

INDUS RIVER WATER MANAGEMENT AND WATER CONFLICTS AMONG PROVINCES: A POLITICAL ANALYSIS

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Abstract

Water scarcity is a big challenge, being faced by Sindh province since long period. It affects not only agriculture of Sindh but also puts its economy down. The mismanagement of water among provinces creates conflicts with each other. With poor economy and low GDP, country could not meet their International development Target (IDT). Agriculture is a major pillar of the economy of Pakistan. The Indus River System (IRS) is the only source of agriculture for all provinces of the country. There is a controversy between provinces of Pakistan, upon the equitable sharing of river water. Currently, Indus delta is facing multiple threats which cause ecological disaster and famine situation in some places. Construction of different projects on river Indus such as, barrages, dams and link canals are highly responsible for the reducing flow of fresh water in the River. Development of canal command system, water storage, barrages & head works for the development of irrigation network, flood water control and hydropower generation has badly affected Sindh province. Indus Delta was growing at rate 34.4 mly due to dominant fluvial processes but current situation has been adverse and waterflow of the river has been reduced to negligible level. In order to solve these problems substantial measures are required to be taken from all stakeholders of the country.

Key words: *Water Scarcity, International Development Target (IDT), Indus River System (IRS), Indus Delta & Canal Command System.*

Introduction

Background

Water is one of the basic needs of life which is not distributed equally across the country. Inequitable water distribution has raised conflicts among the provinces of

Pakistan. Controversy on sharing of Indus river water is well-known issue between Sindh and Punjab who claim each other on using extra amount of water. According to the water accord, the allocation of Sindh is about 48 million acre feet (MAF) for Kharif (dry season) and Rabi (rainy season) (Tagar, H K. 2013). But unfortunately, Sindh is receiving less water which has adverse effects on its major crops (cotton, wheat, rice, and sugarcane). Other provinces also stand for getting less amount of water than the required. Sindh is highly dependent on Indus river water as it is the only source of fresh water that sustains its economy. Sindh lies at downstream and interruption in the flow of Indus River at upstream has badly affected the Sindh that fail to fulfill its desires. Geographically the location of both provinces is opposed to each other {Khan F.K., 2015}.

Indus Water Treaty

Historically; there was no conflict on IRS between upper and lower riparian, before 20 century and water flow was always available in IRS, but after partition, in 1948 India stopped the flow of water to Pakistan. This conflict was lingered for 12 years. In 1960, Indus water treaty was signed between two countries in the arbitration of World Bank. According to this treaty the Western rivers Jhelum, Chenab and the Eastern rivers Ravi, Beas and Sutlej were given to Pakistan and India, respectively {Chandio, 2014; Mahar, 2009}.

The Indus River is one of the world's longest rivers with a length of 2900 km. It begins from Tibet and empties into Arabian Sea. River Kabul and Kuram are main western tributaries of Indus River at the right bank whereas Jhelum, Chenab, Ravi, Beas and Sutlej are eastern tributaries on the left bank. The Indus River makes its delta in Thatta a district of south.

Delta

Delta is a beautiful geomorphic feature that is developed by the deposition of the silt, carried by river and form a triangle structure in millions years (Mahar, 2009). Indus delta is the fifth largest delta of the world. It was historically a fluvial dominated delta but unfortunately since last century it has been converting into tidal dominated delta due to fresh water scarcity from Indus river resulting sea intrusion impact (Mahar, 2009; Chandio, 2011).

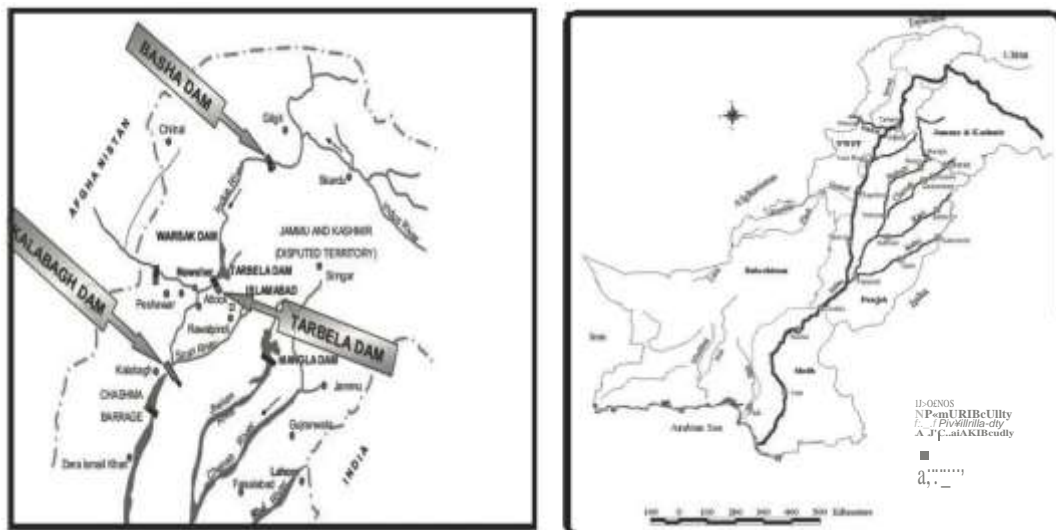
River Indus and dams location

River is always the major source of water that flow from catchment to flood plain area where it is used to irrigate and cultivate the land. In Pakistan the source of river is snow covered mountains range of Himalaya and Karakoram. There are 24 rivers in Pakistan, four in Sindh, seven in Balochistan, eight in Khyber Pakhtunkhwa and five in Punjab. Most of them flow to the main stream of Indus

river and a big drainage system is form is called Indus River System (IRS). The five rivers from Punjab join at Mithan Kot called Panjnad (Water for Pakistan, 2013).

Geography of Indus River

Like other rivers of south Asia, Indus River also originates from Manasrovar Lake from Himalaya. It rises from the northwestern side of Tibet plateau. While crossing Himalaya and Karakoram, it turns south western side and reaches a point known as Gilgit. After that it moves to southward in Pakistan from Gilgit-Baltistan. When it reaches to Punjab province it meets with five rivers namely, Jhelum, Sutlej, Chenab, Ravi and Beas. It is the longest river in Pakistan. It is the 21st world largest river and its delta is world 6th largest delta. The delta of Indus River is about 300km long and 50 km wide having fan shaped delta



Location of different dams on River Indus

Source: Wapda, (2014)

Socio-Economic Importance of Indus River

Water of Indus River is lifeline of Pakistan. Agriculture and food production of Pakistan highly depend on Indus river water, especially the Punjab province is known as bread basket that contains high agriculture production. The Indus river water irrigated 80% of Pakistan's land (Qureshi. A.S. 2011). Rice, wheat, cotton, sugarcane are typical crops and most common production in Pakistan. All of these products are used for both internal consumption and export.

Conflicts between Provinces

A conflict over water is a bone of contention between Sindh and Punjab. The dispute between two provinces is multi-dimensional and is not yet settled. Both Sindh and Punjab claims each other on improper distribution of Indus river water. Sindh claims that Punjab receives large amount of water being enjoying the position of upstream. Punjab is using more water in the name of water storage and hydroelectricity projects consequently depriving Sindh of water. It has been observed that since partition, after the completion of any hydropower, water storage or irrigation strengthening project, quantity of river water has always decreased (Mahar, 2009). Unlike Punjab, fewer crops are grown in Sindh due to diversion of Indus river water because of construction of dams, barrages and canals. Concerns are voiced against the construction of Kalabagh Dam and Bhasha Dam on Indus river water which would result water scarcity in Sindh province of Pakistan. During his government (2001-2008) former president Pervez Musharraf gave the approval of constructing of Kalabagh and Bhasha Dams in 2005. Because of the highly opposition from the side of Sindh province and Khyber Pakhtunkhwa, the Kalabagh project was not more possible to initiate. Sindh claimed that construction of Kalabagh Dam will resist the flow of Indus River to Sindh province. On the one side, the work on Bhasha Dam was remained incomplete and on the other side, construction of Kalabagh Dam becomes controversial issue between two provinces of Pakistan.

Punjab Point of View

- 1) The site of Kalabagh is more favorable as compared to Bhasha and Skardu.
- 2) The wasted water to Arabian Sea should be used to irrigate infertile land of northern areas of Punjab and Sindh province.
- 3) It would supply cheap hydro power to our country.
- 4) The Kalabagh project, after completion would construct many irrigation canals which will fulfill the demands of Pakistan that should be built first.
- 5) The dam is designed in such a way that it would have capacity above 3000 MW production that would solve the energy crises issues from the country.

Sindh Point of View

- 1) Sindh is opposed of making Kalabagh Dam.
- 2) It will irrigate the farmlands in Punjab because Kalabagh Dam is located in a place from where canals could be built. History provides evidence that any project in the upstream area has decreased water of downstream area.

- 3) The coastal region of Sindh requires constant flow of water down to Arabian Sea that is quite need for the fertilization of coastal areas, sustainable environmental flow and stable ecosystem.
- 4) Besides, Sindh claims that the continued decreasing water flow downwards to Kotri barrage has destroyed thousands of acres of cultivated land.

Bhasha Dam

Bhasha Dam was constructed on the Indus River in Gilgit Baltistan, Pakistan. Its work was started but had not completed yet. Former President of Pakistan Yousuf Raza Gillani laid its foundation stone on 18 October 2011. Bhasha Dam was estimated to produce 4,500 mw of electricity; water capacity of the dam is 8.5 million acre feet (10.5 km^3) which will be used for irrigation, industrial and domestic purposes, apart from this, dam will control flood damage of the River Indus downstream during high floods. Its height would be 272 meters (Robinson, S and Geneau A, 2014.). Its total capacity would be 8,100,000 acre feet (10.0 km^3) Due to controversies in building Kalabagh Dam on Indus River, the government switched over the construction to Bhasha Dam, but this Dam will also take the water of river Indus.

Kalabagh Dam

There is highly controversy on construction of Kalabagh Dam. The dam will take the water of Indus River. After construction, the dam would have 3,600 megawatts (4,800,000 hp) of electricity generation capacity. Its height is about 19m (259ft). Kalabagh Dam is condemned by Sindh because it would threaten the small province. (Khan M. I, et al. 2014).

Impacts of Conflicts

Following are the impacts of conflicts between Sindh and Punjab over the distribution of Indus river water.

Political Impacts

Issue of equitable sharing of water is centuries old. Indian Irrigation commission (IIC) was formed in 1901. Due to continued development of canals in upper riparian from 1859 Ban Doab canal on Ravi River till 1909 (Dhanpur canal), an ordinance issued by TIC that no canal could be built without the consent of lower riparian. After the proposal of Sutlaj valley project (11 canals and 4 head works) conflict was raised from Sindh and objected this big project. Cotton Commission was formed that time and it ordered that without the construction of Sukkur barrage no canals will be allowed to build in upper riparian. A constitutional act was formed in 1935 (130, 131) by British India that no province can get much

water without requirement and secure the rights of lower riparian. After Partition, construction of Kotri barrage, Indus Water Accord in 1960, construction of barrages, Mangla and Terbela Dam and lots of canals on one side have strengthened the irrigation network of the country and fulfilled the hydropower electricity demand of the country but on other side continued declining trend of water has destroyed lots of cultivated land in downstream area and allowed the sea to encroached the coastal area. This situation has worsened the political situation of the country.

Economic Impacts

Economy and agriculture has strong linkage with each other in an agricultural country. Pakistan's economy is depending on agriculture. However, agriculture of Pakistan is highly affected due to shortage of water which affects not only the micro economic level of the farmers but also our country's GDP (gross domestic product) is adversely affected. Pakistan starts to imports more goods than exports due to lower production in our own country. It is estimated that about 2.5 million acre land is going to become unproductive due to scarcity of water that is again a big challenge to Pakistan. A part from scarcity of water, floods are also responsible for destruction of agriculture. The 2010 flood destroyed about 5.4 million acres crops along with 1.2 million livestock. It was an unforgettable and historical flood in which Pakistan lost about \$43 billion of its economy (Govt: of Pakistan, 2013).

Health Impacts

Pakistan faces adverse and serious impacts on health due to water scarcity. Unavailability of fresh water forces people, women as well as children to drink dirty water that spreads various diseases among them like diarrhea, cholera, typhoid, malaria, hepatitis A and skin diseases. These dangerous diseases swallowed the lives of many innocent children. Groundwater conditions in the Indus plain are deteriorating day by day. Contamination of arsenic and other metallic elements has been common in groundwater. A study has discovered that contamination in groundwater is more concentrated near the river (Rabbani, 2017). A part from it, there is multiple factors which are responsible in raising the infant mortality rate that are lack of access to clean drinking water, inadequate health facilities and sanitation problems. Water borne diseases and malnutrition are behind the deaths of many innocent children in Tharparkar. According to the official figure by provincial health department, 150,000 cases of diarrhea from different areas of Sindh including Khairpur were reported in 2015 (web site: <https://www.dawn.com/news/1156416>).

Environmental Impacts

Apart from political, economic and health, environmental issues on Manchar, Kinjhar and Haleji in Sindh have been increased. Lakes run due to the active flow of river water (McCabe, 2010). These lakes are source of agriculture, drinking fresh water, fishing and employment in Sindh province. Manchar Lake, the largest lake, had 400 fish species and 726 birds before 1960 but in 1999 only 70 fish species and 100 bird species were found surviving due the shortage of water. Indus Delta had been developed by Indus River in Thatta and Badin districts and made fertile land where cultivation could be possible. Evidences show that Indus was breasted river and natural lakes in many places along the delta. Haleji and Manchar still exist. Along the main stream Oxbow lakes were also found. All these natural features have been disappearing slowly under the situation of water scarcity. The shortage of water is also responsible for the shrinking of delta of Indus water because of the sea intrusion that results disaster of agriculture. Consequently, people of Thatta and Badin have to leave their native place for livelihood.

Purpose of Making Dams

Demand of water is increasing all over the world. It is the basic source of life. It is estimated that future wars would be fought on waters because water demand is higher than supply. Many clashes on water in present history have occurred; one among them was between Pakistan and India which was solved with Indus water treaty in 1960 in the presence of World Bank. Dispute of river Nile between countries is another example. Dams have multi benefits. Hydroelectricity, flood control, irrigating land, groundwater recharging and water security in drought conditions are the main benefits.

Dams in Pakistan

In Pakistan there are two largest dams Mangla and Tarbela Dams and eighty five small dams. Mangla Dam is on Jhelum River having 1,000 MW while Tarbela Dam second largest dam is on Indus River in Haripur district, Khyber Pakhtunkhwa. Apart from it, there is many small dams in Pakistan.

Impacts of Water Shortage in Sindh Province

Sindh is adversely affected by the shortage of Indus river water. Half of the population living in Sindh province is directly linked with cultivation by irrigation. Agriculture is the main factor of their livelihood. Indus river water is the main source of fresh water of Sindh province. Hence lack of water ruined Sindh's economy as well as its agriculture system. Thatta, the most historical place in Sindh province makes Indus river delta. Unfortunately, the worse thing

happening there due to the shortage of water is shrinking of Indus river delta. The Indus delta mangroves are depleting in some parts due to the shortage of freshwater. More than 135 thousand people are dependent on mangrove resources for their livelihood. In the result of this, People who are living there are in miserable conditions that force them to migrate to other places of Sindh. Tharparkar including Umerkot the situation is more adverse because of shortage of fresh water. Apart from them, it also affects the natural habitat and wildlife of Sindh. The land besides the course of river Indus is very fertile and rich in crops. Moreover, Thatta and Badin are also affected by the increasing level of sea due to climate change and It is estimated that they will be drown in 2040 (ICID, 1999). In Sindh about 28% area having fresh water that is able for irrigation. However, large areas of Sindh province receive brackish water including Thar, Nara and Kohistan. They altogether cover almost 68,000 km² of total area. Covered area of Thar is about 23000 km² and population is about one million. Nara is about 22000 km² and Besides, Kohistan enjoys 23000 km² of covered area.

Water Scarcity and Major Crops in Sindh

Sindh is blessed with fertile land. Agriculture is the backbone of Sindh economy. There are many crops that are being grown in Sindh land, wheat, maize, cotton, sugarcane, rice, and variety of fruits. About 68% area of Sindh is under their production. It produces 20% cotton, 12% wheat, 28% sugarcane and 35% rice, besides, it produces 73% bananas, 34% mangoes and 88% chilies (Syed, M. A. 2001). Water scarcity has affected the major crops of Sindh. Less production of crops means low economy of province which directly hit the GDP of country. There are basically two seasons of cultivation, Kharif or summer crops and Rabi or winter crops. According to the report of IRSA- Indus river system authority, water shortage hit the winter crop especially wheat crop. A part from this, Kharif crops especially cotton is to be expected next. Farmers who are totally dependent on agriculture and in miserable conditions due to lack of production of crops. They find no fresh water to feed their land consequently they face famine and drought. Besides, they do not have water to drink and crops to feed themselves. Under these conditions they have to migrate to other place where they can satisfy their hunger.

Conclusion and Recommendations

The acute water shortage raises the economic, political, health and environmental problems among the provinces of Pakistan. These issues not only hit the economy of Pakistan but also affect the GDP of the country. Water shortage is the bone of controversy among the provinces of Pakistan. The river Indus, the main sources of agriculture losses its flow towards downstream (Sindh). Destruction of fertile

land, crops, mangrove and ecological lives are under great threat due to low flow of Indus River. Besides it, the Indus Delta water is badly affected by inconsistent flow of river Indus. Hence, government will have to keep an eagle eye on water issues and to take some substantial measures to settle the water problems among provinces. A credible water accord should be signed among the provinces to make sure the equal distribution of water between provinces. Environmental issues must be addressed in hydroelectricity and water storage projects and physical & environmental deterioration of Indus delta from shrinking sea intrusion should be saved. Moreover, dams should be constructed under the conditions that will not affect the flow of river means, a constant flow towards downstream will save land from salinity, gives life to Indus delta and improves mangrove production and sustain the natural environment. Small dams along the flood plain should be proposed so that environmental, natural and economic issues could be managed.

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