Food Security and Prospects of Water Resources: A Case Study of Kalabagh Dam

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Abstract

Agriculture sector plays pivotal role in boosting Pakistan's economy. It represents around 45% of employment, contributes 21.4% to Gross Domestic Product and provides food to over 240 million people of the country. Due to rapid population growth, it is estimated that it will become around 403 million by 2050 (United Nations Population Fund Report, 2023). It will be challenging for the agriculture sector to meet the forthcoming food demand because the accessible resources to provide safeguards against food insecurity in future are conditional with the availability of fresh water which is the backbone of agriculture sector. The gap between the availability and demand of fresh water is becoming wider due to certain circumstances and it could be accomplished by constructing new dams. Within this debate, the project of Kalabagh dam is analyzed as the most feasible option while comparing it under four dimensions: availability, applicability, acceptability, and affordability. The disagreements among the domestic political groups are main impediments on the way to the construction of Kalabagh dam. Domestic political snags might be addressed through dialogues and compromises. The debate for engendering national consensus on Kalabagh dam and to comprehend the domestic political discrepancies, is evaluated within the prism of the theory of state-building.

1 Introduction

The concept of security is primarily explained by two school of thoughts: traditional and non-traditional. Traditional security paradigm is based on realist construct and referred as 'the state of being free from threat or danger'(Narula, 2014), and is mainly presumed as the military security or security from external attacks. Similarly, according to non-traditional argument, 'security is more than the prevention from external attacks and is based on some other areas like economic security, health security, national and international security, environmental security, energy security and food security (Afolobi, 2023). Food security is directly concerned with this research. Food and Agriculture Organization (FAO), defined food security (FAO 2009: 8):

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> *[…] a situation that persists when all people at all times have social, physical and economic access to safe and sufficient nutritious food to meet nourishing needs and food preferences for an active and healthy life.*

Likewise, Naff elaborates food security as, 'it requires a guarantee of sufficient food to fulfil a population's minimum needs over an extended period of time, a policy usually expressed as self-possessed, domestically produced sufficiency' (Naff, 1994). Generally, food security is defined as 'the ability of a state to provide an assured access to food in an enough quantity and quality to meet basic food needs by all social groups and individuals at all times'(Barrett 2020: 825). Additionally, for preventing the people from the scarcity of food, Article 25 of Universal Declaration of Human Rights (WFP, 2023:Article 25) concedes the right of adequate food to everyone. Likewise, International Covenant on Economic, Social and Cultural Rights (WFP, 2023:Article 11) explains the responsibilities of all the states to identify the right of all the citizens to be free from malnutrition. Moreover, due to growing increase in population, the food demand is steadily escalating as around 800 million people are under acute malnutrition and it is projected that 60% more food will be required to feed the humanity by 2050 (WFP, 2023). Thus, all the states intend to ensure food security by instigating all available resources to comprehend the food demand for their respective populations.

Likewise, food security is severe matter of concern for a country like Pakistan where around 37.2% of the population is estimated to be absolute poor and over 50% of children undernourished in one way or another, and 8 out of 10 children have no excess to eat right type and quantity of food (UNICEF, 2023). The Constitution of Islamic Republic of Pakistan also provides safeguards about food security as according to Article 38(d), the state will ensure the provision of basic needs of life including food for the people of Pakistan.

In this connection, agriculture sector plays central role in fulfilling the food demand of the fast-growing population with the growth rate of 2.55% and an increase of 3.5 million people on annual basis (World-meter, 2023). To comprehend food demand, the availability of water for agriculture sector is obligatory because more than 92% annual surface of water flow is appropriated for irrigation (Mohtadullah, 2016). Currently, water resources are gradually reducing due to urbanization, industrialization and swelling population. This is becoming vulnerable because it leads towards droughts. Likewise, climate change is also causing severe impacts upon supply and demand thereby adversely disturbing the prevailing water balance. In the existing circumstances, the country needs to expand its water storage capacity for continual availability of needed water by constructing new dams and the main aim of this research is to find out the main irritants relating to disagreements among the political groups about the construction of Kalabagh dam. Within this debate, this paper aims to address the queries as following:

- How does future food security relate to water security?
- How can a balance be stuck between increasing food demand and decreasing water resources in a changing environment?
- What is the rationale behind prioritizing the construction of Kalabagh dam?
- What are the main differences/arguments among the provinces and the initiatives of the federal government to address these differences about the construction of Kalabagh dam?

The comparative study within the parameter of 4 a's (availability, applicability, acceptability, and affordability) is applied while comparing the significance of Kalabagh dam. For evaluating the role of domestic politics in food security, the theory of state-building provides acumen to apprehend the debate.

2 Overview of Food and Water Security

Water is the primary necessity for the survival of human life and fulfilling its nutritional demands but the proportionality between domestic use and for growing food is very high. For domestic usage, the minimum 50 liters whereas, for growing food for a person per day, it requires 2600 to 5300 liters (Rijsberman, 2005). Consequently, food security is conditional with water security as 50 to 100 times more water is needed to grow food as compared to water used for domestic usage.

The security of food and water are directly interdependent to each other as, for obtaining more food, more water will be needed and vice versa. Likewise, the role of agriculture sector in water equation is obvious, since it is responsible for around 70% of the withdrawal of fresh water and the scarcity of water means the availability of less than 70% of fresh water available for agriculture production (World Bank, 2023). The agriculture in Pakistan contributes in two ways, irrigated and dry-land (rain-fed). The 90% food production depends on irrigated and 10% on dry-land agriculture due to low rain fall and scanty (Qureshi and Ashraf, 2019). The irrigated agriculture is categorically dependent on the availability of fresh water but the gradual decrease in the production of agriculture due to shortage of water (as shown in Table1) diverts attention about the vulnerability of food security in future.

Table:1

Water Availability Versus Agriculture Growth

Period	Availability of Water in Million Acre Feet (MAF), % in Increase/Decrease over the Average System Usage (103.5 MAF)	Agriculture Growth Base: 2015-2016 %
2017-2018	-9.0	3.88
2018-2019	-18.5	0.94
2019-2020	-8.8	3.91
2020-2021	-7.0	3.52
2021-2022	-10.6	4.27
2022-2023	-29.8	1.55

Source: Indus River System Authority Pakistan Bureau of Statistics, 2023

Additionally, the water availability status of Pakistan is evaluated by the following four indicators:

1. According to Falkenmark Indicator, 'a country having water resources less than 1700 m3 per capita is considered to be water stress country (Falkenmark, Lundqvist and Widstrand, 1989). Likewise, the availability of water is less than 1000 m3 per capita, the country is water scare and if it falls less than 500 m3 per capita, the country is declared as absolute scarcity'. According to this indicator, Pakistan has crossed the water deficiency line in 2005 and if the situation persists, it will declare absolute scarcity country by 2025 (Ashraf, 2016).

2. Water Resource Vulnerability Index (WRVI) provides comparison about the annual availability of water with annual withdrawal (in percent) (Raskin, Gleick and Krishan, 1997:22-26). If annul withdrawals are within 20-40% of annual supply, the country is under water scare and in case, it crosses the 40%, the country would be severely water scare. In 2016, the WRVI for Pakistan was 77% that reflect the severe water scarcity condition (Ashraf, 2016).

3. Water Poverty Index (WPI) has five components: (i) access to water, (ii) water quantity, and quality volatility (iii) water usage for food, productive and domestic purposes (iv) capability for water management and (v) ecological aspects (Sullivan et al, 2003). According to WPI, if water is accessible but having poor quality, is considered a water scare country (Qureshi and Ashraf, 2019). A survey was conducted in 24 major cities and found that 80% samples of drinking water were not safe for human consuming (Ashraf, 2016). So, within the discussion of above-mentioned five indicators, Pakistan is considered as water-scare country.

4. According to International Water Management Institute's (IWMI's) physical and economic indicator: 'the states have not the capability to grasp the water stress by 2025 besides having adaptive potential are declared physically water scare while, the states having ample water resources but would not have to invest substantial amount on infrastructure to ensure the available resources for people are asserted as economically water scare' (Seckler et al, 1998:2). In Pakistan, the shortfall of water was calculated 11% in 2004 and was estimated to reach over 31% by 2025 (GOP, 2001). On the contrary, the floods in 2010, 2012, 2014 and 2022, indicate that Pakistan has enough water resources but due to insufficient economic resources and mismanagement, could not grab over floods. However, Pakistan is constructing Mohmand Dam and striving for funding for Diamer-Bhasha Dam but there is a dire need to construct the Dams having massive water storage potential. Thus, under the current scenario, Pakistan is considered in both economically and physically water scare country.

After evaluating aforesaid four indicators, Pakistan is at the verge of scarcity of water that would be a severe challenge for food security in future. To comprehend food security, it is prerequisite to enhance water storage capacity.

3 Prospects of Water Storages in Pakistan

Pakistan's insufficient water storage potential is the main reason of scarcity of water. Pakistan's per capita storage capacity is only 159 m3 while, it is over 5000 m3 in USA and Australia, Egypt 2362 m3, China 2200 m3 and Turkey 1402 m3 (Qureshi, 2011). Likewise, the storage potential of Aswan dam in Nile River is close to 1000 days, Murray-Darling Rivers and Colorado 900 days, Orang River in South Africa 500 days, while, India 320 days and Pakistan is just 30 days only (Qureshi, 2011). Due to insufficient storage capability, Pakistan has lost over 89 Million Acer Feet (MAF) of water during floods 2010, 2012, and 2014, and dreadful effects on crops, livestock, infrastructure and people (Ashraf, 2016:7). The existing Pakistan's water storage capacity is less than 10% of the average rain flow, while, it remains around 40% at the global level (Ashraf, 2008). The reservoirs have lost their existing storage capacity due to sedimentation, with the rate of 0.2 MAF per year and by 2010, the reservoirs have damaged 35% of their storage capacity (Qureshi and Ashraf, 2019).

Moreover, the irregular flow of water in rivers due to early start of snow and fast glacier melting at elevated temperature and the contraction of glaciers are serious challenges for the smooth supply of water for cropping. Under such circumstances, it would be required to expand water storage capacity by constructing dams. Besides providing water security, the dams will regulate not only the increasing intensity and frequency of droughts and floods but the minimum environmental flow of rivers will also be accomplished to prevent excessive imposition of sea water inside the Indus deltaic region. Thus, the construction of new dams will be more beneficial for assuring not only the food and water security but to augment energy security as well. Within this debate, the following section of this study intends to investigate the main proponents due to which the construction of Kalabagh dam will be comparatively more profitable as compared to the construction of other dams.

4 Advantages of Kalabagh Dam

Large dams regulate the smooth supply of water in canals due to having enormous water storage. Since the construction of Mangla dam in 1967 and Tarbela dam in 1976, no further developments were taken for enhancing the water storage capacity at the massive level. However, Pakistan constructed 68 small and medium dams during the last six decades with the storage capacity of around 8,000 acres(Khalid, 2013), but they had insufficient storage potential. According to Shums-ul-Mulk (former Chairman WAPDA), 'the storage capacity of Kalabagh dam will be equal to 750 such dams'(Khalid, 2013). Thus, the significance of large dams for the storage of water and for food security is palpable. Kalabagh dam has the significance in multiple ways and these are evaluated by applying 4 a's methodology (availability, applicability, acceptability and affordability) as:

1. Kalabagh dam will be mainly filled during monsoon season (July- September) because overall 70 % flow of water in Indus River including the extreme flood peaks is observed during this season. Kalabagh dam will be filled after fulfilling the storage capacity of Terbala dam because the site of Kalabagh dam is around 210 km downstream of Terbala dam. Additionally, some small rivers for instance, Swat, Kabul, Soan and Haro, having the overall water capacity of around 30 MAF also join river Indus in the downstream of Terbala dam (Khalid, 2013). Currently, no reservoir is available for the storage of water of these rivers and Kalabagh dam will provide storage facility. Similarly, the stored water in Terbala dam is released in winter to comprehend the shortage of water, but the storage capacity of Terbala dam is not sufficient enough (Ashraf et al, 2014) and Kalabagh dam, will provide booster for the supply of water in river Indus during winter. By this way, with the construction of Kalabagh dam, the "availability' of plenty of water will be observed especially in winter.

2. The construction of new dams is a continuous process because, the existing dams are consistently losing their storage capacity due to sedimentation. Due to this decline, the security of food due to shortage of water water will remain uncertain. The construction of new dams will grasp food security and under such distressing circumstances, the 'applicability' for the construction of Kalabagh dam is palpable due to partaking massive water storage potential that will ultimately intensify food security.

3. Currently, two dams (Kalabagh and Diamer Bhasha) are under discussion due to their massive water storage potential. The comparative analysis about the construction of Diamer Bhasha and Kalabagh dam indicates that Kalabagh dam will be more feasible due to low

project cost, short time frame for completion and easy access to road and railway networks, as is anticipated in Table 2.

Table 2
Comparative Analysis

Specification	Kalabagh	Bhasha
Power Generation Capacity (MW)	3600[a]	3360[b]
Storage Capacity MAF (Million Acers Feet)	7.9[c]	6.4[d]
Project Cost (Rs)	0.96 Trillion [e]	1.4 Trillion [f]
Maximum Height Above River Bed (ft)	260[g]	922[h]
Diversion of Roads (km)	0	225[i]
Completion Period	5-6 Years [j]	12-15 Years [k]
Flood Reduction Benefits (Million Rs)	1500 [l]	Not Yet Calculated[m]
Distance from Electricity Transmission Network (km)	8	322 [n]
Seismic Position	Low Active Zone[o]	High Active Zone[p]
Accessibility from Railway Network (km)	12 [q]	239[r]

Sources:
a. Iram Khalid, (January-June 2013) 'Hydro Politics in Pakistan: Perceptions and Misperceptions', *South Asian Studies*, Vol.28, No.1, p.18.
b. www.thenews.com.pk. Montreal Engineering Company Canada (MONENCO) in 1984.
c. 'Water Resources and Issues', accessed from www.slideshare.net/Muhammad-Sheraz-Javaid-Awan/kala-bagh-dam-presentation-by-wapda on May 17, 2023.
d. www.thenews.com.pk. Montreal Engineering Company Canada (MONENCO) in 1984 e. 'Water Resources and Issue
f. Sana Jamal, 'Pakistan Begins Construction of Diamer Bhasha Dam', *Gulf News* (July 15, 2020).
g. 'Water Resources and Issues
h. www.wapda.gov.pk/index.php/projects/hydro-power/ready-for-construction, accessed on May 17, 2023.
i. Amjad Hussain Malik, accessed from www.iepislamabad.org/events/energy-crises on May 17, 2023. j. Ibid.
k. Ibid.
l. 'Benefits of Kalabagh Dam', *The Nation* (March 13, 2013), accessed from www.thenation.com.pk/03-mar-2013/benifits-of-kalabagh-dam on May 17, 2023
m. Amjad Hussain Malik
n. Ibid
o. Ibid
p. Ibid.
q. Researcher's own calculation.
r. Ibid.

Therefore, 'acceptability' persists for the construction of Kalabagh dam to meet the upcoming challenges relating to water storage.

4. The decline in the storage capacity of dams indicates that after a certain period, they may destroy their storage potential. In the case of Kalabagh dam, it will not applicable because the storage potential of Kalabagh will sustain for more than 100 years with the capacity of over

3.2 MAF (Ali, 2017). So, Kalabagh dam will justify 'affordability' (the last precondition of 4 a's) in the context of water security.

Both the dams have the significance due to their large water storage potential that demand their construction. However, the comparative analysis of 4 a's indicates that Kalabagh dam is more advantageous that attracts the attention of policy makers for its construction on most urgency basis. The construction of Diamer Bhasha dam was initiated on July 15, 2020, but the construction of Kalabagh dam remains undecided due to political and technical disagreements and the objections raised by the smaller provinces, and these are analysed in the coming section.

5 Theoretical Amplification

The Theory of state-building gives understanding to address the concerns of domestic political groups in the context of Kalabagh dam. According to the theory of state-building, 'It is a process that deals with all the levels relating to state-society relations' (OECD, 2008). In federalized states, state functions are planned on various administrative and political levels. For effective political process and territorial administrative integration, the states intend to develop resilience by managing state-society anticipations at the governmental level from local to national (OECD, 2008). The relations among the various levels of the government must be given similar status. The mechanism about centre-periphery relations has significant impact on state-society relations where the unity and diversity relating to state and society are addressed in a constructive manner (OECD, 2008). State-building is mainly an endogenous process, and large number of local and national actors outside the state institutions have influence. Various initiatives are characterized under stress in fragile situations due to tensions between formal and informal institutions where each actor intends to establish a dominant position (OECD, 2008).

Commonly, it is projected that both international and domestic politics have substantial outcome on each other and certain key factors such as ideology, war and trade are placed to form political progressions (Gourevitch, 1978). The states have to perform double duties to comprehend both international and domestic apprehensions at the same time and several international negotiations are regarded as two-level game: International and national. At the international level, the central governments want to diminish the adverse impact of foreign developments and intensify their strength by satisfying the domestic political groups. At the national level, the domestic political groups intend to defend their power by aggravating pressure on the governments and the political elite groups to grasp heir vested interests (Putnum, 1998).

So, the contribution of the theory of the state-building is obvious to address the apprehensions of domestic political groups about the construction of Kalabagh dam. For assuring food security, it is the responsibility of the federal government to take the domestic political groups on board and boost up its standing on both national and international level according to the theory of state-building.

6 Evaluation of Apprehensions About Kalabagh Dam and Clarification

Kalabagh dam remains controversial among the federal government and smaller provinces due to apprehensions raised by the smaller provinces about its construction. Comparatively, the provinces of Sindh and Khyber Pakhtunkhaw (KPK) proclaimed serious reservations and

Baluchistan province has minor misgivings and the clarifications of federal government to address provincial assertions are given as:

6.1 Objections of Sindh Province

Sindh is the 2nd largest province regarding the population and majority of its rural population rely on agriculture to earn their livelihoods and the availability of plenty of fresh water is the backbone for its rural economy. River Indus is a main source of water for irrigation and the residents of Sindh are very much concerned about water due to becoming lower riparian. Whereas, Punjab province becomes the upper riparian and trust deficit is the main source of disagreement between lower and upper riparians that resulted the criticism on Kalabagh dam project and the key exponents of divergence are elucidated as:

- It was objected that after the construction of Terbala dam, the shortage of water was observed in river Indus during 1977-1991. According to Abrar Kazi, 'the availability of water was calculated as 123.59 MAF during 4 out of 5 years that was probably 80% of 3 western rivers (Chenab at Marala, Jehlum at Mangla and Indus at Kalabagh) (Kazi, 1996). According to accord 1991 (The Water Accord 1991), around 114.35 MAF water was measured for distribution among the provinces, while, WAPDA intimated 10 MAF as system losses and the remaining water (124.35-123.59) was 0.76 MAF that flowed into Indian Ocean' (Kazi, 1996).

 To address this issue, two committees were constituted by the federal government and according to the findings of both the committees, the surplus water of around 35.2 MAF will be available in river Indus below Kotri barrage on yearly basis (Khalid, 2013).

- It was argued that with the construction of Kalabagh dam, Sindh province will become desert due to shortage of water (Nawaz, 2011).

 In response, it was argued by the federal government that after the construction of Kalabagh dam, the additional 2.25 MAF water will be available for Sindh to save the salination of underground water, and additional 7 lac acers land will be brought under cultivation (Nawaz, 2011).

- The objection was raised about the High-Level outlet as the outlets of dam will be used to avert water from the dam that will deprive the Sindh's share of water (Nawaz, 2011).

 In response, WAPDA explained that the design of Kalabagh dam has no provision about the diversion of water from the dam. Additionally, for monitoring the volume of discharged water, a latest electronic telemetry system has been installed at all the barrages and important flow control points and it will be extended to Kalabagh dam to comprehend any objection about water distribution (Nawaz, 2011).

- Sindh province raised another issue relating to 'Sailaba' crops. Sailaba land is about 660,000 acers in Sindh. The crops in Sailaba land are cultivated on the soil moisture of floods. It was objected that with the construction of Kalabagh dam, the Sailaba land will not be cultivated due to shortage of water that will result the decrease in soil moisture (Nawaz, 2011).

 For sustaining the soil moisture of Sailaba land, the flow of river up to 300,000 cusecs is essential that will be available after the construction of dam (Kalabagh Dam Project). However, with the construction of dam, the high intensity of floods will be controlled for avoiding agricultural and human loses.

• Sea water intrusion below Kotri Barrage is another serious argument raised by Sindh province. It was argued that with the construction of dam, the contraction of river flow will badly affect the quality of underground water that will increase sea water intrusion and adversely disturb the existing aquifer system.

 To comprehend this, the federal government constituted a committee of experts in 2005 and according to Report, 'the minimum escapage of 3.62 MAF of water throughout the year below Kotri Barrage will be sufficient to maintain river channel, accommodate the requirements of fisheries, environmental sustainability and to check sea water intrusion (Basson and Schutz, 2005:1). Moreover, according to Water Accord 1991, 'the release of 10 MAF below Kotri Barrage to check water intrusion will be maintained' (Water accord, 1991).

• It was argued that in the delta zone of river Indus, Mangrove forests are under stress and with the construction of Kalabagh dam, they will be further adversely affected due to the chances of shortage of fresh water.

 Mangrove forests spread on around 3,20,000 acers along Karachi in the west to Run of Kutch in the East and around 95% species of forests are salt tolerant. There are various factors in the decrease of forests, i.e. uncontrolled cutting and overgrazing due to intense population pressure of Karachi. A study was conducted by the students of NED University of Engineering and Technology titled 'What Really Threatens us and our Mangroves' (Special Report/Water Crises, 2023). The finding of the study indicates that the main factor in the decrease of Mangrove forests is the limited frequency of tidal inundation and the forests might be increased by planting salt-oriented varieties and with the supply of fresh water on regular basis. With the construction of Kalabgh dam, the likelihoods of regular supply of fresh water will be assured.

6.2 Objections of KPK Province

• The major concern of KPK on Kalabagh dam project is that it will endanger the existence of Newshera town as the town and adjacent areas will become vulnerable in case of high floods due to backwater effect of dam that will block the flow of Kabul River, and the water level will rise in Kabul River that will be unsafe for the survival of the town.

 WAPDA relegated this assertion and a computer-based study was conducted on backwater effect and described that the effect will end about 16 km downstream from Newshera (Special Report/Water Crises, 2023). Moreover, Mohmand dam is under construction on Swat River and it will be completed in 2028. The water storage capacity of dam will be around 1.7 MAF. The water will be stored during floods and by this way, Nowshera will become safe with devastating floods due to backwater effect (Bhutta, 2019).

• It was argued that the construction of Kalabagh dam will undermine the Rehabilitation project of Mardan Salinity Control. It was emphasized that the water level will become higher due to dam in the surroundings of Pabbi, Swabi and Mardan and will disturb the Rehabilitation project of Mardan Salinity Control (Nawaz, 2011).

 Water logging can occur if the underground water level of Pabbi, Swabi and Mardan will lower with the maximum level of Kalbagh dam. The maximum level of dam will be 915 feet while, the lower ground level at Pabbi, Swabi and Mardan are estimatd 970, 960 and 1000 feet respectively. Thus, Pabbi, Swabi and Mardan are 45, 55 and 85 feet above the highest level of Kalabagh dam. The dam will remain at the highest level for only 3 to 4 weeks during floods and will reach at 825 feet in June due to release of water for Rabi cropping. The progression of dam will not become a cause for salinity and water logging in Pabbi, Swabi and Mardan (Special Report/Water Crises, 2023).

- KPK voiced another important concern that its 4500 acres of land will be inundated in Kalabagh dam project including 100 acers will be the prime irrigated land (Nawaz, 2011).

 It is apparent that the construction of dam without acquiring land is impracticable in anywhere at the global level, however, the advantages of dams counterbalance adverse circumstance. The total area of around 27,500 acers at the maximum level in a year just for 3-4 weeks will be acquired. The maximum land will be submerged from Punjab that will around 89% (24,500 acers) while, 11% (3000 acers) will be in KPK. In case of agricultural land, 97% (2900 acers) will be affected in Punjab and only 3% (100 acers out of 3000 acers) in KPK. It can be mentioned that around 5,000 acers of agricultural land was occupied for the construction of Islamabad-Peshawar Motorway (Special Report/Water Crises, 2023).

- KPK voiced another objection about the dislocation of population. According to Kazi, 'around 34,500 people will be directly replaced and many of the people will be indirectly affected because their livelihoods are linked with river and with the construction of dam, they will face heavy losses' (Kazi, 2003).

 Overall affected dislocated population was estimated as 82,000 (48,500 from Punjab and 34,500 from KPK). These people will be compensated by giving the payments against their properties i.e. land, buildings and trees, according to market price as per Land Acquisition Act. Additionally, these people will be resettled along dam's periphery in modern villages with all the amenities electricity, road networks, health and education. Likewise, more than 35000 job opportunities will be available (Ansari, 2018). According to Shamsul Mulk (former Chairman WAPDA and Chief Minister KPK), 'Kalabagh dam will be helpful for eliminating poverty in KPK as more than 800,000 acers of land will be cultivated that is located within 100-150 feet above the level of river Indus' Mushtaq, 2017).

- KPK is seriously concerned about the royalties of power generation from Kalabagh dam. Usually, royalties about power generation are given to the province where they originated. In the case of Kalabagh dam, the dam's location is on Punjab-KPK border and the dam's turbines will be installed in Punjab. So, the royalties will be paid to Punjab province which will not acceptable for KPK.

 In response, Punjab province and the Federal Government gave assurances to KPK about the due share in dam's royalties (Pakistan Water Apportionment Accord, 2010). This issue might be resolved by initiating constitutional arrangements through parliament.

6.3 Objections of Baluchistan Province

Baluchistan is not directly connected with Indus River. However, a Pat Feeder Canal carries around 1.53 MAF of water from Indus River (Guddu Barrage) and irrigates around 4,58,000 acers in Naseer Abad Division of Baluchistan. Baluchistan also has the apprehensions about Kalabagh dam as:

- It is feared that with the construction of dam, the run of water in Pat Feeder Canal will be reduced due to shortage of water.

- It is objected that with the construction of dam, Punjab will unlawfully deviate water that would result the shortage of water in Baluchistan.

 Baluchistan's assertions indicate lack of trust on Punjab and are not based on ground realities. According to water accord1991, Baluchistan's share of water (12%), (Nawaz, 2011:245), is safeguarded. Moreover, a plan is under consideration for the up-gradation of Pat Feeder Canal that will provide additional water to Baluchistan. Likewise, another Kachhi Canal with the capacity of around 1.3 MAF is under construction from Taunsa Barrage to Dera Bughti, and it will irrigate more than 5,00,000 acers (Kachi Canal Project, 2002). With the construction of dam, it would become feasible for the supply of water to above-mentioned canals on regular basis.

7 Existing Scenario of Kalabagh Dam Project

Punjab is the 2nd largest province with respect to its area and is bearing more than 50% of population. It mainly contributes in the production of agriculture sector and holds more than 60% share in the export of agro-based products. Punjab is required maximum share of water due to its output in agriculture sector and population size. Before accord 1991, Punjab's water share was 40%, (Ali, 2017) but after accord, it was reduced to 37% to accommodate the remaining provinces especially Sindh. Furthermore, it was argued that the Water Accord 1991 provided leverage to Sindh for large share of water for cultivation (Ghori, 2005). On the issue of Kalabagh dam, both Sindh and Punjab provinces have opposite stances, as Sindh is categorically against the dam because the dam will result the shortage of water, while, Punjab's view is in favor of dam as the dam will resolve the issue of shortage of water.

Likewise, with the construction of dam, Punjab will be the main victim for the loss of land and property as compared to KPK. As for Baluchistan province is concerned, technically, it cannot object Punjab about water shortage because its main supply is taken from Guddu Barrage which is located in Sindh. The dam has the significance for all the provinces especially for KPK and Sindh as Bashir A. Malik expressed, 'KPK and Sindh will become drought areas in near future if Kalabagh dam is not constructed' (Mushtaq, 2017). Even, Water Accord 1991 also endorses as, "need of new water reservoirs, where ever feasible on Indus or any other river of Pakistan" (Water Accord, 1991). On the issue of Kalabagh dam, the judgement of Lahore High Court (LHC) also persists as the Chief Justice of LHC declared that the project was approved twice by the Council of Common Interests (CCI) and according to the article 154 of the constitution of 1973, the Federal Government is bound to implement CCI's decision (Mahmood, 2012). Likewise, All the studies and reports are in favor of Kalabagh dam project but, the dam is criticized on technical grounds and these are mainly be discussed in this research, but the main wedge on the way to dam is lack of confidence and political rivalries among the provinces.

8 Way Forward

The main objective of this research confines this debate within the circumference of food security which is conditional with water security. Within this parameter, the significance of Kalabagh dam project is thoroughly be investigated and is concluded that the project will ensure water and food security. Thus, the importance of project demands its construction on top priority basis but due to inter-provincial disagreements and political enmities at the regional levels, this project remains controversial. It is the prime responsibility of the Federal Government to take serious initiatives for materializing this project and the theory of state-building provides incites to comprehend inter-provincial discrepancies and to grasp the main obstacle on the way to endorse confidence building at the national level. In this connection, two level game (national and international) according to the theory of state-building might be followed by the Federal Government as:

- At the national level, the reservation of domestic political groups can be addressed through dialogues and compromises. For instance, in KPK, Awami National Party (ANP) has comparatively inflexible stance against the dam among the remaining political parties in KPK. It is surprising that the vote bank of ANP transpires in areas (Charsada, Mardan and Sawabi) which have raised serious allegations against the dam and for sustaining its popularity, ANP dissents the issue of Kalabagh dam as political stunt. The objection of KPK on dam is merely on technical basis and it can be resolved by arranging seminars, media campaigns and by the briefings of the technical experts to the leadership of ANP. The aforesaid arrangements can divert public opinion in favor of dam in KPK and after that, a referendum might by conducted in KPK on this serious issue as the example of a referendum also persists in KPK at the time of Pakistan's inception (3rd June Plan, 1947).

Sindh province is the most critical opponent of this project. It is interesting that all the reports and studies indicate that Sindh would be the most beneficial province with this project. In this connection, the political party at the national level which has the strong influence in Sindh, Pakistan People's Party (PPP) must be taken on board. Media movement within Sindh might be started at the massive level to compel the general public that the main proponent of shortage of water is the absence of water reservoir. The objections of Baluchistan are interconnected with Sindh's and with the construction of dam, they would become realized. Additionally, mismanagement for allocating water share is the main source of inter-provincial trust deficit and it must be grasped.

- At the international level, the federal governments intend to establish good relations with international community to ensure their national interests. When Pakistan's international standing in the background of Kalabagh and Diamer Bhasha dam is evaluated, it is observed that for the construction of Diamer Bhasha dam, the international community is reluctant to finance this project except China. For Kalabagh dam project, almost all the international financial centres including International Monitory Fund (IMF) and World Bank are ready to finance the project. So, the Federal Government must avail this opportunity by establishing national consensus and initiate Kalabagh dam.

9 Conclusion

Food security is a critical challenge for a country like Pakistan where the steady increase in food demand for a fast-growing population is severe matter of concern for the agriculture

sector. Availability of water for food security is obvious. In the existing circumstances where the accessibility of water is decreasing and food requirement is increasing, there is a dire precondition to assure the supply of water on regular basis by constructing new dams. To comprehend this issue, Kalabagh dam is suggested for construction because it has the significance due to its massive storage potential, comparatively low cost, prolonged livable and short time frame for construction. The main obstacles on the way of Kalabagh project are disagreements among the political elites of smaller provinces. All these divergences are incorporated on technical grounds but the factual fact of discrepancies is lack of confidence among the smaller provinces and the federal government. For assuring confidence building, the political elites of smaller provinces might be compelled through dialogues and by arranging the briefings of technical experts. Additionally, for upholding the awareness among the young generation about the construction of dams, the importance of water reservoirs must be included in the syllabus of text books. The last but not the least that a comprehensive media campaign for the construction of Kalabagh dam along with fascinating the sentiments for national integration might be initiated.

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