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GREEN POLITICS AND ENVIRONMENTAL GOVERNANCE IN GILGIT-BALTISTAN, PAKISTAN

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Abstract

Purpose: *Gilgit-Baltistan, a high-mountain region administered by Pakistan, is simultaneously a site of acute climate exposure, important biodiversity, and contested decisions over development and natural resources. The study examines the politics of environmental governance through the analytical lenses of green politics, political ecology, environmental justice, and common-pool resource governance.*

Methodology: *Employing a qualitative desk-based case-study design, it synthesizes publicly available policy documents, international development programme materials, and peer-reviewed scholarship, with particular attention to glacial-lake flood-risk reduction, protected-area governance, land and livelihood rights, and the distribution of environmental decision-making authority.*

Findings: *The analysis identifies a persistent gap between the existence of climate strategies and the institutional conditions required for inclusive implementation. It further shows that community-led adaptation and conservation can strengthen local resilience, whereas exclusionary protected-area arrangements and unequal access to environmental benefits can undermine legitimacy.*

Practical Implications: *The paper argues that an effective green political agenda for Gilgit-Baltistan must join ecological protection to procedural participation, recognition of customary knowledge, transparent benefit-sharing, and accountable multilevel institutions.*

Originality: *Rather than treating adaptation as a purely engineering challenge, it proposes a justice-centred governance framework with practical indicators for evaluating public participation, project outcomes, and distributional fairness. Because the study uses secondary materials and no new fieldwork, its conclusions are interpretive rather than causal estimates of programme impact.*

INTRODUCTION

Climate change has made environmental politics a defining governance question in high-mountain regions. A road damaged by a flood is not only an infrastructure problem; it can reveal whose settlement was protected, who received early warnings, whose land was acquired, and whether reconstruction priorities were democratically debated. Such distributive and procedural choices constitute the substance of green politics. In Pakistan, Gilgit-Baltistan offers an especially consequential setting in which to examine the relationship between environmental risk, political authority, public participation, and development.

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The region contains glaciers, alpine ecosystems, irrigated mountain agriculture, tourism destinations, and communities with long histories of collective resource management. Its landscapes support lives and economic activity locally while contributing to river systems of wider national importance. Climate-related hazards, including changing meltwater regimes, glacier-lake outburst floods (GLOFs), flash flooding, and landslides, intersect with infrastructure expansion, growing tourism, and changing land use. These intersecting pressures create competing definitions of what counts as sustainable development (Gilgit-Baltistan Environmental Protection Agency [GBEPA], 2017; United Nations Development Programme [UNDP], 2025).

Much policy discussion presents environmental protection as a technical exercise in hazard mapping, early warning systems, conservation, and engineering. Such measures matter, but they are incomplete without analysis of institutions and power. Decisions about national parks, pastoral access, compensation, climate investments, and representative consultation can benefit some groups while shifting costs to others. Recent research on the political economy of conservation in Gilgit-Baltistan draws attention to the risks of exclusionary environmental management, while adaptation research documents locally grounded responses and coordination constraints (Khan & Cheng, 2026; Shah et al., 2026; Sarwar, 2026).

This study asks: How are the principles of green politics reflected, constrained, or contested in the environmental governance of Gilgit-Baltistan? What do climate adaptation and protected-area cases reveal about environmental justice and community agency? What institutional changes could reconcile ecological sustainability with livelihood protection and meaningful participation? The article contributes a combined analytical framework that connects climate resilience, conservation legitimacy, and democratic accountability instead of treating these domains as separate policy sectors.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Green politics beyond environmental protection

Green politics is concerned not simply with conserving forests or reducing pollution but with reorganizing social and political relationships that generate environmental damage and unequal vulnerability. Its key concerns include intergenerational responsibility, ecological limits, decentralization, non-domination, and the fair allocation of environmental risks and benefits. In a mountainous context, these principles raise concrete questions: Can residents shape protected-area rules? Do climate investments reach remote settlements? Are women and lower-income households represented? Who bears the opportunity costs of conservation?

Political ecology emphasizes that environmental changes and policies cannot be understood independently of historical institutions, political economy, and unequal access to land and resources (Robbins, 2012). Environmental justice extends the assessment from outcomes to participation and recognition, including the standing of different communities, livelihood practices, and knowledge systems (Schlosberg, 2007). These approaches prevent a narrow reading of environmental performance in which the number of projects completed substitutes for evidence of fair governance.

Collective action and local ecological knowledge

Research on common-pool resources shows that successful collective management may depend on clear use rules, monitoring, locally legitimate decision making, and mechanisms for resolving disputes rather than on simple centralized control (Ostrom, 1990). This does not imply that every traditional practice is automatically sustainable or that communities are internally equal. It does suggest that ignoring locally established arrangements can produce costly conflict and poor compliance. In Gilgit-Baltistan, the relationship between pastoral landscapes, customary access, conservation, and public authority is particularly important.

Research focused on Shimshal and the Khunjerab conservation landscape identifies tensions between protected-area boundaries and customary land-use practices, and documents the emergence of alternative community-led conservation institutions (Sarwar, 2026). At the

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same time, research on local adaptation in Sherqilla describes autonomous and planned practices, such as early warning, physical protection, relocation, and traditional land use (Shah et al., 2026). These studies suggest that public action and local innovation are not opposing models: their effectiveness depends on how authority and expertise are combined.

A justice-centred analytical framework

This paper uses four linked dimensions. Distribution concerns who obtains safety, ecological services, employment, tourism revenue, and compensation, and who absorbs restrictions or hazard exposure. Procedure concerns access to information, consultation, consent-related processes where applicable, appeal, and influence over final decisions. Recognition concerns the treatment of local histories, customary rights, livelihood strategies, language, and ecological knowledge. Institutional accountability concerns clarity of mandates, continuity of finance, monitoring, and avenues for contesting decisions. Taken together, the dimensions provide a way to distinguish an environmentally branded project from genuinely inclusive green governance.

The dimensions operate at multiple scales. A valley-level warning system may be technically effective while questions remain over whose homes are included in risk maps. A national protected-area designation may conserve valued habitat while creating conflicts over grazing and access. A regional policy may promise participation without giving village institutions authority to alter budgets. Green politics, in this framework, is the practice of making those trade-offs visible, negotiable, and subject to accountable public decisions.

METHODOLOGY

The study adopts a qualitative, interpretive case-study methodology based solely on secondary sources available through November 2026. Sources were selected purposively for their direct relevance to environmental governance in Gilgit-Baltistan and for their identifiable institutional or scholarly provenance. They include the GBEPA Climate Change Strategy and Action Plan, UNDP programme materials on GLOF risk reduction, peer-reviewed research on local adaptation and conservation, and foundational works on common-pool resource governance, political ecology, and environmental justice.

Document analysis proceeded in four stages. First, the materials were grouped into policy, programme implementation, local adaptation, and conservation/governance sources. Second, relevant passages were coded conceptually according to distribution, procedure, recognition, and accountability. Third, similarities and disagreements across sources were compared to identify recurring mechanisms and contested interpretations. Fourth, findings were translated into conditional policy recommendations and indicators for future empirical examination. The method supports analytical synthesis, not statistical representativeness or impact attribution.

This study did not conduct interviews, surveys, site visits, participant observation, or independent remote-sensing analysis. Accounts based on field research are attributed to their original authors and are not presented as new observations by this paper. Official project descriptions may privilege achievements, while critical academic studies can foreground conflict; the interpretation therefore distinguishes stated objectives, reported outputs, and independently demonstrated effects. No claims of statistical causal effect or region-wide popular consensus are made.

CASE CONTEXT: ENVIRONMENTAL GOVERNANCE IN GILGIT-BALTISTAN

Ecological dependence and hazard exposure

Gilgit-Baltistan's mountainous environments combine steep slopes, glaciers, river valleys, high-altitude pastures, and settlements dependent on locally managed water and land. Environmental change threatens transport networks, agriculture, housing, and public services, particularly where roads and markets are vulnerable to localized disruptions. Climate threats are not distributed evenly: settlement location, household income, access to warnings, and the ability to relocate can alter exposure and capacity to recover.

UNDP's 2025 GLOF-II project brief identifies more than 3,000 glacial lakes across Gilgit-Baltistan and Khyber Pakhtunkhwa and 33 assessed as potentially hazardous, emphasizing risk across both regions rather than Gilgit-Baltistan alone (UNDP, 2025). These figures

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should not be mistaken for a current count of lakes uniquely within Gilgit-Baltistan. The project operated across 24 valleys in the two regions, illustrating that mountain hazards demand coordination across administrative levels and physical watersheds.

Policy mandates and institutional relationships

The Gilgit-Baltistan Climate Change Strategy and Action Plan outlines adaptation, environmental management, and coordination priorities anchored in national and regional arrangements (GBEPA, 2017). It records the development of environmental protection institutions and region-specific policy instruments. The existence of a strategy is significant because it recognizes climate change as a cross-sector issue; however, a strategy alone does not establish whether institutions possess reliable staffing, enforcement power, or mechanisms to resolve disputes.

Authority over environmental decisions is spread among sector agencies, regional bodies, national ministries, project partners, and non-state organizations. As a result, responsibility may become fragmented among those planning development, enforcing conservation, managing disasters, and providing technical support. The political status and governance arrangements of Gilgit-Baltistan further complicate straightforward application of models developed for fully empowered provinces. A robust climate-governance assessment must therefore examine who can authorize action, who funds it, and who is answerable when competing mandates produce conflicting decisions.

FINDINGS AND DISCUSSION

Climate adaptation: meaningful advances and unresolved inequities

The GLOF-II programme illustrates the benefits of risk reduction that combines technical systems with community preparedness. UNDP reports work involving early warning, hazard awareness, protective infrastructure, and training in vulnerable valleys (UNDP, 2025). Its October 2025 account describes real-time monitoring installations and safe havens across northern Pakistan, along with drills and locally organized hazard groups (UNDP, 2025b). Such activities can reduce the informational and logistical barriers that make sudden floods especially dangerous. They should, however, be assessed by coverage, operational reliability, inclusivity, and performance during actual events, not installation counts alone.

The qualitative Sherqilla case study finds a mix of household/community initiatives and planned intervention, including warning practices, protection works, relocation, and established land-use knowledge (Shah et al., 2026). It also identifies funding and coordination constraints that can impair policy execution. This provides support for a hybrid institutional model in which local knowledge improves risk identification while public agencies supply technical capacity and sustained financing. The generalizability of one valley case remains limited, and adaptation practice is likely to differ across ecological and socioeconomic settings.

Distributional challenges arise when an intervention improves aggregate risk scores but excludes homes, agricultural plots, or livelihoods outside formal protection boundaries. Procedural challenges arise when vulnerable households receive notices but cannot question the design. A justice-oriented evaluation would therefore ask not only whether a new alarm exists, but whether every exposed group can access it, understand its signal, reach a safe location, and receive follow-up assistance. These are proposed evaluation questions, not measured outcomes of the present research.

Conservation: biodiversity protection and the politics of access

Protected areas are frequently justified by biodiversity preservation, watershed services, and tourism. Yet conservation also regulates land use and can redistribute decision-making power. In Gilgit-Baltistan, critical scholarship emphasizes tension between externally imposed restrictions and livelihoods historically organized around grazing, agriculture, and place-based resource stewardship. Sarwar (2026) examines how contestation around Khunjerab National Park has interacted with Shimshal community claims and conservation alternatives. His analysis challenges the presumption that excluding resident populations necessarily produces better environmental outcomes.

Khan and Cheng (2026) place environmental and agrarian conflicts within a broader political

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economy of climate governance. Their argument links the growing influence of commercial interests and conservation narratives with threats to small-scale agroecological practices. These are critical interpretations based on particular evidence and theoretical commitments; they should not be read as proof that all protected areas or every climate intervention in the region are extractive. Taken together, however, the studies show why environmental legitimacy cannot be assessed through ecosystem targets alone.

Two policy risks follow. One is the criminalization or restriction of established livelihood practices without transparent evidence, proportionality, effective appeal, or compensation. The other is unequal access to the economic benefits of conservation tourism, wildlife management, or project employment. A more defensible model would distinguish truly harmful resource use from sustainable customary practice, establish participatory zoning, and publish benefit-sharing decisions. Any change to access rules should be developed with affected communities and supported by accessible dispute-resolution procedures.

Tourism, infrastructure, and the contradiction of green growth

Tourism and road access can diversify livelihoods and improve access to services. At the same time, visitor growth can create pressure on waste systems, groundwater, fragile slopes, and landscapes, particularly where public services expand more slowly than commercial activity. Describing tourism as sustainable does not make it so. Environmental assessment must include cumulative impacts, seasonal peaks, disposal capacity, road safety, and the distribution of revenue between local households and external operators.

Large infrastructure choices similarly raise political trade-offs. Improved connectivity can enable evacuation and market access but may affect slope stability, land claims, and settlement patterns. Green development requires more than an environmental impact statement written after political commitments have already been made. Meaningful participation should begin when alternatives remain open. Disclosure of assessment methods and a process for reviewing compensation claims would make environmental governance more credible.

This study does not assign a numeric environmental cost to tourism or construction projects because it does not possess comparative site-level measurements. Its contribution is to specify which political and ecological indicators must be monitored together before a claim of sustainable growth can be justified.

Participation, representation, and environmental citizenship

Participation is often presented as an invitation to a meeting. Yet consultative attendance and actual control over decisions are distinct. Environmental citizenship becomes substantive when residents can access risk maps, shape priorities, object to restrictive rules, track budgets, and seek remedies. This is especially relevant in dispersed mountain settlements, where travel expenses, seasonality, language, and information asymmetries can limit participation even without formal exclusion.

A recognition-based approach also asks whose knowledge counts. Village-level experience with irrigation channels, slope movement, pasture conditions, and historical flood paths can complement formal observation. Such knowledge should be documented carefully, compared with scientific assessment, and included in deliberation. It should neither be romanticized as infallible nor dismissed as anecdotal. An accountable system explains how local claims are considered and why certain choices prevail.

Inclusive participation requires attention to gender, age, livelihood type, settlement distance, and differential resource ownership. A formally representative committee may still be dominated by people with financial or political leverage. Public agencies and programme partners can improve legitimacy through transparent selection rules, accessible meeting records, grievance tracking, and periodic review of whose concerns are addressed.

Financing, coordination, and accountability

Project-based climate assistance can deliver equipment and training quickly, but long-term effectiveness depends on maintenance, local operating budgets, staff continuity, and public oversight. Early warning hardware without repair capacity or locally understood response protocols

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may become a fragile asset. Similarly, conservation agreements without a reliable benefit-sharing mechanism can generate disputes that outlast a project cycle.

The institutional issue is therefore not simply the volume of climate finance. It is whether responsibility is aligned with authority and whether performance information reaches affected citizens. A transparent register of interventions, costs, coverage, maintenance status, grievances, and ecological indicators could support scrutiny by community organizations and elected institutions. Such systems would also allow comparison of policy promises with implementation across valleys without assuming that identical solutions fit every location.

A practical distinction should be retained between outputs, outcomes, and justice. The number of trainings is an output; increased evacuation preparedness is an outcome; equal ability to act on warnings is a justice consideration. Monitoring only outputs can exaggerate success. Evaluations that include all three dimensions would generate a fuller picture of green politics in practice.

PROPOSED GREEN GOVERNANCE FRAMEWORK

The evidence supports a framework organized around five mutually reinforcing principles. First, treat ecological risk reduction and livelihood security as linked objectives. Public planning should map threats alongside land use, seasonal mobility, housing, and income dependence rather than building hazard models without social context. Second, establish structured participation with defined authority: community input should have identifiable stages at which it can change siting, design, access rules, or budget allocations.

Third, integrate formal environmental science with community knowledge. Joint monitoring teams could combine hydrometeorological observations and locally documented hazard histories, with public records of methodological uncertainty. Fourth, build distributional safeguards into conservation and adaptation. These may include transparent eligibility for support, impact assessments of restrictions on resource access, accessible compensation reviews, and published benefit-sharing terms. Fifth, create accountability arrangements durable beyond donor financing, including maintenance budgets, independent performance reviews, and accessible complaint channels.

The framework does not presume that consensus is always possible. Environmental decisions can involve real conflicts between conservation targets and immediate livelihood needs. Its purpose is to ensure that disagreements are addressed through visible criteria, open reasoning, proportionality, and legitimate institutions instead of being concealed behind the language of technical necessity.

Table 1. Analytical dimensions and suggested monitoring indicators

Dimension	Central governance question	Illustrative indicator
Distribution	Who receives protection or bears restrictions?	Coverage by settlement and livelihood group; compensation transparency
Procedure	Can affected groups alter decisions?	Public hearings, documented responses, appeal mechanisms
Recognition	Are local practices and knowledge respected?	Use of community hazard histories and customary-resource mapping
Accountability	Can promised results be verified?	Maintenance logs, open budgets, independent audits, complaint outcomes
Ecological effectiveness	Are environmental conditions improving?	Risk performance, ecosystem condition and independently reviewed trends

Note. Indicators are proposed by the author as a framework for future evaluation; they are not findings from a field survey.

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POLICY RECOMMENDATIONS

An operational green political agenda should begin with publicly accessible valley-level climate-risk and land-use planning. Maps and project designs need to be presented in locally understandable formats, with adequate opportunities to correct information and contest boundary decisions. Existing planning institutions should collaborate with village organizations, women's groups, and livelihood representatives rather than creating parallel committees only for short-term projects.

Adaptation finance should prioritize life-safety investments while including sustained maintenance commitments. Every installed monitoring system should have a responsible institution, an annual maintenance plan, and clear public guidance on warnings and evacuation. External evaluations should examine which populations remain outside effective coverage. Where relocation is necessary, affected households should receive meaningful consultation, transparent options, and accessible grievance pathways.

Protected-area governance should make the rules governing grazing, other customary uses, visitor activity, and commercial privileges explicit and open to review. Participatory zoning and co-management arrangements can be tested where legal mandates permit. Benefit-sharing should be traceable through published agreements. Tourism planning should assess carrying pressures and allocate resources for local waste management, ecological monitoring, and public services instead of relying solely on visitor numbers as an indicator of success.

Finally, environmental agencies should publish periodic implementation scorecards that distinguish declared policies from funded projects and verified outcomes. Academic institutions could assist with independent evaluations using mixed methods, while public reporting should explain uncertainty. These measures would turn green politics from a policy slogan into an auditable public process.

LIMITATIONS AND FUTURE RESEARCH

This paper is restricted to documented secondary evidence. It does not identify the views of every valley, estimate the net economic effects of climate change, or evaluate particular interventions through experimental or quasi-experimental designs. The selection of sources may overrepresent documented project areas and prominent conservation conflicts while understating less visible everyday governance. Publication dates and administrative terminology can also differ among materials.

Future research should compare valleys with different governance arrangements and hazard exposure using interviews with diverse resident groups, administrative records, geospatial indicators, and documented budget flows. Participatory research could test whether procedural inclusion predicts trust and compliance, whether conservation benefit-sharing changes livelihood outcomes, and whether early warning systems reduce unequal risk. Such studies should identify comparison cases and ethical protocols before collecting data, rather than assuming that any correlation demonstrates causality.

CONCLUSION

Gilgit-Baltistan demonstrates that green politics concerns the distribution of authority as much as the protection of the environment. Climate risk reduction, biodiversity conservation, and development infrastructure all require technically capable institutions. Yet they also produce decisions about access, belonging, livelihood rights, and public accountability. The evidence reviewed here points to the potential of community-based adaptation and ecological stewardship while identifying recurring concerns about centralized conservation, unequal influence, and implementation capacity.

A durable environmental future for the region cannot be secured by technical projects in isolation, nor by treating community institutions as substitutes for necessary public investment. It requires negotiated partnerships, clear and enforceable safeguards, inclusive representation, transparent financing, and evaluation of both environmental and social outcomes. The central contribution of this paper is therefore a justice-centred model of green governance: ecological effectiveness is strengthened, not weakened, when those most affected by environmental decisions possess meaningful opportunities to shape them.

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