



RESEARCH PAPER

Water Sharing Issues in Pakistan: Impacts on Inter-Provincial Relations

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PAPER INFO	ABSTRACT
<p>Received: October 18, 2021</p> <p>Accepted: December 29, 2021</p> <p>Online: December 31, 2021</p> <p>Keywords: CCI, IRSA, National Integration, Provincial Harmony, Water Sharing,</p> <p>*Corresponding Author: Khadeeja.imran54@gmail.com</p>	<p>The burgeoning conflict over the water sharing is now a global phenomenon. Many international treaties, laws and water management models are available to settle down the water sharing issues among states like Absolute Territorial Sovereignty and the Upper Riparian Absolute Territorial Integrity and the Lower Riparian and Mediated Strategy of Restricted Integrity. Inter-provincial water sharing issue in Pakistan is a classic example of upstream-downstream rivalry which has been traced back from the pre-partition history of Pakistan. Lower riparian province Sindh has a historical conflict with upper riparian province Punjab, Balochistan being lower riparian has water conflict with Sindh, and KPK has water sharing issue with Punjab. The constitution has also empowered the existing institutions like CCI and IRSA and established several new rules for the water management among provinces. Currently, it has become the issue of federation and has disturbed the provincial harmony and national integration.</p>

Introduction

Administrative “If the wars of this century were fought over oil, the wars of the next century will be fought over water” (Serageldin, 2009).

No country all at once can progress upward if its provinces are looking down upon one another. Disagreement is the beauty of a relationship either between two people, two states or two provinces. If taken up sensibly, these disagreements lead the concerned parties to such conclusions which lay the foundation of new dimensions and directions. On the contrary, if they are not resolved rationally, they hurt the national causes more than anything else can do.

Pakistan has historically been engulfed in various types of problems - political, financial or social - yet there are some issues which are bulging in their intensity with each passing day as they are lying at the mercy of provincial governments and their political interests. One such matter is inter provincial water sharing issue that is becoming graver gradually as underground water levels in Pakistan are speedily going down whereas provinces are not reaching any point just because of their political interests (Khan & Awan, 2020). This persistent disagreement among the provinces especially after the 1991 Water Apportionment Accord is affecting other matters of inter-provincial nature as well. Such a competition of political gains and regional superiority among the federating units has slowed down the pace of the national institutions taking Pakistan ultimately to the tag of a third world country (Anwar & Bhatti, 2018).

So, it is very much clear that in Pakistan, the interprovincial water sharing issue on the distribution of the water of Indus River traces back to the commencement of the massive system of canal construction by the British from the mid-nineteenth century to

onwards. In this situation, *Sindh* rightfully protested against the overuse of Indus water by *Punjab*. It was the British government which did an unjust allocation of Indus Water's tributaries making *Punjab* the chief recipient at that time thus deepening the roots of inter provincial water sharing issue in the present Pakistan. Different commissions and committees like Indian Irrigation Commission 1901 (Commission, 1903), Cotton Committee and Ray Commission were formed to disallow *Punjab* from using Indus Basin water and to balance the demand and supply of water among the provinces (Committee, 1942).

After the division of subcontinent, India cutoff the water supply to Pakistan. After this, Indus Water Treaty (IWT) 1960 was signed between India and Pakistan allocating most of the *Punjab's* share of the Indus Basin water, according to the 1945 Sindh-Punjab Agreement, to India. To compensate the water lost to India, this treaty allowed Pakistan to shift storage and link canals from the western half of the Indus Basin to its eastern half (Wolf and Newton 2008). This settlement according to the IWT was not welcomed by *Sindh* as *Sindhis* widely perceived the compensatory water and the storage on the Indus and Jhelum rivers to be advantageous to *Punjab* and not to *Sindh* (Tariq & van de Giesen et al., 2020).

Presently, the water sharing problem in Pakistan has disguised itself as an issue between the lower and upper riparian provincial units. KPK and Punjab as upper riparian are accused by Sindh as lower riparian for stealing its share from Indus Basin through the canals of Chashma-Jhelum and Taunsa-Panjnad. Sindh also accused Punjab for overusing the water and for the constant desecration of international regulation of water and related treaties. It also opposes the construction of Kalabagh Dam expressing its fears that this project would originate severe water scarcity producing economic and agricultural difficulties in the province. It further claims that the Kalabagh water reservoir would further restrict the water storing ability of Manchar Lake and Haleji Lake (Khan & Awan, 2020).

Punjab, on the other side, reasons that due to the lack of planning and infrastructure on the part of Sindh, about 35 million acre-feet (MAF) water is wasted into the Arabian Sea that can be consumed for the socio-economic progress. Punjab also points out the water losses of almost 14MAF between Sukkar and Kotri Barrages. Furthermore, where *Sindh* accuses *Punjab* of stealing the water through Chashma-Jhelum and Taunsa-Panjnad, *Punjab* at the same time majorly depends upon the IWT for the utilization of water of these two canals (this treaty was signed with India by the federal government of Pakistan not Punjab's provincial government). Another point of conflict is that the Punjab government favors the Kalabagh Dam while Sindh along with KPK strongly opposes the construction of the Kalabagh Dam. Both the provinces are in conflict with this dam by sharing the argument that the turbines of the dam that will produce electricity will be fixed across the border of

Punjab while the water storing pools will be created in KPK drowning a big piece of agricultural land of Nowshehra city. The provinces also raise questions on the point of salinity, water logging and the displacement of local community for the execution of the project. So, the Kalabagh Dam controversy is considered by Sindh as yet another offense that is directed at Sindh by the Punjabis in the arrangement of further annexation of Sindh's rightful share of water. Last but not the least, Balochistan also opposes the project of Kalabagh Dam and considers it as another scheme of Punjab to control the other provinces. In a nutshell, the issue of water sharing among the provinces in Pakistan has gone exceedingly complicated and apparently no solution to this issue is being expected in the near future (Bhatti & Farooq 2014; Kanwal, 2014).

The ostensibly continuous water sharing issue between lower riparian and upper riparian provinces was temporarily resolved in the form of the Water Apportionment Accord of 1991, when all the four provinces mutually agreed on the set allocations of Indus Basin water among themselves. This accord, which was established on the expected average flow of 114.35 MAF of water in the Indus Basin, out of which, 55.94 MAF and 48.76 MAF of water was allocated between Punjab and Sindh provinces respectively while remaining 9.65 MAF of water was distributed between Khyber-Pakhtunkhwa and Balochistan provinces. Although it has been maintained that before the real apportionment came closest to what a rational apportionment could be, the accord, however, suffered from the legitimacy crisis (Hassan et al., 2019).

The annual average water flow of Indus Basin which is allocated to the provinces under WAA is doubtful. Not only the official figure of annual average water flow but also the reason given for the construction of an additional storage specifically Kalabagh Dam is also rejected by the smaller provinces. The principle argument in the approval of the construction of the Kalabagh Dam on the Indus Basin draws the picture of the scarcity of water resources and wastage of water into the Arabian Sea, and that the additional storage capacity is the only possible way to protect the country from this disaster. Since 1947 to up till now, there are only two mega water storage dams, Tarbela and Mangala, which are also reducing their storage capacity by one percent in comparison to the population growth rate of three percent. So, it becomes quite essential to build dams after every 10 years but provincial disharmony has been the major cause of not constructing any other major dam after Tarbela and Mangala (Ahmed et al., 2007; Iqbal, 2010).

The interprovincial water sharing issue is the outcome of poor governance and self-centeredness of political parties, lack of sustainable policies, parochialism over national interests, politicization of national issues, absence of native and competent leadership and unreliable policies. Pakistan is facing the dearth of adequate water storage capacity even in the presence of widespread network of canals and sub canals. Constitutional institutions such as Council of Common Interest, Indus River System Authority (IRSA), Water and Power Development Authority (WAPDA), provincial irrigation departments, and provincial

irrigation and drainage authorities are there to do their duties effectively but these bodies have remained unsuccessful in developing coordination, cohesion and consensus among the provinces. This is also due to several overlapping legislature policies, for example, the working domain of provincial water management is taken over by the federal institutions like WAPDA (Khan & Awan, 2020)

Literature Review

The research in hand deals primarily with Pakistan that is a developing south Asian country with multiple internal issues waiting to be sorted out amicably. Any issue or conflict that a country faces is of much importance as it slows down the pace of the national development.

So far, the inter-provincial water sharing issue has not only hurt provincial relations but has also threatened the national integration. Armed with high magnitude of assumptions of divergence rather than collaboration on the water sharing formula between the federating units of Pakistan, there is a rampant danger of disruption of the national fabric with respect to social, political and regional elements (Bhatti & Farooq, 2014). The same author opines that the first and alarming dispute is water sharing between the federating units of Pakistan. This has resulted in the strained relationships between the provinces; especially between Punjab and Sindh. Moreover, it is the main growing challenge for the state of Pakistan and may shake the whole political geography of the country (Kanwal, 2014).

There are complains that a smaller volume of water is being received by the provinces as per their records. Such complains have not only given the socioeconomic and agricultural crises but also resulted in the form of distrust among the working institutions of the provinces (Anwar & Bhatti, 2018). This situation further led to a number of political and racist movements getting a strong point of interest and added authority to the opinion of the opposition in terms of dams and reservoir/canal projects. Being the end user of the Indus River, people from Sindh foresaw that the disputes and new projects might result in more lowered supply of water. Hence, it led to an atmosphere of hatred among the people of Sindh; the province where fresh water is not easily available because of its restricted supply. This limited amount of water in Sindh had always affected multiple operations which needed reasonable amount of water to function properly. (Van Hemelrijck, 2019).

The distribution and management of the Indus River water is quite a volatile subject matter between four of the federal units of Pakistan but its intensity is high between Punjab and Sindh. Being an upstream area, Punjab has more control over the water and it is also a reality that in the previous two decades, there has been substantial decrease in the share of Sindh province and it was not given the due share of attention in the political factions as

the country is controlled by the majority of Punjabi bureaucracy sitting in Islamabad, the capital of Pakistan (Kanwal, 2014). Hence, from all the dimensions, the officials from the major province Punjab have greater control over the water channels and their distribution, even though, Punjab has more suitable underground water for the agricultural purposes as compared to that of Sindh (Hassan et al., 2019).

In order to control and distribute water, there is a need to employ state of the art technological and engineering facilities, such as canals, dams and river diversion structures. As the human needs of water are increasing and it fetches actual usage of water nearer to the potential upper limit, in this situation, the societies adopt the measures of conservation for the arrangement of water for additional usages. Such plans cannot be carried out until a unanimously accepted water sharing formula is not designed.

The research in hand is significant at two levels i.e., macro and micro. At macro level, it investigates that the inter-provincial water sharing issue hurts national interests while at micro level it poses threats to agricultural, industrial and domestic needs. At macro level, national interests of a country stand on the strong bases of cohesion, integration and sovereignty. Any persistent issue among the provinces or federating units of a country may weaken these bases gradually ultimately paving way for the external forces to play foul by exploiting the internal situation.

On the other hand, if we see this matter at micro level, a permanent conflict among the provinces directly affects their individual efficiency. If federating units are not at good terms with one another, how can they benefit their masses in a resourceful way. To yield positive and mass-oriented outcomes, it is very much important for the federating units to be in close contact. (Memon, 2002).

At micro level, the water sharing dispute is widening the gap among the provinces affecting all the relevant and allied corners; the crisis of domestic commodities is an outcome of provincial disparity and mistrust. All that is needed now is a feasible yet practical solution to the interprovincial water sharing issue in Pakistan. The research in hand becomes even more significant as it investigates the possible remedies and solutions to this issue with the help of the document analyses and expert interviews.

Discussion

Pakistan, talking of geographically, is not that big country where issues take time to be resolved. The stakeholders comprise only four provinces and federally administered areas. Even the number of big and small rivers flowing across the provinces is also not that big but the water sharing issue has become a permanent disturbance among the provinces. Multiple issues have made the water departments almost inactive in terms of the resolution

of this problem. That is the reason, even in the presence of so many accords, treaties and formulas, the interprovincial water sharing issue has become quite persistent in its nature.

Forty-four forums have been founded, organized, and constructed in Pakistan to handle water concerns since 1947, along with a regulating body to the National Policy on Water, but none have been effective. In this study, 14 official and semiofficial documents were analyzed using MAXQDA 2020 to generate word clouds based on the theoretical perspective described as shown in figure 1.



Figure 1 frequencies of words in selected documents

The study of these documents is provided to address the research questions while underlining the issues that impede the complete implementation of the water sharing formula in Pakistan. For the document analysis of chosen texts, the multi-stage analysis approach was utilized. The codes connected to the water sharing formula were found on the first level, and then these codes were refined into word files. After then categories were developed, they were combined into themes linked with research questions in the final step.

The current water sharing formula effecting the inter provincial relations in many ways like there is lack of sustained water policy. Treatment capacity is insufficient, and

current infrastructure is in poor condition and operation. The sewerage setup's area is quite restricted, and the present fragmentary system is in disrepair. Similarly, water delivery networks are frequently insufficient (The World Bank Group, 2019). Three huge dams completed in the 1960s and 1970s - Tarbela Dam on the Indus River, Mangla Reservoir on the Jhelum River, and the Chashma Barrage on the Indus River are Pakistan's major manmade water storage (WAPDA, 2016). Here is the initial total live storage capacity of these dams, which were built primarily to deliver water for agriculture. (Tarbela's initial water storage capacity was 19.4 billion cubic meters, Mangla water reservoir's initial water storing capacity was 12 billion cubic meters, and Chashma water reservoir's starting water storage capacity was 0.87 billion cubic meters) (The World Bank Group, 2019).

The lack of sustained agricultural policies is another factor. The 2012 National Climate Change Policy (GoP, 2012) puts greater emphasis on water from the perspective of numerous climatic threats which include accelerated climate extremes, glacier retreat, growing agricultural water needs, and coastal saline intrusion. The policy's 2013 implementation framework determines aims, strategies, and different adaptation activities of water control and its link to agriculture and electricity generation (The World Bank Group, 2019). The lack of agricultural policy generate the insecurity for economic growth. To assist the process of economic growth and to promote better social stability in Pakistan, it is critical that problems of job creation and poverty reduction be prioritized. During the next decade, this plan would be based on increased water storage and electricity generation (WAPDA, 2009). However, consistent measures addressing the water issue in Pakistan have been rare in the previous decade. There are several economic development paths Pakistan may take, but they are different in terms of how much they enhance water security. Water issues could stymie economic, social, environmental, and political development if they are not addressed carefully. Growing population, squeezed water resources, and swelling climate change all suggest that if they are not addressed carefully, water issues could stymie economic, social, environmental, and political development. Aside from climate change and population expansion, urbanization and economic growth cause increases in the water demand other than the agriculture side (The World Bank Group, 2019).

Water conflicts between the provinces Punjab and Sindh exist many years before the establishment of Pakistan. Punjab's pre-partition desires to get water for agricultural purposes were resisted by the province of Sindh, and the British forced a solution for both the provinces in 1945, granting Sindh first access to Indus waters. This system was in effect until 1970. As a result, the federal government started allotting water on temporary basis, resulting in continuing disagreements. Numerous panels failed to reach some resolution until all the four provinces agreed to the Water Apportionment Accord in 1991. (The World Bank Group, 2019).

Water has been related to certain episodes of civil upheaval and bloodshed in Pakistan. Demonstrations over the shortage of water can prove fatal, as in Karachi in 2001, or they might result in property destruction and violent clashes with police, as in Sindh in 2012. (Mustafa et al., 2017). As per the evidences, disagreements over water-allocation have caused casualties and injuries in KP and FATA (Mustafa et al., 2017), and that unfair access to domestic or commercial water leads to hostilities. In one case, Perween Rahman, a Karachi activist trying to address these disparities, was assassinated in 2013.

Average Annual Provincial Resource Availability in Pakistan

	Accord apportioned Surface water	Internally generated runoff	Renewable fresh groundwater	Total renewable resource
Khyber Pakhtunkhwa	10.83	11	2	24
Punjab	69.00	19	9	97
Sindh	60.14	3	2	65
Balochistan	4.77	8	1	14
Pakistan	144.75	41	14	229

Source: Water Apportion Accord (1991)

The Accord places no restrictions on how the provinces utilize the water that has been allotted to them.

The federal institutes are almost proved themselves ineffective in reducing the tension among the provinces. Firstly, the federal institutes are failing in minimizing the water wastage. Water waste would be prevented at all costs. Any surpluses might be exploited by another province, but they would have no rights (Apportionment of the Waters, 1991). Unmetered consumption is difficult to manage, resulting in customer waste (FoDP, 2012). Existing water distribution infrastructure will be updated to reduce water loss and waste (National Drinking Water Policy, 2009). Water metering and effective municipal water waste management should be encouraged (National Water Policy Draft 1, 2005).

Secondly, incapable of recycling the sewage water. Although it is now slightly out of date, the most comprehensive analysis of Karachi's water infrastructure and management needs (JICA & KWSB, 2008) proposed a master plan to address waste, theft, and nonrevenue water (NRW). Until date, operational and financial sustainability of water services has been difficult. Karachi produces an estimated 1.8 million cubic meters of sewage every day (KWSB, 2018). Uncontrolled wastewater discharge and sewage leakage cause microbiological pollution of drinking water, with less than 8% of wastewater being treated (The World Bank Group, 2019)..

There is also lack of cooperation between national and provincial governments. There is need of collective framework in creating cooperation between national and provincial government is another establishes disaster management collaboration between national and provincial administrations in order to correct Pakistan's reactive reaction to natural catastrophes (GoP, 2007). Through wider economic assessments and collaboration between federal and provincial water and energy policy bodies, careful evaluation of trade-offs and synergies is necessary (The World Bank Group, 2019). The goal is to encourage co-riparian cooperation for water sharing and long-term management, both during flood and drought situations, as well as pollution control to enhance water quality. Improve the operation of IRSA in order to improve the environment and instill a spirit of greater peace and mutual collaboration in fulfilling water allocations (National Water Policy Draft 1, 2005).

There is an urgent need for institutional assistance at the provincial level for urban household water and sanitation in order to guarantee long-term planning, collaboration among urban service providers, and support for smaller cities and towns. Effective institutional and legislative arrangements are also necessary for rural and industrial water supply sectors, as well as for water body pollution management (National Water Policy Draft 1, 2005).

Some of the participants agree that it affects (A. Islam, personal communication, August 2, 2021) because in a transboundary river system like Pakistan, the flows are interdependent and as the population is expanding water demand is also increasing which is creating stress on overall water supply (M, Irshad, personal communication, August 12, 2021). The reason is, "you can only distribute if you get something" (R. Iqbal, personal communication, June 19, 2021).

Water stress from the neighboring country is affecting the inter-provincial water sharing remarkably. Eastern rivers (Ravi, Sutlej and Beas) are fully managed by India according to Indus Water Treaty. In response of this conflicting treaty, India often exploits the release of Pakistan's share of water which eventually influences the water sharing among the provinces devastatingly. This issue has been raised with India several times but still it is unresolved (W, Sikandar, personal communication, May 4, 2021).

Participants point out the need for amendments in WAA. There is a need to revise the accord and revision in rules of business of IRSA itself. There is a need to provide coercive role to OFWM departments, Ministry of Climate Change and Chamber of Commerce and Industries (B. Fatima, personal communication, August 7, 2021).

It is obvious that sharing of water among provinces is slightly dependent on political pressure as well. Feudal lords in the Punjab and Sindh regions of Pakistan often influence the sharing of water among provinces just to irrigate their own plains. Despite

this harsh reality, inter-provincial water sharing is majorly controlled by the departments led by federal and provincial governments. Technical and administrative breaches in the departments often provide these feudal lords an opportunity to influence the system. Conclusively, it can be stated that water sharing among provinces is solely a departmental issue but deficiencies in the relevant departments must be addressed to overcome the challenges (W, Sikandar, personal communication, May 4, 2021). It is a mix of departmental and political issue, dating back to pre-partition (subcontinent) (G. Official, personal communication, May 4, 2021).

But some believe in that it needs to be addressed at both levels. Actual water requirements for various sectors must be estimated and a water distribution mechanism must be developed, that must be further briefed to political leaders to make them understand actual scenarios with facts and figures (I. Ahmad, personal communication, August 10, 2021).

CCI approved National Water Policy and a National Water Charter in April 2018 (R. Iqbal, personal communication, June 19, 2021). The role of CCI is not yet active in this regard as IRSA is the real forum for inter-provincial water sharing issues in Pakistan. Any issue not resolved by IRSA can be referred to CCI (A. Islam, personal communication, August 2, 2021). IRSA's role needs to be empowered for basin level planning and resolving inter-provincial issues (A. Chaudhry, personal communication, August 2, 2021). 18th amendment is implemented only in immature form which has caused more harm than benefits (B. Fatima, personal communication, August 7, 2021). CCI works on the disputes arising among the federation and the federating units regarding the rightful distribution of water coming from any natural source. The CCI has already conveyed it to the federal and provincial governments to submit a complaint with the office of CCI in case of any violation or grievances. (I. Ahmad, personal communication, August 10, 2021).

Conclusion

The study in hand concludes different points of action in terms of water sharing among the provinces in Pakistan. From the concerns of provincial governments to the behavior of water authorities, multiple issues have been discussed and analysed with the help of official documents and expert interviews. The study finds out that present practices must be modified, and existing frames and missions are reconsidered in a new context. The study concludes that lack of long-term water policies for agriculture and economic activities enhance the interprovincial rift on water sharing among the provinces that risks the national integration. There is a dire need to amend the existing water sharing formula and revamp the water management policies in the province on the district level. There is a lack of coordination among provincial and federal bodies to address water sharing among the provinces in acute weather conditions. The system to handle overexploitation of groundwater for irrigation and handling

of floods is old-fashioned. Water authorities responsible for the design and administration of inland waterway infrastructure, such as WAPDA, IRSA, and CCI, are increasingly confronted with the challenge of network renewal. Rather than looking for methods to build infrastructure, water authorities are looking for ways to redevelop it.

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