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Water Crisis in Pakistan: A Historical Analysis of Kalabagh Dam

Muahammad Ayaz [α] & Dr. Sadaf Farooq [σ]

Abstract- Water is the requirement of life and a backing force of socio-economic development. Due to some human interference in natural activities, the global environment is changing rapidly. Resultantly, water resources are on the verge of diminution. The case of Pakistan is much alarming as it is an agricultural country depending on canal water. Any shortage of water will nearly defunctionalize the canal system of Pakistan. Some experts claim that Pakistan may become dry by 2025 if she did not build any big water storage. From the economic point of view, the agriculture portion in Pakistan's total economy is 21% to Domestic Gross Product (GDP) and above 45% to the labor force. Kalabagh Dam can be fruitful in these circumstances because it will generate 3600 Mega Watt (MW) electricity and will store 6.1 Million Acre Feet (MAF) water. After discussing the water crisis in Pakistan, this paper is analyzing the role of KBD as a remedy to water scarcity, electricity shortfall as well as the politics of water.

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I. Introduction

Kalabagh, situated on the bank of river Indus, is 50 kilometers downside town from Attock Bridge, linked with Islamabad, Khushab, Bhakkar, Bannu, Kohat, and Attock by railways and road. At Kalabagh, the river Indus is going through a narrow gorge with full speed. On both sides of the river, well-known hills of Salt Range are lying, famous in all over the world for its Geological museum[1].

The issue of the KBD is heard everywhere in Pakistan. The experts prepared the design of the dam at Kalabagh in 1953. However, it came to the limelight during Ayub Khan's regime. Ayub preferred Tarbela Dam over theKBD[2]. In the same year, the World Bank declared that the construction of the KBD was highly needed to overcome the shortage of water and power, and Pakistan should complete it till 1976[3]. WAPDA then established a committee comprised of Pakistani and foreign engineers to prepare a feasibility report. They agreed to construct the dam downside of the meeting point of the river Swat and the river Indus. Under the guidance of F. F. Snyder, an expert on flood hydrology and Dr. Herbert Einstein, the dam was analyzed and observed from every aspect. The committee sent its final report to the four provinces, and it did not receive reasonable objection from neither province.

The government requested the United Nations Development Program (UNDP) to grant financial assistance for a detailed engineering study of the site, which was accepted, and the World Bank sent a team of experts by June 1980. They declared the construction of the KBD technically and economically sound and viable. According to the price level of 1987, the estimated cost for executing of the project of the KBD was US$ 3.46 Billion. Its completion duration was six years according to its building schedule, and its first generating unit would be functionalized by April 1993[4]. However, the government could not follow the roadmap due to the opposition of various political parties and provincial governments. In KP, the ANP with consistency stood against the construction of the KBD. On June 11, 1998, the issue of the KBD got momentum again when Prime Minister Nawaz Shareef (1997-1999) showed his enthusiasm to build the KBD. The ANP very strongly reacted to this statement.

Chief of Army Staff General Parvez Musharraf (1999-2008), in his first address to a public meeting in KP, talked elaborately on merits and demerits of the KBD against Basha Dam. President's speech was of great significance as he chose a venue that was likely to be affected by the KBD. It was Nowshera, which will suffer most in terms of dislocation of people and loss of fertile land due to building of the KBD. The audience felt that the President had announced the construction of the KBD. However, later he clarified in an interview that he had not made any announcement except the presentation of merits and demerits of the KBD and Bhasha Dam[5]. According to his viewpoint, the KBD would have the ability to store 90 MAF water while Bhasha Dam has only the capacity to store 50 MAF water. It would irrigate 300,000 acres of land in southern KP through a link canal that would increase crop yield and reduce poverty. The feasibility of the KBD was ready, while the feasibility report of Bhasha Dam would prepare in three to five years[6]. However, the politician of the ANP and the PPP (Sherpao) turned down all the assurances of the President.

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II. Merits of the KBD

Kalabagh Dam reasonably will lead to the solution of three main problems of Pakistan. The most urgent is the issue of load shedding, after which it would deal with the challenges of irrigation and flood. These are the highlighted issues resulting in difficulties nowadays[7]. In the first week of April 2013, the demand for electricity was 11,000 MW, and the generation was about 8,000 MW[8]. It means 3,000 MW electricity shortfall, which could increase in the peak season[9]. The expected generation of cheap hydroelectricity is 3600 MW which would help to reduce power outage.

Hydel power costs 2.5 to Rs. 3 per unit. As compare to hydel power, thermal electricity is expensive. It will cost Rs — 16 per unit. Except for 30% line losses, the KBD will save $4 billion for the country per annum[10]. To keep these figures into consideration, if the KBD were functional, there would have been no load shedding in Pakistan[11].

Pakistan is losing nearly 30 MAF water to the sea due to the absence of big dams and resevoirs[12]. Another careful study claims the wastage of water to the sea as 36 MAF[13]. The dam will store 6.1 MAF water, and throughout the year, it would be available for irrigation purposes. It will water 2.4 million acres land: 0.44 million acres of KP, 0.68 million acres of Punjab, 0.8 million acres from Sindh and 0.54 million acres land from Balochistan[14]. Another study measures its irrigation capacity close to a million hectares of barren land. It will guarantee the self-sufficiency of Pakistan in wheat[15]. The additional water of the KBD will cause the enhancement of crop production in three ways: by irrigating new lands, by cropping intensity enhancement on the prevailing tracts and by enhancing yields.

Pakistan had to bear a loss of more than $45 billion caused by the floods recently[16]. Kalabagh storage capacity is 6.1 MAF water, which will be proved helpful in flood alleviation. On the other hand, this surplus water will ensure the flow of water during low flow seasons. According to WAPDA, the KBD is mandatory to compensate for the storage loss due to siltation of existing reservoirs. It will also provide additional storage and regulation on the Indus for water management and its timely supply. To control the floodwater, the project for the disposal of floodwater will use two spillways on the right bank. These spillways will have a water release capacity of over 2 million cusecs. There would be a powerhouse on the left bank connected to twelve conduits each 36 feet in diameter; this will ultimately generate 3600 MW electricity[17]. In low flow days, the KBD will release water according to the following provincial shares:

Table 1

Province	Percentage	Supply (Million Acre Feet)
KP	14	0.854
Punjab	37	2.257
Sindh	37	2.257
Balochistan	12	0.732
Total	100	6.1

Source: Muhammad Idris Rajput, Kalabagh Dam, and Sindh: A View Point, 40.

III. The KBD: An Issue of Resentment among the Provinces

The KBD has harmed the national integration and created a sense of provincialism. Three provinces are against the construction of the KBD. Punjab is the only province favoring the KBD because it will provide cheap hydro-electric power to industrial zones in Punjab[18] with irrigation of six lacs eighty thousand acres of land of the province[19]. Answering a question regarding the sense of Punjab dominancy, the ANP's leader Asfandyar Wali Khan declared while he was addressing a large audience in KP that he and his party would not agree to accept Punjab as federation's commander[20].

As far as the viewpoint of Sindh is concerned, according to WAPDA, Sindh will receive 37% water of the KBD, which is 2.25 MAF. The availability of water will strengthen the agriculture sector. Still, Sindh is not ready to accept the KBD. Sindh is the lowest riparian of the Indus river system; hence, it has the following observations and apprehensions.

1. The downstream flow of water is declining, and no surplus water is available every year to ensure better downstream flow.
2. Sindh will face a shortage of water due to the upstream proposed canals to off-take from the KBD which will draw excessive water.
3. Storing of 6.1 MAF will lead towards the reduction of water flow coming down to Sindh with the following effects:

a. Cultivation of nearly 500,000 acres, will be affected due to reduced flow.
b. It will, consequently, destroy the livestock in Indus delta.
c. Mangrove forests consisted of an area of 294,000 acres in Indus delta will be affected.
d. It will deteriorate the Indus river channel.
e. It will reduce the drinking water supply in the area below Kotri, as underground water there is saline.

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f. It will destroy forests of nearly three lacs acres in the riverine area.
g. Sea intrusion will increase further because of low flow. According to the Board of Revenue of Sindh, already, nearly 1.2 million acres of land has become the prey of sea intrusion.
h. Tube wells based on water seepage of the river will become saline due to low flow.
i. The abovementioned facts will lead to poverty in Indus delta as their livelihood will be badly affected[21].

The Provincial Assembly of Sindh has passed unanimously various resolutions against the construction of the KBD. A member of Provincial Assembly (MPA), Dr. Abdul Wahid Soomro, resolved thus:

> This House resolves that the proposed Kala Bagh Dam being detriminated to the interest of Pakistan in general and Sindh Province in particular, be dropped. Provincial Assembly of Sindh had already passed two resolutions in this regard in the past, and this House reaffirm the same. The House, therefore, recommends to the Federal Government to abandone this project once for to remove the misgivings of the people of Pakistan."[22]

The above mentioned proposal on the floor of Sindh Assembly was followed by resolutions no. 01, 413, 414 and 423, and were passed unanimously by the House. They demanded the federal government to stop the project of the KBD.

The claimed losses of the provinces were not observed objectively. Regretfully, provincial prejudices and biases made the case of the KBD complicated[23]. The main objection of Sindh on the construction of the KBD is that Sindh will turn barren. Analysis of past facts and figures show that before the construction of Mangla and Tarbela Dams, Sindh was receiving an average three crore and sixty lacs acres feet water per annum[24]. After building both these dams, Sindh was getting four crores and thirty lacs acres feet water. As it got more water after construction of Mangla and Tarbela dams, then certainly, by building the KBD, Sindh will record a considerable increase in water. As a settled fact, the KBD will not absorb the water of Indus; it will emit water that will reach Sindh ultimately. The experts have revealed that Sindh will get 40 lacs acres feet of water additionally[25].

Another apprehension of Sindh is that big dams need to fill every year, and during the year of low flow, it would be challenging to fill the KBD, resultantly Sindh will become the victim of low water. No matter water is less or more, Sindh will get its share according to the Accord of 1991 of the Indus River System Authority (IRSA). The IRSA includes nominated members of the federation and four provinces. Yet another objection that the construction of the KBD will result in two more downward canals on river Indus which will reduce water share of Sindh. Seven water channels are presently carrying water from the Indus and providing water for irrigation to Punjab and KP. The withdrawal gauge of water through these canals is 65 thousand cusecs from the Indus river. Two downwards waterways of Kalabagh will be much less than those seven canals. Even after the construction of seven canals, Sindh is receiving its due share of water, so how the two small water channels will reduce the flow towards Sindh? Tarbela Dam locates in KP and it is receiving only 4 percent of its water, while Sindh is getting 70 percent water[26]. Objection on this ground is wrong and meaningless and against the very spirit of the 1991 Water Accord of the provinces.

Balochistan had little concern with the issue of the KBD as it is not a direct riparian of the river Indus[27]. Still, it receives water for irrigation by Pat Feeder Canal at Guddu Barrage. It seems to the authority of the province that in the post-Kalabagh Dam scenario, the request for more water will have little chances of kind consideration from the Indus river system. Thus, the share of the irrigation water of Balochistan will be reduced[28]. Resultantly, according to the viewpoint of Balochistan, the fertile land of the province will be deprived of water for irrigation. Moreover… various resolutions were passed by the Balochistan Assembly against the construction of the KBD. A bill of the Provincial Assembly claims that it will deprive Sindh of water for irrigation, and fertile lands of KP will become barren due to water logging[29]. Like Sindh, Balochistan fears that the KBD would cause a detrimental reduction in the irrigation water supplies[30].

IV. Reservations of KP: The KBD and Provincial Politics

Khyber Pakhtunkhwa is the resident of three big multi-lingual groups, i.e. Pakhtuns, Hindko-speaking, and Saraikis. Overall, 73.9% of people speak Pashto, 3.9% conversate in Saraiki and 20.4% are other linguistic groups (others include Hindko)[31]. Pakhtunsclaim majority in the valley of Peshawar. Experts opine that Peshawar and its inhabitants are the principal sufferers of the KBD. The critiques say, Peshawar will suffer from a constant danger of flood in case of any kickback of the KBD water[32].

Since the announcement of the construction of the KBD, the ANP had severely opposed it. Apart from the ANP, other mainstream provincial political parties, i.e. Pakistan People's Party (PPP) and Qomi Watan Party (QWP), had raised objections over the construction of the KBD. The politicians politicized the issue and used it as a tool to grab political weight age in their constituencies[33]. Not only the ANP and Abdul Wali Khan opposed the case of the KBD, Lieutenant Fazl-i-Haq initially opposed it. Then, Wali Khan opposed the construction of the KBD and even threatened the authority of its bad consequences[34].

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Abdul Wali Khan raised the slogan that the KBD was not in Pakhtun's favor. He has clarified several times that we will struggle against the construction of the KBD at every cost. When he was alive, even the powerful rulers of Pakistan could not build the KBD[35]. Later, his son, Asfandyar Wali Khan, stood against the KBD. While addressing a vast gathering at Nishtar Hall Peshawar, he remarked, "they have to make a choice, whether they want Pakistan or Kalabagh Dam[36]". Asfandyar has considered it as the project of Punjab superiority over small provinces, so he and the ANP rejected the commandership of federation by Punjab[37].

The First objection of the politicians and people of the province is that Nowshera and its surrounding areas will have a constant danger of flood. They had made this observation on the base of the 1929 historical water cataclysm of Peshawar Valley, including Nowshera. In 1929, a part of the hill had fallen in the river Indus at Kalabagh and the water kicked back. Consequently, it drowned Nowshera and its surrounding areas. They fear that after the construction of the KBD, if it rains heavily in spring or monsoon season, the water of Peshawar's rivers will kickback. Consequently, Nowshera, Akora Khattak, Swabi, Peshawar, and Mardan will be highly flooded[38]. Another apprehension is that the drainage of related areas, i.e. Mardan, Pabbi, and Swabi plains will be affected adversely by the reservoir, which will further result in water logging and salinity. The construction of the KBD will lead to the displacement of many people of KP[39].

However, careful studies and investigations had disapproved of these apprehensions. According to WAPDA, the backwater effect of the KBD will not affect Nowshera and its surrounding areas[40]. In the modified design of the project, the reservoir conservation level has been lowered by 10 feet from 925 to 915 feet above mean sea level (MSL). Although this has eliminated the need for construction of any protective dike near Nowshera, still the government has decided to build 25 feet high protective fosse to save Nowshera and surroundings from any flood danger [41]. A state-of-art computer-based analysis revealed that the effect of backwater would end nearly 10 miles downstream of the town. The same objection was also discarded by international experts, i.e. Dr. Kennedy of the USA and Dr. Lianzhen of China[42]. Another observation of the proposed dam shows that the water within its usual level will remain 10 miles downstream of Nowshera. Moreover, the construction of the Munda Dam on the Swat River will be additional protection in cases of flood[43].

They object that the Mardan Salinity Control and Rehabilitation Project (SCARP) will be at risk. The water level in the KBD reservoir will be higher than the ground levels of the surroundings, including Mardan, Swabi, and Pabbi. Resultantly, the SCARP system will be damaged. WAPDA disapproves of this claim. The KBD reservoir would be 915 feet above the MSL while the lowest ground levels at Mardan, Pabbi, and Swabi areas are 960, 970, and 1000 above the MSL, respectively. Thus, Mardan is 55 feet, Pabbi is 45 feet, and Swabi is 85 feet higher than the maximum conservation level of the KBD; this maximum level will only occur in 3 to 4 weeks of September and October. Then the water will be released for Rabi crops, which will reduce the water level and will reach 825 feet, a dead level. By this process, the land drainage will not be blocked. Thus, the danger of waterlogging and salinity in these three areas and its surroundings would be eliminated[44]. Moreover… the Mardan SCARP system will not be disturbed because the river Kabul and Kalapani will remain functional as usual. The main drains of Mardan SCARP are situated 35 feet above the KBD reservoir's elevation. Thus, there is no fear of any blockage or obstruction to the SCARP system of Mardan[45].

Another objection on the part of KP is, that 4500 acres of land in which 100 acres of land is highly cultivable will be submerged in the KBD reservoir. The WAPDA explains that "the (lake) of the KBD project will extend 92 miles up the Indus River and 36 miles up the Soan River, and 10 miles up the Kabul River from Kabul-Indus confluence. At its maximum level of 915 feet from the MSL, the reservoir area would be 164 square miles. Total cultivable land under the reservoir will be only 35,000, acres but permanently submerged fertile land at the maximum elevation of 915 feet would be 27,500 acres —24,500 acres of Punjab and 3000 acres in KP. Out of this cultivable land, only 3000 acres is irrigated land (2900 acres in Punjab and 100 acres in Khyber Pakhtunkhwa). Furthermore… floods will submerge 7,500 acres land with a recurrence interval of 1 to 5 years. The government will compensate the owners of this land. They will also be allowed to cultivate this land as before"[46]. To get advantages and cash benefits, a group of people must bear some losses. The sacrifice in the case of the KBD is less than 1000 acres of prime irrigated land which the provincial government acquired for Mardan SCARP[47].

Another expected issue of KP is the dislocation of people in large numbers due to the construction of the KBD. Except for those who will indirectly be suffered from the KBD reservoir, nearly 34,500 people will be dislocated directly[48]. The dependents of the river, i.e. boatmen and fishers will be financially affected and will have to migrate. Ramzan bin Shabeer quotes WAPDA estimation of affected people that total of 68,664 people which include 38,075 of Punjab and 30,589 people of KP. However, according to the writer, for 80,000 to 250,000 people can be affected by this project. Five Degree Colleges, 237 Primary Schools, and various High Schools may be affected due to the reservoir of the KBD[49].

WAPDA claims that the number of dislocated people would be 120,320, in which 78,170 will belong to

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Punjab and 42,150 from KP. To pay the affected, the authority had made a schedule of compensation. Moreover… the government will compensate loss of properties like buildings, lands, and trees according to the market price under the Land Acquisition Act. They expect to make provisions that they will offer every land-owning family a minimum of 12.5 acres of land which requires 74,000 acres land. They also planned to train the affected other than the agriculture sector in various trades in training institutions. For this purpose, the government will make 20 models and 27 extended villages. According to the prices of July 2005, the expected cost of the KBD project was USD 6, 124 million[50]. On the execution of the total Resettlement Action Plan, the government desires to allocate an amount of 403 billion[51].

Two issues, i.e. construction of the KBD and renaming of the province had dominated the provincial politics of KP in general and that of the ANP in particular. She achieved the objective of renaming of the province by Eighteenth Amendment to the 1973 constitution of Pakistan in April 2010. The issue of the KBD is not solved yet and still, is a bone of contention between the political leaders of KP and the central government. The project of the KBD has changed the style of provincial politics, which harmed national integration. On the question of the construction of the KBD, the country badly needs to achieve a national consensus, but here, the issue has not been dealt with enthusiasm as a national cause, and only interests of the provinces were favored.

In 1998 when Nawaz Sharif was the Prime Minister (PM) of Pakistan, the PML-N government reopened the issue to construct the KBD. The ANP strongly protested this step of the PM. The ANP demonstrated and carried out rallies. Wali Khan, irrespective of his old age, bad health condition, heat, and suffocation of August, had participated in these demonstrations and rallies. He addressed a large gathering at Nowshera and condemned the decision of the Nawaz government of the construction of the KBD[52]. The Senator and spokesperson of the ANP, Zahid Khan, clarified that the ANP would oppose the KBD construction to "their last breath"[53]. He termed it "a conspiracy for national (integration) destruction." According to him, the ANP would offer the same sacrifices as the party had given against terrorism. The ANP chief, Asfandyar Wali Khan, had recorded his opposition to the construction of the KBD. "The construction of the KBD will be opposed at all cost. . .. No one should misunderstand the position of ANP regarding Kalabagh Dam —we will resist it and subsequently defend the rights and interests of Pakhtuns"[54].

The ANP brought the issue of the KBD in the Provincial Assembly of KP. Begum Naseem Wali Khan moved an anti-Kalabagh Dam resolution in the House. The federal government was requested to abandon the project of the KBD. There are various other opportunities available, i.e. Bhasha and Mohmand dams, which can be availed[55]. The Assembly unanimously passed this resolution. Another anti-Kalabagh dam resolution was presented in KP Assembly by Abdul Akbar Khan, who demanded the federal government to avoid the construction of the KBD[56]. Seven members of the Provincial Assembly, i.e. Haji Muhammad Adeel, Abdul Akbar Khan, Sardar Inayatullah Khan Gandapur, Behram Khan, Anwar Kamal, Malik Mian Noor, and Maulana Muhammad Asmatullah, resolved again in the Assembly. They demanded to abandon the construction of the KBD and proposed the government to overcome water and electricity shortage by building of Bhasha Dam as well as small and big dams at other suitable points in the province[57].

It is of immense importance that due to climate change all over the world, a country should have the ability to store more water. The state can use Stored water in low flow season or dry periods. Unluckily, in Pakistan, big dams are opposed by some sections of the people. Especially the KBD is very much unpopular in KP and Sindh. The facts and figures show that the objections are baseless. The International Panel of experts (IOPE) has declared the KBD project useful for Pakistan's economy[58].

V. Conclusion

Keeping in view the cries in opposition mostly in the provinces of Pakistan against the construction of the KBD, the country cannot overlook its disadvantages. Indeed, the project has some severe kinds of harms and disadvantages, i.e. huge debts for building, sentiments of disintegration and disharmony to the national cause, etc. However, the benefits of the dam, particularly in present conditions of severe shortfall of electricity and shortage of water, are more troublesome than its harms. The water flow of Pakistan has already been severely affected by the aggressive attitude of India as she is blocking water from entering Pakistan's river. Resultantly, the water resources are decreasing[59]. After brief analyses of the abovementioned facts and figures, one can justify that the country should build the KBD, for which, she must achieve national consensus. Not only the KBD, but we should avail all the opportunities we have in this sphere. Only then will Pakistan overcome the issues of electricity and water shortfall; if not, the country and its inhabitants will face severe consequences.

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