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Canals, Claims, and Consequences: The Cholistan Water Debate

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ABSTRACT
The Cholistan Canal project, a flagship component of Pakistan's $3.3 billion Green Pakistan Initiative launched in 2023, aims to irrigate 1.2 million acres of arid Cholistan Desert through a 176 km canal, promising enhanced agricultural productivity, food security, and a potential 15–20% boost in agricultural GDP. Proponents view it as essential for converting barren land amid climate volatility, population growth exceeding 240 million, and inefficient water use losing 30–40% of supplies. However, the project has sparked intense controversy, particularly from Sindh, a lower riparian province, which alleges violations of constitutional protocols, including bypassing Council of Common Interests (CCI) approval under Article 154 and expert consultations mandated by the IRSA Act. Critics highlight risks to the fragile Indus Delta ecosystem, where reduced downstream flows below Kotri Barrage have already caused mangrove depletion, saltwater intrusion, fisheries collapse, and delta shrinkage. Inter-provincial tensions have escalated, fueling protests, Sindhi nationalism, and threats to federal coalition stability, while transparency deficits stemming from outdated telemetric systems and absent environmental impact assessments exacerbate mistrust. This study critically analyzes legal, environmental, economic, and socio-political dimensions, revealing deep governance challenges in water allocation under the 1991 Water Apportionment Accord. It underscores the need for reformed institutions, inclusive stakeholder engagement, and integrated water management to balance developmental aspirations with equity and sustainability, preventing potential zero-sum conflicts in a water-stressed nation.

Keywords: *Cholistan Canal, water governance, inter-provincial disputes, Indus Delta, Green Pakistan Initiative.*

Introduction

Pakistan stands at a critical juncture, contending with escalating climate volatility, rapidly depleting freshwater reserves, diminished water storage capacity, and a fast-growing population exceeding 240 million (Pakistan Bureau of Statistics, 2023). In this precarious context, the role of canal infrastructure in national development has gained paramount urgency. Canals are vital lifelines for food production and livelihoods within an agrarian state. The Green Pakistan Initiative (GPI), a $3.3 billion state-backed program launched in 2023, aims to transform over 4.8 million acres of barren land into cultivable terrain through the construction of six major canals, most notably the 176 km long Cholistan Canal (Hussain, 2025). Proponents argue that this ambitious initiative could boost agricultural GDP by up to 20% and address severe structural inefficiencies in water usage, as the country currently loses 30–40% of its water due to outdated irrigation practices and systemic waste (Khan, 2025). The project is framed as an essential strategy for enhancing food security, generating rural employment, and mitigating the economic impacts of water scarcity in a nation where agriculture remains a cornerstone of the economy.

However, this flagship project has ignited intense controversy across environmental, constitutional, and interprovincial dimensions. Critics, particularly from Sindh province, assert

that the initiative has circumvented mandatory oversight by key federal institutions like the Council of Common Interests (CCI), raising significant constitutional and governance concerns. They warn that the large-scale diversion of water for these new canals will substantially reduce downstream flows into Sindh, thereby threatening the already fragile ecosystems of the Indus Delta a region already suffering from seawater intrusion and land degradation and exacerbating long-standing water-sharing tensions between provinces. This fundamental clash underscores a profound national dilemma: the pursuit of agricultural expansion and immediate food security versus the imperative of upholding ecological sustainability, adhering to constitutional governance frameworks, and ensuring interprovincial equity. The controversy highlights the critical need for a balanced, transparent, and inclusive approach to water resource management that reconciles developmental ambitions with environmental stewardship and federal harmony.

Statement of the Problem

The controversy surrounding Cholistan Canal, reflects deep-rooted structural and governance challenges. It is a complex interplay of inter-provincial mistrust, in the absence of updated and reliable data, it is seen as the centralization of resource control. The lack of consensus among experts raises serious concerns about legal and procedural legitimacy. Environmentally, the construction of new canals without adequate safeguards risks accelerating the degradation of ecologically sensitive regions as affected communities express fears of displacement and unequal benefits. Politically, the exclusion of key stakeholders from decision-making processes has triggered backlash, civil protests and calls for judicial intervention. Though constitutional forums like Indus River System Authority (IRSA) and Council of Common Interests(CCI) are mandated to decide these conflicts but their impartiality remains under scrutiny as provinces question their ability to function as a neutral arbiter. Therefore an integrated analysis covering environmental, socio-economic and inter provincial dimensions of water governance is needed.

Scope of the study

This study examines the 176 km long Cholistan canal within the broader context of Pakistan's water governance. It focuses on implications of the project for inter-provincial water distribution, environmental sustainability, public reception and institutional coordination. The analysis is centered on the projected impacts of the project on downstream regions, particularly Sindh, while also considering the developmental aspirations of Punjab by exploring the technical, environmental and policy dimensions. The study incorporates perspectives from hydrological data, political leadership and civil society to provide a balanced understanding of project's benefits and potential trade-offs. The analysis draws exclusively on publicly available sources due to time constraints.

Critical Analysis of the Issues

Legal Dimensions

The Cholistan Canal project has faced strong opposition for allegedly bypassing Constitutional protocols and legal procedures. The 1991 Water Apportionment Accord clearly defines provincial allocations (55.94 MAF to Punjab, 48.76 MAF to Sindh, 5.78 MAF to KP and 3.87 MAF to Baluchistan) but its failure to establish a transparent mechanism for measuring actual water flows and distribution in case of shortage has led to persistent disputes (Pakistan Indus River System Authority [IRSA], n.d.). The authority is largely an adviser which lacks power of enforcement. Additionally, no expert consultation as provided under Article 10 of the IRSA Act 1992 has been conducted. According to Pakistan’s Constitution under Article 154, the CCI must approve projects involving interprovincial natural resources such as water; however,

critics argue that the Cholistan Canal was launched without CCI approval, thereby violating both constitutional mandates and the 1991 Water Apportionment Accord. While the Executive Committee of the National Economic Council (ECNEC) conditionally approved the project, subsequent attempts by the Federal government to revise the minutes and exclude the canal from CCI deliberation sparked accusations of procedural manipulation. Furthermore, the last CCI meeting was held during an interim government in January 2024, which is constitutionally mandated to meet on a 90-day interval, raising concerns about the weakening of federal institutions and regulatory oversight, thereby endangering interprovincial equity and trust (Sattar, 2025). The High Court of Sindh, Karachi has already issued a stay order on the issue (Anwar, 2025). In a broader context, Pakistan's stance of equitable water sharing, being a lower riparian under Indus Water Treaty will also be jeopardized.

Inter provincial water disputes

The Cholistan Canal project has become a critical flashpoint, illuminating Pakistan's deep-rooted and enduring inter-provincial water disputes. As the lower riparian province, Sindh has voiced vehement opposition to the canal's construction, driven by the well-founded fear of substantial reductions in its already critically stressed water supply from the Indus River system. The hydrological reality underpinning this conflict is stark. The Sutlej River, from which the Cholistan Canal is intended to draw its supply, has experienced a catastrophic decline in water flow, plummeting from an average of 9.35 million acre-feet (MAF) between 1976–1998 to a mere 2.96 MAF from 1999–2022, largely due to upstream infrastructure and climate change impacts (Hussain, 2025). This dramatic shortfall creates a perilous scenario: if Punjab compensates for this deficit by drawing additional water from the Indus or Jhelum Rivers via link canals, Sindh's access will be further and severely constrained, directly threatening its agriculture and ecosystem.

The procedural discord surrounding the project further entrenches the dispute. Although the Indus River System Authority (IRSA) issued a Water Availability Certificate for the canal, the authority's Sindh member issued a formal, public dissent, declaring the decision "unfair to Sindh" and underscoring that both provinces are already experiencing significant water shortfalls of 20% and 14% respectively (Hussain, 2025). This dissent is not merely procedural but highlights a profound crisis of trust and equity within federal water governance. Compounding this tension is Pakistan's national water storage crisis; the country saves only 10% of its river water, compared to a global average of 40% (Hussain, 2025). Consequently, implementing the Cholistan Canal without robust, transparent, and binding safeguards for downstream flows risks transforming a development project into a catalyst for a zero-sum water conflict. It threatens to escalate long-standing grievances into more acute political strife, undermining national cohesion by prioritizing the water needs of one province over the survival of another, all within an increasingly arid and contested hydrological system.

Environmental Impact

The Cholistan Canal project has ignited profound environmental concerns, with critics warning it could accelerate the catastrophic degradation of the already fragile Indus Delta ecosystem. This dire situation is rooted in a long-standing failure to uphold the 1991 Water Apportionment Accord, which mandates a minimum annual flow of 10 million acre-feet (MAF) of water downstream of the Kotri Barrage to sustain the delta. In reality, official data from the Indus River System Authority (IRSA) reveals that this crucial flow has fallen short in 12 of the past 25 years, as water is routinely diverted for upstream irrigation before reaching the sea (Kumar, 2025). This systemic reduction has already triggered an environmental cascade:

it has intensified saltwater intrusion, which salinizes agricultural lands and contaminates freshwater sources in coastal villages, leading to the collapse of local fisheries and the destruction of vital mangrove forests.

The scale of this ecological crisis is staggering. The mangrove cover in the Indus Delta, a critical buffer against storms and a hub for marine biodiversity, has plummeted from 260,000 acres to a mere 80,000 acres over the last century (Khan, 2024). This loss compounds a national crisis, as Pakistan's overall forest cover stands at only about 5% of its land area, drastically below the globally recommended 25% (Ministry of Climate Change and Environmental Coordination, n.d.). The delta's fisheries have been decimated, with stocks collapsing from 5,000 tons in 1951 to just 300 tons today, representing an annual economic loss estimated at $2 billion (Kumar, 2025). Furthermore, a 2019 study documented that the delta itself has shrunk from 13,900 square kilometers in 1833 to a paltry 1,067 square kilometers in 2018 (Kumar, 2025). In this context, environmental experts vehemently argue that proceeding with the Cholistan Canal without robust, guaranteed ecological safeguards would serve as the "final nail in the coffin" for the Indus Delta (Kumar, 2025). This threat is especially severe for a country already losing green spaces due to unchecked urbanization, poor land-use planning, and the pressures of a rapidly growing population.

Socio-political tension and Federal discord

Political and public resistance to the Cholistan Canal, spearheaded by the Sindh provincial government has been fierce and labels the project as unconstitutional and unilateral. Pakistan Peoples Party (PPP) leaders have accused the federal government of bypassing the Council of Common Interests which governs inter-provincial natural resource management (Social News XYZ, 2025). Massive protests erupted in Sindh following the project's inauguration. These protest depict deepening Sindhi nationalism, as civil society groups frame the canal as "hydrological colonialism". Political parties like the Jeay Sindh Qaumi Mahaz have capitalized on this sentiment, organizing canal-blocking protests leading to clashes with police (Ali, 2025). This unrest threatens to revive violent separatist movements. The PPP leader Sherry Rehman warned that the initiative could lead to the desertification of fertile Sindhi lands and the displacement of up to 20 million people (Hussain, 2025; Khan, 2025). The canal dispute has fractured the fragile PMLN-PPP coalition, with PPP Chairman Bilawal Bhutto threatening to quit the federal government unless the project is halted. The Sindh Cabinet, civil society, and advocacy groups such as the Save Indus River Movement have decried the absence of inclusive dialogue and transparency, framing the project as a threat to federal cohesion and provincial autonomy (Gopi, 2025). The political opposition is further compounded by contradictions within the ruling coalition, where the PPP governs Sindh while simultaneously participating in federal decision-making, (Webindia123, 2025). PPPs role of a staunch supporter of provincial autonomy and pioneer of 18th amendment is also being questioned. The project has become a lightning rod for broader grievances over center-province power imbalances and resource inequities in Pakistan.

Economic arguments

Despite ecological and legal critiques, proponents of the Cholistan Canal argue that the project offers transformative economic benefits, particularly for Pakistan's underutilized arid regions as conceptualized by Integrated Water Resources Management (IWRM). The canal is designed to irrigate 1.2 million acres of Cholistan Desert (Khan, 2025). With agriculture accounting for 25% of Pakistan's GDP and employing 37% of its labor force, this initiative aims to reduce dependency on food imports, enhance national food security, and stimulate rural employment (Hussain, 2025). Additionally, the GPI promotes scientific farming with inputs

like drone-assisted soil analysis and modern mechanization, potentially increasing yields and water-use efficiency. According to the Eurasia Review (2025), such efforts could lead to a 15–20% boost in agricultural GDP, particularly vital in the context of Pakistan's ongoing macroeconomic instability. Therefore, for supporters, the canal is not merely a piece of infrastructure—it is a strategic investment in national development and food sovereignty. The share of agriculture sector in national GDP however remains only at about 25 percent (Pakistan Bureau of Statistics, 2024) despite being the most resource intensive, whereas the share of agriculture sector in national tax revenue stands at a meager 0.3 percent (Pakistan Institute of Development Economics, 2023). The average yield of Pakistan's crops is far below the world average, resulting in annual loss approximated at USD 18 billion (Business Recorder, 2024). The investment on Agriculture research is still neglected, National Food Security & Research Division has been allocated a meager Rs 17.73 billion budget for 2024-2025 (Ministry of Planning, Development & Special Initiatives, 2024).

Transparency and trust deficit

One of the most contentious aspects of the Cholistan Canal project is the glaring procedural opacity and a severe trust deficit that has marred its planning and approval processes. At the core of this issue is the absence of reliable, transparent data, exacerbated by Pakistan's outdated and non-functional telemetric systems for water monitoring, which the World Bank (2023) has highlighted as a critical governance failure. This data vacuum makes impartial water accounting nearly impossible, allowing room for disputed claims and accusations of inequitable distribution. Compounding this technical failure is the profound lack of meaningful stakeholder engagement. Public consultations with affected communities, particularly in downstream Sindh, were largely absent, and independent, comprehensive Environmental Impact Assessments (EIAs) were not conducted, violating both democratic norms and established principles of environmental governance.

This procedural disregard has fueled a deep and growing trust deficit between federal authorities and the downstream provinces. The decision-making process within key institutions itself reflects this fracture. The Indus River System Authority's (IRSA) issuance of a Water Availability Certificate was publicly disputed by Sindh's own member on the authority, Ehsan Leghari, who labeled the process "unfair to Sindh," revealing a stark lack of consensus even within the regulatory body designed to ensure inter-provincial equity (Hussain, 2025). This internal dissent underscores the project's contested legitimacy. Consequently, opposition parties, civil society organizations, and provincial governments have united in accusing federal authorities of marginalizing and overriding provincial voices (Gopi, 2025). As analyst Naseer Memon succinctly put it, "Punjab's own share of water is guaranteed… but when new irrigation areas are planned without explaining the source, people in Sindh will protest" (Hussain, 2025). This erosion of trust has transcended bureaucratic disagreement, triggering widespread political backlash, sustained protests, and solidifying the perception that the project prioritizes unilateral development over collaborative federalism and ecological justice.

Conclusion

The finite nature of freshwater resources presents a stark reality for Pakistan; if not managed judiciously, scarcity will only intensify. This crisis has already transformed vast tracts of fertile land into barren wasteland and displaced thousands in coastal communities, creating a humanitarian and environmental emergency. In this dire context, the state promotes large-scale canal infrastructure as a pivotal component of its national strategy for agricultural revitalization, food security, and climate adaptation. Projects like the Cholistan Canal, under

the broader multi-billion dollar Green Pakistan Initiative, exemplify the government's ambition to utilize perceived underutilized lands to boost agricultural GDP and reduce the nation's costly dependence on food imports. However, this very initiative powerfully encapsulates the fragile and often contradictory nature of Pakistan's water politics, pressing environmental limits, and deeply contested federalism. While aimed ostensibly at "greening the desert," the project carries the profound risk of a hydrological zero-sum game, rendering fertile lands barren elsewhere particularly in downstream Sindh through catastrophic flow reduction that could devastate existing agriculture and ecosystems.

Therefore, unless the project is fundamentally reconsidered through a lens of cooperative federalism and ecological balance, it threatens to inflame deep-seated inter-provincial tensions, accelerate the degradation of vital deltaic ecosystems, and paradoxically heighten rural poverty in already vulnerable regions. The strong, unified, and cross-sectoral public opposition emerging from Sindh encompassing political parties, civil society, and farmers is not merely a regional protest but a critical national alarm. This opposition reflects the urgent necessity to recalibrate such large-scale interventions according to the principles of equitable water distribution, long-term environmental sustainability, and genuine democratic legitimacy. A sustainable path forward demands inclusive dialogue, rigorous scientific assessment of cumulative downstream impacts, and adherence to constitutional oversight mechanisms like the Council of Common Interests. Ultimately, ensuring that the proposed solution to one crisis does not become the genesis of several others is imperative for national cohesion and ecological survival. The challenge lies in forging a water management paradigm that reconciles developmental ambition with the immutable realities of a shared river system and the constitutional rights of all provinces.

Recommendations

Legal and Institutional reforms

- IRSA Act should be revised as per the modern needs, the vague areas like water sharing in shortage should be addressed.
- Extensive consultations be carried out by experts under article 10 of IRSA Act and findings to be made public. Also it should be mandatory to accord for expert panel before such projects.

Integrated Water Resource Management

- Install a reliable and accurate telemetric system for transparent data analysis, establish satellite-based water monitoring and predictive analytics.
- Promote forest conservation, biodiversity preservation and economical water usage habits though media, social media and curriculum.
- Encourage adoption of micro-irrigation systems like drip and sprinkler irrigation in low flow.
- Fast improvement in storage capacity through reservoirs and promoting water harvesting and recycling techniques for mitigating the effects of climate change.
- Launch national subsidies for canal lining, water metering, and laser land leveling.

Policy reforms

- Improvement in crops yield through investing in agriculture research.
- Focus on urban planning, already available Green lands should not be designated for other purposes.
- Federal government should improve tax collection from agriculture sector in collaboration with the Provincial governments to provide for fiscal space for agriculture and irrigation.

- Serious implementation of The National Action Plan on Population (2025-30) which aims to reduce population growth by 1.1 percent. This will reduce the stress on water and food resources.

Inter provincial / Social collaboration

- Better coordination mechanisms between Federal and Provincial governments, on issues like agriculture and population control etc which have been devolved to provinces by 18th amendment of the Constitution but are affecting the overall national economic and ecological stability.
- Appointment of expert and neutral members at IRSA and holding of meetings at regular intervals as mandated under the Constitution by the CCI.
- Conduct quarterly interprovincial water diplomacy forums to foster mutual understanding and preempt conflicts.
- Institutionalize grievance redressal mechanisms accessible to both governments and affected communities.
- Allow civil society groups and local stakeholders to submit feedback during project design and implementation.
- Organize public hearings in both riparian and non-riparian regions before major irrigation works begin.

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