

THE INTERSECTION OF ENVIRONMENTAL LAW AND CLIMATE CHANGE IN PESHAWAR, PAKISTAN: FRAMEWORKS AND FUTURE CHALLENGES

Salman Khan¹, Umar Farooq², Mujeebullah Mujeeb³, Hamdan Hayat⁴, Sawaira Bibi⁵

¹Department of Environmental Sciences, University of Peshawar, Peshawar, Pakistan

^{2,4,5}Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar, Pakistan

³Department of Natural Resources Management, Faculty of Environment, Kabul University, Kabul, Afghanistan

¹salmankhan2025@uop.edu.pk, ²umarfarooq@aup.edu.pk, ³mujeebmujeebullah@yahoo.com,

⁴hamdanhayat209@gmail.com, ⁵bibisawaira94@gmail.com

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Corresponding Author: *

Umar Farooq

Abstract

This paper presents an empirical-doctrinal synthesis of the environmental jurisprudence and climate change adaptation mechanisms in Khyber Pakhtunkhwa (KP), Pakistan with particular focus on the capital, Peshawar. The KP Water Act 2020 and KP Environmental Protection Act 2014 exemplify the statutory inertia in the face of rising UHI effects, acute soil degradation and widespread systemic contamination of soils by water. This study relates legal enforcement variables with quantitative physical data such as a falling Water Quality Index (WQI) of urban drinking water, increasing wastewater violations in the Kabul River Basin, and the rapid unregulated transformation of agricultural land, which reveal the structural incapacities of the provincial environmental governance. The analysis also looks at how climate litigation has increased at an exponential rate as a judicial remedy for executive failures. The results call for a paradigm shift from reactive pollution management towards proactive climate resilience. A key recommendation was the statutory introduction of Health, Safety, and Environment (HSE) officers within corporate structures, the formal incorporation of WQI in municipal bylaws and the promotion of intergenerational equity by bringing youth climate advocacy into the legislative process.

INTRODUCTION

Environmental law has grown from an underutilized regulatory arena to a primary means of survival in the era of climate change. The vulnerability is especially high in Pakistan and the laws are unable to meet the pace of ecological degradation. Climate justice in developing states greatly depends on the implementation of international treaties into implementable local laws, according to Gilani (2023). Likewise, Raza and Baloch (2024) state that the national climate mitigation targets can be ineffective at the municipal level due to policy gaps in the provincial

climate strategies. Environmental laws in KP should thus shift towards a broader approach to climate resiliency, rather than merely pollution control, Khan (2025) states.

Peshawar is a node point, a place of intense violence where swift urbanization, industrialisation and climatic change converge in the context of KP. According to Hayat (2024), the unmonitored land use changes in Peshawar have resulted in the emergence of urban heat island effects in a very short period of time. It's not about the lack of law, it's about structural incapacities. Ahmad and Rehman (2024) stated that

unregulated urban growth around Peshawar has adversely affected the soil health, thus converting fertile agricultural belts into concrete landscapes. To assess the effectiveness of environmental law, therefore, one must delve into the provisions of the law, judicial rulings and administrative procedures.

Methodology

This study uses a doctrinal legal approach and empirical analysis of the environment. The legal evaluation is geared towards examining primary legislation, such as KP Environmental Protection Act (2014) and judicial precedents recently. As per Khattak (2025), the study of legal pluralism and environmental enforcement in KP needs to be studied within the framework of both formal courts and administrative tribunals.

Quantitative environmental metrics are added to support the validation of the effectiveness of these laws. According to Ali (2025), methanol use of Water Quality Index (WQI) methodology will provide objective measurement to determine if municipal authorities are enforcing National Environmental Quality Standards (NEQS). Javed (2024) maintained that this is important for the use of such indices in legal evidence in environmental litigations. In addition, secondary data related to wastewater pollution assessment on the Kabul River Basin was analyzed. According to Afridi (2023), hydrological modelling of the Kabul River reveals high level pollution trends both

between countries and within a country. The Kabul River is the final recipient of the legal enforcement failures and lack of action of Peshawar, as Tariq and Hussain (2026) state, which receives the untreated industrial and municipal effluents every day.

Evolution of Environmental Jurisprudence in Pakistan

In Pakistan, the approach is that the constitutional basis of environmental protection is in Article 9 of the Constitution which guarantees the right to life. The case of Asghar Leghari v. Federation of Pakistan was a turning point in the jurisprudence. Mustafa (2025) concludes that the legacy of this case is to make climate change a reality for the judiciary and the fundamental right of people to be protected. This judicial activism resulted in concepts of intergenerational equity being incorporated into actual climate law, as Shah (2024) states.

As executive enforcement is failing, citizens are resorting to the courts. It is evident from Figure 4 that environmental and climate change related litigations have climbed rapidly at Peshawar High Court during last ten years. According to Durrani (2023), the devolution of environmental governance allowed provinces such as KP to design laws, whereas Kamal (2026) argued that judicial activism is a sign of the administrative weakness of the underfunded environmental protection agencies.

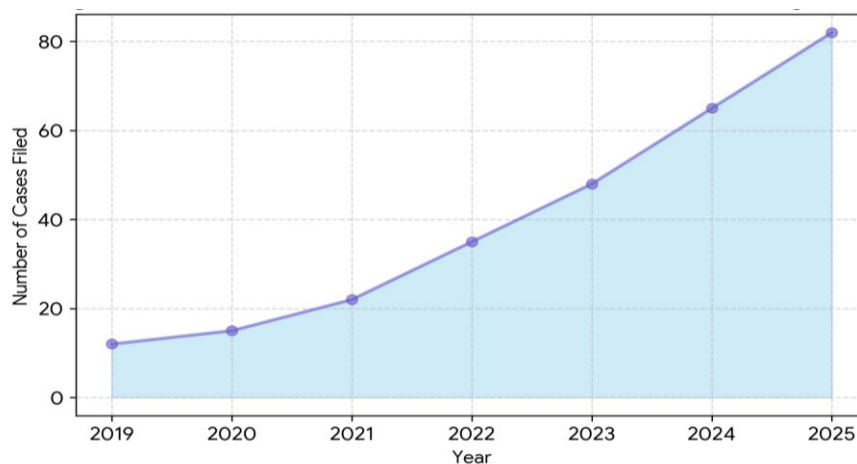


Figure 1 Rise of Environmental & Climate Petitions at Peshawar High Court.

KP’s Legislative Framework: Unregulated Urbanization and Statutory Inertia

The KP Environmental Protection Act, 2014 (KPEPA 2014) is the backbone of environmental legislation in Peshawar. All new projects require an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) according to section 13. But according to Shinwari (2025) there are some critical loopholes in the KPEPA which enable mega-projects and housing societies to evade EIA requirement. Exemptions for real estate developers are a big setback to the

preventive aspect of the law, according to Malik (2025).

This regulatory loophole has resulted in catastrophic changes to land use. The figures in Figure 3 clearly show the rapid rate of agricultural lands disappearing into urban built-up areas in Peshawar. The absence of the enforcement of municipal zoning laws under the KP Local Government Act (2013) can lead to the loss of carbon sinks and change the quality of topsoil forever in the region, Hussain & Ali (2024) state.

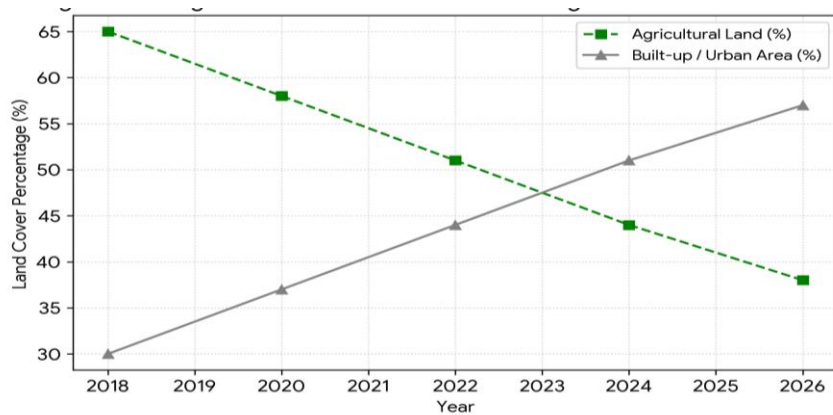


Figure 2 Unregulated Urbanization and Loss of Agricultural Land in Peshawar.

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Case Studies: Hydrological Crises and Enforcement Failures

The Kabul River Basin: Wastewater Pollution and Legal Infractions

In KPEPA 2014 Section 11, it is not allowed to discharge untreated effluents. The Kabul River Basin is, however, a case in point of regulatory failure. According to Ullah and Hassan (2024), a big share of this toxic discharge is due to mismanagement of industrial wastes in the Hayatabad Industrial Estate. According to Farooq

(2025) these industrial effluents contain heavy metals in great concentration, exceeding the legal limits by an alarming extent. Without a dedicated regulatory monitoring, there is a culture of non-compliance as stated by Qureshi (2026). In addition, Naseer (2025) reported that the pollution profile of the river is aggravated by the agriculture runoff which carries synthetic fertilizers. The volume of reported legal infringements in the basin are highlighted in figure 3.

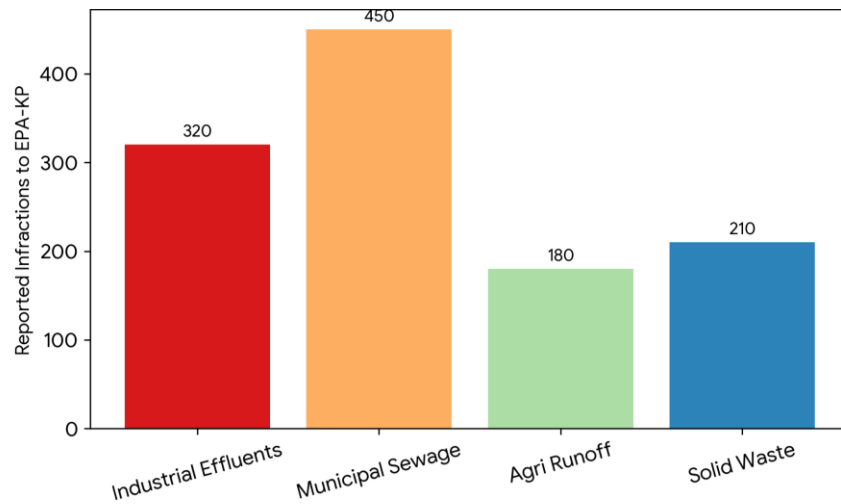


Figure 3 Wastewater Pollution Legal Infractions in the Kabul River Basin (2025)

Urban Drinking Water Safety and WQI Compliance

The right to clean drinking water is constitutionally guaranteed, but the quality of the drinking water supplied by municipalities in Peshawar often does not comply with the required standards. The microbiological contamination in drinking water of Peshawar has been a reflection of the complete failure of the municipal water

treatment regulations (Orakzai, 2026). According to Begum (2023), there is a need for immediate statutory intervention in the rapidly urbanizing areas to avoid irreversible aquifer contamination because of the vulnerability of groundwater. A Water Quality Index (WQI) methodology shows a continuous degradation, which is directly related to enforcement failures. This worrying trend is shown in Figure 4.

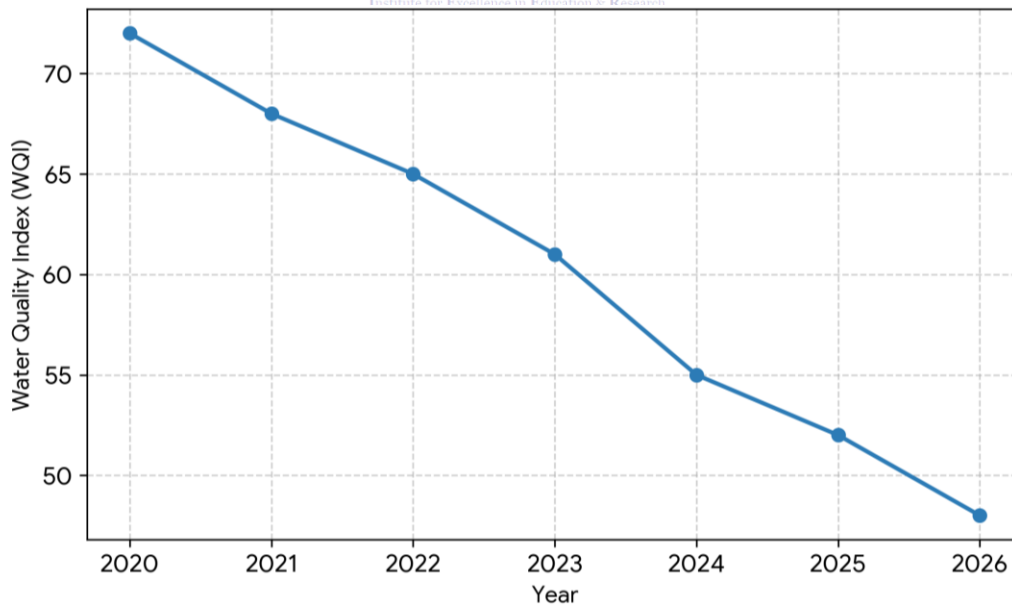


Figure 4 Decline in Urban Drinking Water Quality Index (WQI) in Peshawar.

Bridging the Gap: Corporate Compliance and Climate Advocacy

A strong link between corporate governance and environmental law is needed to move from a reactive to a proactive approach to climate-resilient law, otherwise the two will not work together. According to Rahman and Yasin (2026), certified HSE officers are essential in converting intricate legal requirements into everyday practices within industries. Abbas (2024) states that there is no strong internal auditing law in South Asia which makes corporate environmental responsibility mandatory, except when it is required by law.

To bridge the enforcement gap, Zafar and Mahmood (2024) suggest that institutional challenges in EPA-KP, such as underfunding, need to be addressed. Siddiqui (2025) says that investing in eco-awareness programs, such as b.Nature training modules for corporate stakeholders, overcome the psychological barrier between profit and nature. Youth advocacy, including Youth@COP programmes and platforms such as Climate Forward Pakistan, extends the legal frontiers to safeguard intergenerational resources by bringing the voice of the youth into formal policy-making.

Conclusion and Legal Recommendations

The environmental legal regime applicable to Peshawar is quite detailed and extensive, but is not effective because of poor implementation and enforcement. Environmental problems like soil degradation, urban flooding and water pollution have been worsened by climate change, fast urbanisation and industrial development. To overcome these challenges, there is a need to strengthen the legal enforcement and institutional capacity. The following recommendations are proposed:

- **Improved Environmental Enforcement:** activate Environmental Protection Tribunals in KP and enforce the environmental laws.
- **Promote Sustainable Environmental Management:** Mandate certified Health, Safety, and Environment (HSE) officers in industries, adopt the Water Quality Index (WQI) for water

monitoring, and enforce land-use regulations to protect agricultural land.

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