novel legal and regulatory practices from other nations can be modified to address local environmental problems (Fatima et al., 2021). This research seeks to find out the innovative solutions that can be used in environmental issues by studying successful international models and best practices. The Diffusion of Innovations theory is, therefore, an important clue for the spread and adoption of new ways to solve environmental problems.

## **Material and Methods**

### **Research Design and Data Collection**

The secondary qualitative with the deductive approach was the adopted research design for this study. The purpose of such a nuanced and detailed approach (Mohajan, 2018) towards this complicated social phenomenon is well chosen to research the complexities of the environmental legal frameworks in Pakistan. A descriptive research design was used in the study as researchers observed the happenings naturally occurring without disturbing variables and acting upon experimental conditions (Siedlecki, 2020). It collected data from many trusted sources to present the information to the reader in a comprehensive way and in a well-rounded way to understand environmental laws and sustainability in Pakistan. Principally, relevant literature reviews were sourced from Google Scholar, JSTOR and the World Economic Forum providing papers and reports as sources. Country-specific studies, such as studies, scholarly articles, legal documents and reports were obtained from the Pakistan Research Repository for local environmental issues and local legal responses. Also, key resources from highly reputable think tanks such as Pakistan Environmental Protection Agency (PEPA), United Nations Environment Programme (UNEP) and World Health Organisation (WHO) were used. As a result, this holistic approach led to the creation of a rich and wide dataset that was subsequently dissected to better understand Pakistan's environmental legal framework and its ability to address its sustainability challenges.

### **Legal Framework and Its Effectiveness**

Pakistan's environmental protection legal framework comprising the Pakistan Environmental Protection Act of 1997 (PEPA) and other relevant legislations are important for allowing Pakistan to mitigate environmental issues and sustenance. These provisions are a major step towards environmental governance, however, enforcement of these provisions has been greatly limited by weaknesses and gaps identified.



One of the key components of the legal framework is officially provided in PEPA through Section 3 describing the establishment of the Pakistan Environmental Protection Agency (Pak-EPA). Pak-EPA is the prime regulator body to enforce environmental laws and regulations. Nevertheless, the Pak EPA is hampered by scarce resources insufficient capacity to cover all legally defined responsibilities, and poor coordination with other relevant authorities (Nadeem et al. 2020). Support for increasing Pak-EPA's enforcement capacity will include additional funding for the Pak-EPA (training programs, inter-agency cooperation etc.) which will help increase Pak-EPA's ability to enforce environmental violations and lead to increased Pak-EPA effectiveness.

Another important provision of the Pak-EPA is Section 12, which implies the requirement of Environmental Impact Assessments (EIAs). Environmental Impact Assessments are the tools used to evaluate the potential environmental effects of a development project and determine the right measures of mitigation. Despite these shortcomings, lack of transparency, limited public participation and inconsistent implementation (Sohail et al., 2022), EIA often fails. Better public consultation, easier access to information, and better independent oversight are critical to making EIAs more effective. If integrated into these steps, EIAs would become more credible and effective sources of environmental protection.

PEPA (1986) outlines specific procedures and institutions for dealing with some of the key areas of air and water quality, hazardous waste management and biodiversity conservation. By allowing regulatory bodies to set National Environmental Quality Standards (NEQS) for different types of pollutants in Section 11 of PEPA, the model provides a framework for system owners to plan based on the social limitations imposed by the regulatory bodies. As Hassan et al. (2020) have highlighted, NEQS aids in setting guidelines for the control of pollution but they often lack enforcement and do not have the necessary monitoring infrastructure to provide useful inputs into the climate economy. To make NEQS more effective, there is a need to improve enforcement measures, install pollution monitoring technologies and educate the public on environment standards. Therefore, the implementation of NEQS will be much more effective and will bring about greater control over environmental pollution and its protection.

There are many gaps and weaknesses in the legal framework for environmental protection. A major problem is that there are weak penalties for violations of the environment. Unlike its predecessor, the Fine applies up to five hundred thousand rupees under the Pakistan Environmental Protection Act (PEPA), however, the amount is not high enough to discourage pollution (Ilyas et al., 2019). Moreover, environmental harm by corporations and individuals is not truly held to account by the law, and the law has little impact on changing harmful behaviour. Secondly, there are not enough legal provisions to deal with new environmental problems such as climate change and biodiversity loss. Although PEPA provides an overall

structure for environmental protection, it does not directly deal with those important challenges (Ullah et al., 2021). To address these issues, stronger still, the legal framework must be amended and policy institutions that fulfil mandatory principles of climate change adaptation and mitigation, biodiversity conservation, and essential principles of sustainable development be put in place. Such an approach would be much more effective and forward-looking in environmental protection.

Encompassing strengths, weaknesses and gaps, the provisions of the legal framework in Pakistan on environmental protection are apparent while the challenge of environmental protection in Pakistan is due to the strengths, weaknesses and gaps it possesses. The legal framework in Pakistan is effective to the extent that the enforcement mechanisms are strengthened, transparency, and public participation are improved and emerging environmental issues are addressed.

## **Comparative Analysis**

### **India:**

A comparison of its strategies and framework with Pakistan and India is made. Even though both countries have been able to create environmental protection acts responding to the Pakistan Environmental Protection Act (1997) and the Indian Environment (Protection) Act (1986), their efficiency changed (Khan et al., 2020). However, in India laws such as the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, have been passed for environmental protection. There also have been set up institutions like the National Green Tribunal for such environmental disputes. Bureaucratic inefficiencies and lack of resources also pose challenges for India and Pakistan to enforce and implement these laws (Light, 2019). Despite these constraints, comparing the approaches in one country to those of another offers opportunities for lessons on what to change in the law in both of those countries on the path toward an environmentally sustainable future.

### **China:**

The legal strategies and frameworks of Pakistan and China are seen to display differences and similarities. There are very strict Environmental Protection Laws and Air Pollution Prevention and Control Laws in China, and they have succeeded in making the cities' air and water much better (Hassan et al., 2020). On the other hand, Pakistan's legal framework suffers from institutional weakness and resource limitations and is unable to be effectively enforced. Both countries have the same environmental challenges but China was more proactive with stronger legislation and more enforcement thus resulting in more visible progress in reducing pollution and promoting sustainability (Lazarus, 2023). Pakistan,

however, has found it far harder to make the same level of impact. China's experience in further improving its legal framework and increased enforcement facilities can facilitate Pakistan to more quickly attain similar environmental goals.

### **USA:**

An analysis of the legal strategies and frameworks that exist in Pakistan and the USA highlights stark differences in how things are approached and the outcome of the strategies. Both countries though have passed environmental protection laws like (the Pakistan Environmental Protection Act (PEPA), 1997 and the Clean Air Act (CAA), 1970 in the USA) but the laws are poorly implemented (Ikram et al., 2019). The USA is a country with good compliant enforcement mechanisms and agencies (the Environmental Protection Agency (EPA) and other agencies) of this nature. On the other hand, Pakistan is low on resources, and corruption and it has very poor institutional capacities in enforcement. More importantly, legal instruments in America cover a wider scope and contain more content, while those in the USA cover a narrower scope, and are less political (Khan et al., 2020). Finally, the comparative analysis as a whole urges Pakistan to enhance its enforcement mechanisms and its more general capacities to appropriately implement its environmental legal framework.

## **Key Findings and Discussion**

The research findings constitute a comprehensive analysis of the existing environmental legal framework in Pakistan from the angle of its structure, effectiveness and application with challenges existing at the chalk. The environmental governance legal framework includes the Pakistan Environmental Protection Act 1997 (PEPA) and its implementing legislation. It is however severely flawed despite enabling these, analyses of weaknesses and gaps within it, however, reveal its flawed basis. The law is in some respects ambiguous, offers few means of enforcement, and focuses far too much attention on the problem of industrial pollution, all of which undermine the effectiveness of the framework in addressing a range of environmental issues.

This context is a crucial matter of strengths and weaknesses of the current legal framework. However the government has made efforts to pass laws such as PEPA and have bodies like the PEPC, however, enforcement of this continues to be an issue. The resources are limited, corruption, weak institutional capacities, gaps in legislative measures and inadequate penalties for violators render environmental laws inefficiently implemented. Environmental degradation continues taking affect ecosystems, people's health, and socioeconomic development. In addition, the research demonstrates that the legal framework works very badly. Despite implementation proceeding weakly — constrained by limits to resources, corruption

and bureaucratic deficiencies — laws and regulations are surpassed. The absence of good enforcement mechanisms and monitoring compounds long-lasting environmental degradation. The results suggest that institutional capacities must be improved, transparency and accountability increased, public engagement increased and environmental stewardship promoted with critical analysis and reform.

Given these challenges, there exist opportunities to legally reform Pakistan as well as the opportunity to offer improved environmental governance to Pakistan. Strengthening abilities of institutions, adherence to laws to international best practices and innovative approaches such as the design of technology-driven monitoring and enforcement mechanisms are promising solutions. However, these reforms will require constant efforts to implement and enforce them by the stakeholders at all levels and will have already been made in vain if successful.

The results of this study suggest possible courses of action within the legal system to deal with the systemic problems that need to be resolved for the sustainability of the environment in Pakistan. Effective enforcement mechanisms, robust institutional capacities, and public engagement are critical to ensure compliance with environmental regulations and mitigation of environmental degradation. Consequently, it calls for further collaborative work from government, civil society, and other players for exploitation of these findings to synergise them into actionable policies and initiatives which are aimed at protecting as well as the prosperity of the environment in Pakistan.

## Conclusion

This research revealed a complex and multifaceted landscape to understanding Pakistan's environmental sustainability and legal challenges facing the country. The strengths, weaknesses and possible approaches for environmental governance improvement have been gleaned from a microscopic analysis of the existing legal framework using case studies, comparative analysis and critical evaluation. However, as in the case of Pakistan's legal framework, PEPA and various provincial laws at the local level support its robustness and complementation, placing the said legislation central to the findings. The idea of these legal instruments covers the regulatory mechanism, institutional structure and standards for environmental quality, which is a basic framework which can be used to solve the nation's environmental challenges. The presence of this sort of legislation reflects the government's dedication to environmental responsibility and is a major stride in combating environmental degradation.

Environmental decision-making processes can be strengthened through the power of public participation, stakeholder engagement, and technological advancements to increase accountability, transparency and effectiveness. Although Pakistan's environmental laws are important steps to regulating the environment, major implementation and gaps remain. To address these challenges we need to extend beyond legislative measures to address these issues on a multidimensional and multi-lateral level, extending across socio-economic, cultural, and institutional elements. Promoting innovation, strengthening collaboration between key stakeholders, and fostering a culture of environmental stewardship can create a more sustainable future in Pakistan by balancing economic growth against environmental conservation for the benefit of both next generations.

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