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# Leveraging the Climate Crisis: The Politicization of Water and the Case for Punjab

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Received: 8 February 2026 | Revised: 16 May 2026 | Published: 29 May 2026

## Résumé

La gouvernance de l'eau dans le Pendjab indien et pakistanais est généralement analysée sous l'angle de la sécurité et des changements climatiques. Toutefois, la littérature existante aborde rarement la manière dont l'architecture constitutionnelle influence la capacité infranationale. L'objectif central de cette étude est d'examiner la capacité du Pendjab à gérer la sécurité hydrique, à répondre aux inondations, à développer des infrastructures et influencer les traités diffère entre l'Inde et le Pakistan, malgré leur histoire et leur écologie communes. Cet article vise à combler cette lacune dans la recherche en examinant les cadres constitutionnels et les stratégies politiques par lesquels les gouvernements nationaux et infranationaux négocient leur autorité dans des secteurs clés. Dans les deux pays, la répartition des pouvoirs législatifs et fiscaux affecte directement la capacité du Pendjab à gérer les systèmes d'irrigation, à répondre aux inondations provoquées par les changements climatiques, à mobiliser des ressources et à influencer les accords internationaux de partage de l'eau. À travers une analyse comparative des architectures constitutionnelles, des institutions intergouvernementales et des cadres conventionnels, cette étude démontre que l'eau constitue fondamentalement un enjeu politique pour les deux pays. Ainsi, en mettant en lumière la l'architecture fédérale, l'analyse souligne comment les structures institutionnelles influencent la gouvernance environnementale et révèlent des implications plus larges pour la responsabilité démocratique et l'équité régionale au sein de ces deux États fédéraux.

**Mots-clés:** Hydro-politique, Gouvernance de l'eau, Inde, Pakistan, Traité des eaux Indus, Pendjab.

## Abstract

Water governance in Indian and Pakistani Punjab is generally analyzed through the lenses of security and climate change; however, existing scholarship does not often address how constitutional design impacts sub-national capacity. The central focus of this study explores how Punjab's ability to manage water security, flood response, infrastructure development, and treaty influence differ across India and Pakistan despite their shared history and ecology. This paper works to advance the research gap and examine the constitutional frameworks and political strategies through which national and sub-national governments negotiate authority across key sectors. In both countries, the distribution of legislative and fiscal powers directly affects Punjab's capacity to manage irrigation systems, respond to climate-induced flooding, mobilize resources, and shape international water-sharing agreements. Using a comparative analysis of constitutional provisions, intergovernmental institutions, and treaty frameworks, this study demonstrates that water is fundamentally a political issue for the two countries. Indeed, by highlighting federal design, the analysis underscores how institutional structures influence environmental governance and reveals broader implications for democratic accountability and regional equity in the two federal states.

**Keywords:** Hydropolitics, Water Governance, India, Pakistan, Indus Water Treaty, Punjab.

**Pour citer l'article / To cite this article:** Dhugga, J. (2026). Leveraging the Climate Crisis: The Politicization of Water and the Case for Punjab. *Politika: Undergraduate Journal of International Affairs, Politics and Policy*, 3(1), 14-28. 10.18192/politika.7874

## Introduction

In both India and Pakistan, Punjab holds a unique position as a politically influential agrarian region, the source of national food security, and the site of one of the most strategically important water systems in South Asia. However, despite shared historical backgrounds, the outcome of Punjab's governance has diverged significantly across the two states. While India's Punjab has become increasingly constrained by central policy interventions in agricultural markets, water distribution, and infrastructure priorities, Pakistan's Punjab has often been criticized for exercising disproportionate influence over the central government, especially in matters of water allocation, resource access, and development planning. These contrasts raise an important question on how power relations between central and subnational governments shape governance in Punjab, and why India and Pakistan, despite similar histories and ecological challenges, have distinct patterns of provincial and territorial authority. This paper argues that the answer lies in constitutional design and political strategies through which central and subnational governments negotiate authority across key sectors. Specifically, central-subnational power relations in both countries directly structure Punjab's ability to manage water security, respond to floods, build infrastructure, access public resources, and influence international water-sharing arrangements.

## Historical Context and Theoretical Framework

Understanding contemporary governance in both India and Pakistan requires situating current patterns of

authority within the historical processes that produced them. The region's political economy, its incorporation into two distinct federal systems, and its significance to hydropolitics in South Asia have all influenced how power is negotiated and asserted between national and subnational governments. The modern irrigation economy of Punjab arose under British rule, when massive canal-colony projects in the late nineteenth and early twentieth centuries reconfigured the region into a site of agrarian extraction (Ranauta, 2021). Canal construction reorganized land use and created a consistent hierarchy of districts, privileging the central canal belts while leaving southern tracts relatively under-resourced, an asymmetry that continues today in Pakistan (Akhtar et al., 2021). Following the 1947 Partition, which established the Union of India and the Dominion of Pakistan, the division of the Indus Basin and the reorientation of river flows intensified structural inequalities. In Pakistan, the central state's reliance on Punjab as the political and military core entrenched a highly centralized approach to resource governance, later reinforced by the Water and Power Development Authority (WAPDA), which concentrated hydrological planning at the federal level. By contrast, India's post-1950 constitutional decisions created a federal structure that placed water primarily within state jurisdiction. However, ongoing border tensions and national development strategies prompted the central government to intervene through mechanisms such as the Bhakra Beas Management Board and central flood-control schemes (Jain & Jacob, 1970). The 1960 Indus Waters Treaty (IWT) further institutionalized the territorial division of rivers, placing asymmetrical pressures on

the two countries. India retained greater autonomy over the eastern rivers of Ravi, Beas, and Sutlej, while Pakistan's dependence on the federally managed Indus system reinforced national-level control over provincial water planning (Sinha, 2021). In both Punjab, these historical processes have left a legacy where water resources have become immensely politicized, and the institutional distribution of authority between national and subnational governments has become foundational to how water is managed and allocated.

In addition, the existing literature on federalism, resource governance, and political economy provides the necessary foundation for interpreting these dynamics. Scholars such as Daanish Mustafa (2007) and Naeem Abas et al. (2019) highlight the geopolitical and security factors that shape the IWT, emphasizing how national-level actors use water as a strategic resource to centralize decision-making authority. Their work is essential as it underscores how federal governments in both countries treat water governance as an extension of national security, limiting state and provincial influence. Moreover, studies on climate vulnerability and disaster risk, such as those by Muhammad Abid et al. (2016), Dilshad Ahmed and Muhammad Afzal (2022), and Gaurav Pakhale and Jyoti Nale (2023), demonstrate that local communities in both Punjab face increasingly severe flood and climate-related disasters. However, these analyses generally omit the political and administrative structures that influence uneven adaptation outcomes across the region. Similarly, Ali Nobil Ahmad's examination of infrastructure in Pakistan's Southern Punjab (Ahmad, 2022) and Harinderpal Singh Bedi and Sandeep Singh's examination of water distribution in

Indian Punjab (Bedi & Singh, 2021) offer valuable insights into subnational inequities. However, they treat these inequities primarily as technical or regional problems rather than outcomes of shifting power relations between central and subnational governments. Throughout this scholarship, Punjab often appears as an object of hydrological or climatic analysis instead of a site where federalism, resource politics, and subnational bargaining actively shape livelihoods and development pathways.

By bringing these works together, this essay contributes to the literature by examining how federal and subnational power relations promote different models of water governance on both sides of the border. By comparing the two Punjab within a single analytical framework, the paper addresses several understudied gaps, such as the limited comparative analysis of Punjab across the India-Pakistan divide, the tendency of existing literature to prioritize national security over federal structures, and the lack of attention to how water-sharing and infrastructural decisions are made in state and provincial political economies. Indeed, while existing studies diagnose climate risk, infrastructural inequality, and interstate water tensions, they rarely express how these challenges are embedded in and exacerbated by multi-scalar governments. Hence, this essay aims to extend the scholarly debate by reframing water governance as a fundamentally political process shaped by intergovernmental power relations, bureaucratic authority, and subnational capacity.

### **Water Security and Power Relations**

Water security in both Punjab is shaped by scarcity, climate, and institutional pressures. Although India and Pakistan

share the Indus River Basin and an agrarian legacy shaped by the Green Revolution in the 1960s, their water insecurity has been influenced by different governance structures. These differences reveal how centralized decision-making, subnational capacity, and intergovernmental relations shift the politics of scarcity. Understanding these undercurrents is important for analyzing how subnational units navigate uneven authority over natural resources.

Indian Punjab's water insecurity is shaped primarily by the rapid depletion of groundwater and federally imposed agricultural incentives. The Central Ground Water Board reports that over 75% of Punjab's administrative blocks are now classified as "over-exploited," with groundwater tables dropping in several districts (Fujita, 2021). This acceleration reflects the structural consequences of the Green Revolution, which incentivized paddy cultivation despite Punjab's semi-arid ecology. While state-level policymakers have attempted to impose crop diversification schemes, their authority remains limited by the centralized procurement model and the Food Corporation of India's minimum support prices, which reward water-intensive rice production (Gill & Nehra, 2018). This governance imbalance highlights a severe strain in Indian federalism, where states hold administrative responsibility for water management but lack fiscal and agricultural policy autonomy. This indicates a political, rather than a technical, barrier to water sustainability. Indeed, Punjab's water crisis reflects asymmetries in central-state power that constrain regional adaptation. Thus, the trajectory of water insecurity in Indian Punjab illustrates how environmental

pressures are inseparable from federal political structures.

In contrast, Pakistani Punjab's water insecurity is rooted less in groundwater depletion, though it is worsening, than in its role within the canal-based irrigation system and interprovincial politics shaped by the 1991 Water Apportionment Accord (WAA). As a result of the agreement, Punjab receives a majority share of Pakistan's allocated Indus waters, a distribution perceived by Sindh, the southeastern and third-largest province, as structurally inequitable (Ranjan, 2019). Unlike India, where the conflict is between the state and the centre, Pakistan's water politics is contingent on intra-federation competition among provinces. This dynamic ultimately empowers Punjab as the largest and most politically dominant province. Scholars often focus on critiquing Pakistan's hydropolitics for their top-down, securitized framework that sidelines provincial governance; however, Amit Ranjan (2019) highlights how Punjab's political dominance fuels perceptions of inequity. Ranjan suggests that long-standing grievances in Sindh and Khyber Pakhtunkhwa lead to federal water-sharing initiatives being interpreted as technocratic and an extension of Punjab's power. In this sense, Punjab's privileged position within Pakistan's federal system allows it to reinforce provincial hierarchies that shape how water disputes are politicized. However, these analyses rarely consider Punjab as a subnational actor limited by federal hydro-development agendas, revealing a crucial gap this paper addresses. Indeed, despite their political strengths within their respective nations, both Punjabs are forced to navigate the limits imposed by central governments, revealing that provincial power is not

absolute, but contingent on federal intervention.

The divergent trajectories of water insecurity in both Punjab matter because they reveal how federal structures, more than ecological or cultural factors, determine the political options available to subnational governments. An important point of comparison lies in the direction of dependence. Indian Punjab is structurally dependent on the central government for agricultural pricing, procurement, and subsidies, all of which determine groundwater extraction patterns. In this arrangement, New Delhi sets incentives while Punjab often bears the consequences. In Pakistan, dependence is inverted. As the dominant province within Pakistan's federal system, it exerts disproportionate influence over national institutions. However, it remains dependent on federal decision-making for major hydrological decisions such as dam operations, site development, and the interpretation of provincial rights under the Water Apportionment Accord. In this case, Punjab holds authority over distribution within the province but remains constrained in shaping overall national hydro-governance. In addition, the scale at which conflict arises is significant. For instance, in India, water conflict emerges in a vertical configuration between the state and central governments. Punjab's attempts to legislate on water conservation or crop diversification routinely confront constitutional and fiscal limits. For example, efforts to shift from paddy to maize stall because the central procurement system does not guarantee remunerative support prices for alternative crops (Singh & Singh, 2022). Thus, the conflict is embedded in a mismanagement between state environmental responsibility and central

economic authority. In Pakistan, by contrast, the conflict is primarily horizontal between provinces and is mediated by federal institutions, such as the Council of Common Interests, which resolves power-sharing disputes between Pakistan's provinces. Here, disputes arise from water scarcity and uneven bureaucratic representation. The result is a multi-scalar conflict in which Punjab is simultaneously perceived as privileged by provinces like Sindh and constrained by federal priorities. These critical comparisons reveal that water insecurity in both Punjab is a political outcome shaped by federal design, not just ecological crises. Indian Punjab's vertically constrained autonomy and Pakistani Punjab's horizontally contested authority demonstrate how federalism produces different pathways to the same structural vulnerability. In both cases, provinces and states confront the consequences of decisions made elsewhere, whether in New Delhi's bureaucracy or Islamabad's negotiation frameworks.

### **Flood Management and the Politics of Authority**

Flood management in the two Punjab exposes another dimension of how federal structures distribute responsibility and shape political capacity. Although both regions reside in the Indus Basin and face increasingly unstable monsoon seasons, the scale of flood vulnerability differs as each region is embedded in distinct federal arrangements. Indeed, floods in India and Pakistan have become a political event as much as a climatic one, and they communicate who makes decisions, who finances response and recovery, and who ultimately bears the burden of risk.

In India, flood governance reflects the broader pattern of central dominance over disaster management. In 2023, Punjab experienced intense rainfall above the normal seasonal average in parts of the state, submerging over 1400 villages across 19 districts (Bhageerath et al., 2025). Despite this high exposure, the state government exercises limited fiscal and regulatory autonomy during emergencies. The *Disaster Management Act* of 2005 empowers the central government to define guidelines, allocate funds, and set national priorities (*Disaster Management Act, 2005*), leaving states operationally responsible but financially dependent. Indeed, this legislation produces significant tension. Punjab is required to implement flood protection measures, such as embankment strengthening, river training, and early warning dissemination, but funding flows through centrally controlled government bodies like the National Disaster Management Authority (Gupta, 2020). The state's requests for post-flood compensation are generally evaluated by central committees, meaning that flood recovery becomes entangled in political negotiation. This regulation shows that environmental governance in India often reproduces central hierarchies, and flood management in Punjab exemplifies this by linking state vulnerability to federal oversight. The political economy of agricultural subsidies further restricts Punjab's ability to invest in long-term mitigation. Indeed, strong support for paddy cultivation, even in flood-prone districts, has incentivized land-use practices that exacerbate waterlogging and drainage inefficiencies (Dhaloiya & Singh, 2024). Subnational attempts to shift cropping patterns, improve canal drainage, or restore

wetlands repeatedly confront the structural dependence on central government policies. In essence, the institutional makeup of Punjab positions the state as an implementer of federally shaped policies rather than an autonomous planner, limiting its ability to encourage integrated and locally focused flood-prevention strategies.

In contrast, flood management in Pakistan's Punjab operates through a different structure, where the province plays a dominant role but remains embroiled in national hydropolitics. In 2010, nationwide flooding impacted over 20 million people and overwhelmed nearly one-fifth of the country (Bashir et al., 2021). Later, during the 2022 floods, 2 million acres of cropland were destroyed, with the majority in Punjab, and nearly 33 million people were affected (Rose & Abedullah, 2023), highlighting the region's geographical and agricultural importance and the province's consistent vulnerability to flooding. Unlike in India, the province of Punjab in Pakistan takes advantage of significant administrative control over irrigation, river encroachment, and local infrastructure through the provincial Irrigation Department (Zakir-Hassan et al., 2023). However, it remains dependent on the federal Water and Power Development Authority (WAPDA) for major decisions involving reservoir releases and the operation of hydropower. This creates a multi-level governance system in which provincial flood protection depends on federal management, especially during monsoon surges. It can be argued that Pakistan's governance is influenced by a bureaucracy inherited from colonial rule, in which authority is concentrated in technocratic institutions with limited provincial accountability. Indeed, Punjab's dominance within the national bureaucracy

allows it to influence major water decisions, but this influence is limited by federal authority in areas of national security and energy production. The 2010 and 2022 flood events demonstrate that reservoir releases can increase downstream flooding, yet these decisions lie beyond the province's exclusive jurisdiction, despite it bearing the burden. Provincial dominance, therefore, coexists with inherent dependence. Punjab influences federal policy more than any other province, but it cannot shape the national hydro-political direction. This arrangement starkly contrasts with India's strictly vertical dependence but produces a similar outcome with limited subnational control over the environmental risks it must manage.

When juxtaposed, the two Punjabs expose how federal structures create distinct but parallel limits on provincial capacity. In India, the central government exercises financial and regulatory dominance, while in Pakistan, the centre exerts hydro-technical control. While the mechanisms differ, the effects are comparable, as each province or state faces a form of structural vulnerability rooted in the political organization that mediates climate risk. An essential comparison exists in the long-term planning of both countries. Indian Punjab's infrastructure needs are often slowed by its fiscal dependence on centrally allocated disaster funds, while Pakistani Punjab's capacity for long-term flood management is restricted by the national prioritization of dams and hydropower, illustrating security and energy agendas instead of provincial climate adaptation needs. In both cases, federal priorities displace subnational environmental imperatives. Finally, both Punjabs face a shared challenge as disaster management is

treated as an episodic emergency rather than a structural governance issue. In India, this is rooted in a centralized approach that reduces state autonomy, while in Pakistan, it emerges from a federal-provincial entanglement in which national development priorities override localized risk management. These differences matter because they highlight policy variation and illustrate the central claim of this essay that climate vulnerability in both Punjabs is produced through political institutions that determine how risk is distributed across levels of government.

### **Infrastructure Development and Capacity**

Infrastructure development is one of the most evident areas where central and state/provincial power relations influence governance outcomes in the two Punjabs. Examining infrastructure through a federal lens reveals that India and Pakistan configure state capacity in different ways. While Indian states, like Punjab, are constrained by fiscal and regulatory centralization, Punjab's dominance within Pakistan's federal bureaucratic and budgetary structures allows it to shape certain development trajectories. Infrastructure thus impacts how the balance of power between national and subnational governments is negotiated.

Infrastructure in India's Punjab is characterized by a high degree of dependence on central funding, especially under sponsored schemes such as the Pradhan Mantri Gram Sadak Yojana (PMGSY), the Smart Cities Mission, and the National Highways Authority of India (NHAI) programs. While these initiatives have contributed to national progress, the decision-making power over project selection, contractor approval, and financial

disbursement remains largely with New Delhi (Akram & Rath, 2021). As a result, state planning bodies have limited discretion in determining which infrastructural needs require more attention. This is particularly evident in irrigation infrastructure. Punjab's canal network is one of the most extensive in India but has deteriorated significantly over the past two decades. A study on the water crisis in Punjab and Haryana found that canal embankments and distributaries were in poor condition; however, proposals for reconstruction have been repeatedly stalled due to delayed approvals (Gill & Nehra, 2018). This imbalance between national and local priorities has crucial political implications. India is witnessing a reassertion of central control over development planning. Punjab's experience supports this assessment because, despite being one of India's most agriculturally productive states, its infrastructural expansion remains tied to central development models rather than state economic aspirations. The result is an ingrained reliance that reduces Punjab's ability to encourage long-term development or respond to emerging risks such as groundwater depletion or climate-induced agricultural crises.

Comparatively, in Pakistan's Punjab, the infrastructure dynamic unfolds through a nearly opposite structure. Instead of being limited by federal centralization, Punjab has historically benefited from federal resource allocation. Under the National Finance Commission Award and the Public Sector Development Programme, Punjab regularly receives the largest share of federal development funds, exceeding those of Sindh, Balochistan, and Khyber Pakhtunkhwa (Ranjan, 2019), illustrating both its population size and political weight

in federal decision-making. This significant advantage has allowed Punjab to pursue major infrastructure projects over the past two decades, particularly in urban centers like Lahore, Rawalpindi, and Faisalabad. However, provincial leverage is not always equated with equitable development. Indeed, Punjab's development model often contributes to displacement, rural-urban inequality, and a concentration of public investment in urban centers aligned with political elites (Rehman et al., 2022). This model suggests Punjab's political leadership strategically directs infrastructure spending toward areas that strengthen existing power relations, creating a development plan that privileges metropolitan growth, while peripheral and agrarian districts receive limited investment. Indeed, this implies that even within the province, infrastructure is profoundly political and is shaped by elite incentives and electoral politics rather than regional need. Provincial control thus does not allow the province to align national priorities with climate-resilient or locally equitable infrastructure needs.

Comparing the two Punjabs illustrates that infrastructure reflects governance and reproduces inequities. In India, centralized development planning maintains provincial dependence, limiting Punjab's ability to achieve its own infrastructural goals. In Pakistan, Punjab is able to impact federal development strategies, but this influence can lead to uneven development within the province, especially along rural-urban divides. Though different, both systems promote infrastructure decisions informed by political hierarchies rather than local needs. Furthermore, an analysis can be made on how each Punjab accesses state capacity. In India, Punjab gains access to resources

through compliance with and participation in central government programs, while in Pakistan, Punjab achieves it through political leverage and bureaucratic dominance. However, in both cases, infrastructural choices are not driven by environmental vulnerability or long-term development goals. Instead, they are catalyzed by political incentives embedded in federal systems. This contributes to how federal structures allocate resources and how development itself is actualized. In essence, infrastructure plays a critical role as a political tool, impacting state and inter-provincial inequalities.

### **Resources and Distribution**

Access to resources is one of the most discernible markers of how federal structures shape uneven development in the two Punjabs. While infrastructure determines the physical networks through which resources flow, access determines who benefits from those networks. A comparative lens of India and Pakistan emphasizes that the national-subnational organization of authority in each country fundamentally affects the distribution of resources, creating distinct patterns of inequality rooted in political hierarchies. Consequently, both Punjabs offer a unique perspective on how federalism shapes everyday development outcomes.

Resource access in India's Punjab is inseparable from the political economy of agriculture. As one of the most significant contributors to India's national food procurement, Punjab is critical to national food security, and water access contributes directly to agricultural livelihoods. Approximately 99% of Punjab's cropped area relies on irrigation, with 72% from tubewells and 28% from canals (Satpute &

Singh, 2024), demonstrating that access to water is evidently an issue about access to economic survival as well. State-level politics, including free electricity for tubewells, minimum support prices (MSP), and canal-restoration programs, allow farmers to draw water as a subsidized resource, reinforcing a political contract in which water access is mediated through electoral incentives rather than federal measures. These policies suggest that water distribution is embedded in a competitive economy in which state governments use subsidies to secure rural vote banks, especially among large landholding constituencies. In addition, this structure means resource access is tied to water availability and political will. Punjab can negotiate for federal funds through canal modernization programs while simultaneously distributing groundwater access through state subsidy regimes. This creates an environment in which water becomes a politically protected resource that voters expect, and politicians must deliver. In this sense, India's Punjab shows that when federal systems empower states with fiscal and administrative autonomy, water becomes a resource tied to political performance instead of political dependency. This allows for a contrast with Pakistan, where access to water functions as a hierarchical, federally structured privilege rather than an electorally negotiated entitlement.

In Pakistan, water goes beyond a natural resource to become a mechanism of political hierarchy. Unlike its Indian counterpart, water governance in Pakistan is administered primarily through federal and provincial bureaucracies shaped by Punjabi military and bureaucratic dominance. Since Punjab controls over half of Pakistan's

irrigated land and receives a large portion of canal water allocations under the WAA (Bashir et al., 2021), water becomes a basis for institutional bias and aligns priorities with the province's interests. This system strengthens Punjab's position, while provinces with weaker institutional capacity and political leverage often find themselves unable to challenge decisions, promoting grievances over interprovincial equity. Furthermore, water is also distributed unevenly within Punjab. For example, Southern Punjab, despite being home to much of the province's cultivable area, receives disproportionately lower per-acre water deliveries compared to the canal-rich central districts (Akhtar et al., 2021). This disparity reinforces long-standing trends of patronage, where canal access historically flowed to politically influential *baradari*, or kinship, networks and large landholding families (Akhtar et al., 2021). Laws such as the *Canal and Drainage Act* formalize bureaucratic discretion, allowing irrigation officers to exercise authority over water flows, granting or withholding access in ways that reinforce elite primacy. The result is a political economy in which access to water is inseparable from class hierarchy. For instance, small-scale farmers are consistently disadvantaged, as seen in how tail-end water shortages have increased in some districts because the administrative structure allows upstream communities, who are often elites, to capture the majority of flows (Akhtar et al., 2021). The centrality of Punjabi bureaucratic control also means water is more easily mobilized as a national security issue than a developmental one, narrowing provincial autonomy and limiting equitable reforms.

The contrast between the Punjabs illustrates that water access serves as a

diagnostic for federal design and political incentives. In India, decentralization and state-level electoral competition encourage governments to deliver water as a public good, even if environmental over-extraction remains a severe problem. Farmers can pressure the state for access, and the state has both the administrative autonomy and electoral motivation to respond. In Pakistan, by contrast, resource access is shaped by centralized authority and interprovincial hierarchies. Since Punjab's political dominance influences federal decisions, water becomes a tool of elite consolidation instead of a universally accessible developmental resource. Indeed, whereas Indian Punjab's inequalities are largely rooted in groundwater depletion and crop patterns, Pakistani Punjab's inequalities are based in political design, where canal water is abundant but selectively accessible. This comparison illustrates that similar ecological pressures can produce different distributive outcomes depending on whether a federal system incentivizes accountability or centralization. These patterns also demonstrate that the politics of water in both Punjabs is shaped by federal arrangements that either democratize resource access or reinforce hierarchies.

### **Water Sharing, Federal Constraints, and Subnational Exclusion**

Water-sharing arrangements, particularly the Indus Waters Treaty, represent a pivotal dimension of Punjab's hydro-political landscape. While the treaty is formally negotiated between India and Pakistan at the national level, its practical implications are disproportionately endured by the two Punjabs, which are the site of key

river networks and irrigation systems shaped by the treaty's allocations.

Despite being the region most affected by the 1960 partition of the Indus system, Indian Punjab played a limited role in negotiating the IWT, a pattern that continues today due to India's constitutional division of powers. Under Article 246 and the Union List, international treaties fall exclusively within central jurisdiction, preventing Indian states from formally influencing treaty negotiations (*Constitution of India*, 1950). As a result, Punjab's interests, especially its reliance on water from the Ravi and Beas rivers, have historically been represented through the central government rather than through provincial channels. This exclusion is significant because the IWT's allocation of the eastern rivers of Ravi, Beas, and Sutlej to India has placed heavy demands on Punjab's irrigation system. For instance, following the diversion of the Ravi and Beas rivers toward Rajasthan as part of the inter-state reallocation, Punjab has continued to lose the water it once depended on (Kumar et al., 2017). Furthermore, the construction obligations imposed on India, such as the Madhopur and Harike headworks, have required Punjab to shoulder infrastructural responsibilities without treaty-level influence. In effect, Punjab bears the operational and financial burdens while having no formal role in determining the allocation of its waters. This disconnect strengthens the deeply rooted grievance that the state executes federal commitments but cannot contest or renegotiate them. It is important to note, however, that despite institutional marginalization, Punjab retains some capacity to indirectly shape water-sharing outcomes. Through inter-state disputes, most notably the Sutlej-Yamuna

Link (SYL) canal conflict, Punjab has exercised political pressure on the central government, delaying national-level infrastructure commitments related to treaty execution. The dispute arose from Haryana's demand for a share of Ravi-Beas water after its 1966 separation from Punjab, requiring Punjab to construct a canal, transferring water eastward (Gill, 2016). Punjab's refusal, grounded in its declining river flows, led to decades of litigation and political resistance, halting the canal's completion. In this sense, although Punjab cannot negotiate treaties, it can obstruct or reshape their domestic implementation, highlighting how subnational politics intervene in federal treaty obligations. This interplay indicates a tension between constitutional centralization and regional agency as the central government negotiates the treaty, but Punjab is burdened by the distributional and political consequences.

Unlike India, Pakistan's Punjab wields more substantial indirect power in shaping water-sharing policies due to its demographic size, economic influence, and bureaucratic dominance. Although Pakistan's Article 97 vests treaty-making power in the federal government, Punjabi bureaucrats and military officials have historically occupied central positions within the irrigation, water, and foreign affairs departments (Herring & Kennedy, 1979). This structural primacy ensures that Punjab's priorities are embedded in national water strategies, even without formal provincial authority. For example, Punjab controls the majority of irrigated land dependent on Indus waters and relies on canal inflows allocated under the IWT (Hasan et al., 2021). Therefore, its preferences regarding reservoir

construction, like the Mangla expansions, sediment management, and seasonal flow releases, impact Pakistan's negotiating stance with India. This influence can be seen in Pakistan's frequent appeals to the Permanent Indus Commission over Indian hydropower projects like Kishanganga, a dispute largely driven by Punjabi agricultural and hydropower interests (Mallick, 2020). However, Punjab's power also generates internal tensions. Since other provinces, like Sindh, argue that water-sharing disputes with India are often leveraged to justify domestic centralization, Punjab is portrayed as the primary beneficiary of federal control. This illustrates that although Punjab can indirectly shape Pakistan's negotiations, it does so through federal channels and reinforces inequalities rather than promoting provincial autonomy.

The dichotomy of the two Punjabs demonstrates how federal structures shape the degree of subnational influence in international water governance. India's centralized treaty authority formally excludes Punjab from negotiations, but strong electoral accountability and interstate mechanisms allow Punjab to influence implementation from below. Indeed, subnational resistance, like the SYL dispute or demands for revised allocations, forces the central government to renegotiate implementation, highlighting how democratic federalism allows states to indirectly shape treaty outcomes even when constitutionally excluded. In comparison, Pakistan's centralized but Punjab-dominant water bureaucracy gives Punjabi interests disproportionate informal influence, consolidating central authority. Indeed, provincial interests influence water-sharing at the expense of horizontal federal balance, contributing to perceptions of undue favour

towards Punjab. Together, these differences show how subnational influence in international water treaties no longer remains an issue of constitutional inclusion but has now become a question of political structure. India's Punjab is excluded by law but empowered through electoral federalism, while Pakistan's Punjab is included informally but restricted by centralized authority that undermines provincial legitimacy. Thus, despite their shared geography and river systems, the two Punjabs experience water-sharing politics through fundamentally different federal logistics, influencing how each subnational government confronts water scarcity, climate stress, and interstate hydro-politics.

### **Conclusion**

Both Indian and Pakistani Punjabs demonstrate that subnational politics fundamentally shape water governance. In India, Punjab's authority is constrained by a centralized federal system in which interstate water allocation, especially the reorientation of the Ravi and Beas, has limited the state's ability to secure its own needs. Conversely, in Pakistan, Punjab's political primacy elevates it within the country, allowing it to shape water distribution through development strategies and indirect pressure on the central government. Across both contexts, the evidence shows that access to water is a reflection of power and is mediated by federal arrangements, subnational leverage, and negotiations over authority, demonstrating how multi-scalar governance structures shape water governance. However, the analysis also reveals limitations, as national-level hydro-politics tends to be privileged over the lived, uneven

realities faced by those living in the region. Future research can build on this study by examining how federal and administrative structures affect marginalized populations in both countries, as these groups directly experience the impacts of state-centered

water policies and inequitable access. Ultimately, Partition may have drawn the borders, but federalism has continued to decide how the waters of the Indus are allowed to flow.

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