

Essay:

→ Sunday
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Hydropolitics: Challenges and Solutions.

1 Introduction:

Hydropolitics is not only domestic issue. ~~but also~~ ~~but also~~, it is regional one. However, solutions should be implemented both domestically and regionally to cope up with hydropolitics.

2 The domestic hydropolitical challenges in Pakistan:

2.1 Water Scarcity Status:

- The per capita water availability in 1950s was over 5000 m³. However, today per capita water availability is 1000 m³.

2.2 Water storage shortfall:

- The water storage capacity in Pakistan is only for 30 days. While, international recommendation is 120 days.

2.3 Aquifer Stress:

- The Indus river basin supplies approximately 60% of irrigation and 70% of drinking water.

2.4 Population Impact:

- From 2017 to 2023, water availability per capita is ^{dropped to} 154 m^3 . However it may drop to 765 m^3 by 2030.

2.5 Reservoir challenges:

- Sedimentation is reducing the effectiveness of storage capacity.

2.6 Dependence on Indus river:

- Approximately 95% of the renewable water comes from Indus river.

2.7 Agricultural dependence on water:

- Approximately 90% of the water goes to agriculture, with much loss due to old conveyance system.

3 The regional hydro-political challenges to Pakistan due to Afghanistan:

3.1 Construction of dams over Kabul river:

- Construction of Kama, Sarobi and Shekhot dam over Kabul river.

3.2 No bilateral treaty on water sharing between Afghanistan and Pakistan:

- Pakistan and Afghanistan have no bilateral treaty like Indus water treaty.

4 The regional hydropolitical challenges to Pakistan due to India:

4.1 Suspension of Indus water treaty:

- After Peshawar attack in India occupied Kashmir; India has suspended Indus water treaty.

4.2 India is using water as a political weapon:

- Uri attack 2016, Pulwama attack 2019, and Peshawar attack 2025

4.3 River diversion plans:

- The river diversion plans of India is limiting the flow of Sutlej, Beas and Ravi rivers.

4.4 Construction of dams over Indus river limiting the flow of water to Pakistan:

- Construction of Balighar dam and Kishanganga dam.

5 Solutions to domestic hydropolitics in Pakistan:

5.1 Implement municipal, domestic and industrial water conservation plans.

5.2 Construction of dams:

5.3 Artificial recharge programs:

5.4 Population control policies must be implemented:

5.5 Construct check dams and small reservoirs:

5.6 Diversify water sources:

5.7 Modernize irrigation:

6 solutions for hydropolitics due to Afghanistan:

6.1 Establish a joint Kabul river commission:

6.2 Establish a bilateral treaty between Afghanistan and Pakistan:

7 solutions for hydropolitics due to India:

7.1 Renew technical engagement and treaty modernization:

7.2 Strengthen international legal diplomacy

7.3 Regional water diplomacy frameworks

7.4 Joint water infrastructure projects

8 Conclusion:

"water is a weapon, wars are fought over it long before the guns are fired" as per the former analyst of the world bank. currently, water is used as a weapon by regional countries. The domestic hydropolitical challenges which are faced by Pakistan are: water scarcity, water storage shortfall, aquifers stress, population impact, reservoir challenges, dependence on Indus river and agriculture dependence on water. However, not only domestic hydropolitical challenges, regional hydropolitical challenges also exist. The hydropolitical challenges due to Afghanistan are: construction of dams over Kabul river and no any bilateral treaty between Afghanistan and Pakistan. Moreover, the hydropolitical challenges due to India are: suspension of Indus water treaty, India is using water as a political weapon, river diversion plans, and construction of dams over Indus river limiting the flow of water to Pakistan. For instance, these challenges must be coped up by proper implementation of solutions. The solutions for domestic hydropolitical challenges

faces by Pakistan are: implement municipal, domestic, and industrial water conservation plans, construction of dams for water storage, implement artificial recharge programs, implementation of population control policies, construct check dams and small reservoirs, diversify water sources, and modernize irrigation. The other solutions due to regional hydro-politics especially from Afghanistan side are: establish a joint river Kabul commission, and establish and negotiate a bilateral treaty between Afghanistan and Pakistan. The solutions for hydro-politics due to India are: renew technical engagement and treaty modernization, strengthen legal diplomacy and regional water diplomacy frameworks, and work on joint water infrastructure projects.

The water scarcity in Pakistan is one of the major issues faced by citizens. According to the news International, the per capita water availability in 1950s was over 5000m^3 , but now the availability of water is dropped to 1000m^3 . It means that water scarcity has been dropped. If water scarcity challenge cannot be tackled, then it can cause grave challenges further to the citizens.

The second domestic challenge faced by Pakistan

tan is water storage shortfall. According to the news, the water storage capacity in Pakistan is only for 30 days. However, the international benchmark for water storage is 120 days.

India has water storage capacity of **170 to 220 days**. **USA** (United States of America) has water storage capacity of **900 days**. The storage capacity of Pakistan must be increased.

The third domestic challenge of hydro-politics in Pakistan is aquifer stress. According to Dawn news, the Indus river basin supplies approximately 60% of irrigation and 70% of the drinking water. As the population is increasing in Pakistan, the aquifer stress is being increased.

The fourth hydro-politic challenge faced by Pakistan is rise in population. As per the seventh population housing census, the annual rate of population is increasing 2.4%. From 2017 to 2023, water availability per capita is dropped to 154m^3 . However, by 2030 it may dropped to 765m^3 . The rapid drop in the availability of water put strain over Pakistan.

The fifth challenge due to hydropolitics in Pakistan is reservoir challenges. According to the news international, sedimentation is reducing the effectiveness of existing dams and decreasing the storage capacity of dams. Therefore, Tarbela and Mangla dams are reducing the storage capacity. Sedimentation is highly impact the storage capacity of dams.

The sixth challenge due to hydropolitics in Pakistan is over dependence on the Indus river basin. Approximately 95% of the renewable water comes from Indus river basin. Dependence on Indus river due to drinking, washing, agriculture and hydroelectric power generation is further putting strain.

The seventh challenge due to hydropolitics in Pakistan is high dependence of agriculture on water. According to dawn news, agriculture accounts for 14 to 15% of GDP and 40% of the employment. As per the news international, 90% of the water goes to agriculture, with much is lost due to old conveyance system. As per the world bank, "water security is a national security."

“Hydropolitics is not only a domestic issue, but also a regional one, enforced by trans-boundary river and politics,” as per Lanquet Commission. The first challenge of regional hydro-politics due to Afghanistan is construction of dams over Kabul river. Kabul river originates in Afghanistan but its water flows in Khyber Pakhtunkhwa province of Pakistan. The peoples of KP province rely over Kabul river for drinking and washing purpose. However, Afghanistan has build ~~Kama dam, sarobi dam and Shahtoot dam~~ on river Kabul; limiting the flow of water in KP province of Pakistan.

The second challenge of regional hydro-politics due to Afghanistan is no formal bilateral treaty over water sharing between Afghanistan and Pakistan. Like the Indus river water treaty; Pakistan and Afghanistan does not have any bilateral treaty. Therefore, water sharing between two neighbouring countries is putting strain over each other, especially Pakistan.

The other regional challenges of hydro politics are due to India. After Peshawar attack on April 22, 2015 India has suspended the Indus water treaty. Indus water treaty was signed by India and Pakistan in 1960. This treaty was brokered by the World Bank. According to this treaty western rivers such as Indus, Chenab, and Jhelum are given to Pakistan. While, eastern rivers such as Sutlej, Beas and Ravi river were given to India. However, this treaty was suspended by India alone.

~~The second regional hydro political challenge due to India is using of water as a political weapon. India is long been using water as a political weapon. Whether in 2016 Uri attack, 2019 Pulwama attack and 2025 Peshawar attack.~~

The third regional hydro political challenge due to India is river diversion plan. According to Indus water treaty, India and Pakistan both have control over eastern and western rivers in case of irrigation and hydroelectric projects. However, India has build dams, and other water infrastructure

that has limited the flow of water in Pakistan.

The last hydro-political challenge faced by Pakistan due to India is construction of dams. The construction of dams such as **Kishanganga** and **Balighar** dams by India over Indus river is further limiting the flow of Indus river to Pakistan. This has caused grave concerns in Pakistan.

The first and the foremost solution of domestic hydro-politics is the implementation of municipal, domestic and industrial water conservation plans. If water conservation plans would be implemented properly then water can be saved and it can be used properly.

The second solution of domestic hydro-politics is the construction of dams. **Diamer Basha** dam and proposed **Soan** dam can hold upto 360 million cubic of water and can generate approximately 5240 megawatt of electricity as per the news International.

The third solution of domestic hydro-politics

is artificial aquifer system. Artificial aquifer system can use rain water. This can increase water capacity and storage that can be used in times of need.

The fourth solution of domestic hydro politics is population control policies. Government must make such policies in which education can be provided to couples regarding family planning. To insert intrauterine devices, skin implant, condom usage or hormonal therapy.

The fifth solution of domestic hydro politics is construct check dams and small reservoirs. If check dams would be constructed, and small reservoirs can be built then it can cope up with silt and sedimentation.

The sixth solution of domestic hydro politics is diversify water sources. Use of rain water, ground water and their storage for irrigation and drinking purpose.

The last solution of domestic hydro politics is to modernize irrigation system such as drip sprinkler method in irrigation.

to decrease the loss of water from canals and tube wells. As per world bank, "water security is a national security."

The first solution of regional hydro-politics due to Afghanistan is establishment of Kabul river commission. This commission includes policymakers, water analysts from both the nations.

The second solution of regional hydro-politics is the treaty negotiation between Afghanistan and Pakistan. ~~A formal treaty must be created between Afghanistan and Pakistan for the share of Kabul river between these two countries.~~

The first solution of Indian hydro-politics is the technical engagement and treaty modernization. Treaty should be modified by inviting United Nations or World Bank.

The second solution of Indian hydro-politics is to strengthen international legal diplomacy of World Bank, International Court of Justice or World Bank for the share of water.

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The third solution of hydropolitics between India and Pakistan is to mediate dialogue through regional platforms. Regional platforms such as Shanghai Cooperation Organization, and South Asian Association for Regional Cooperation. These platforms must be utilized by both the neighbouring countries for negotiating dialogue and diplomacy related to water crisis.

The last solution of hydropolitics between India and Pakistan is creation of joint water infrastructure. The joint water infrastructure includes flood protection programs, water conservation and irrigation programs.

To conclude with, hydropolitics is not only a domestic challenge but also a regional challenge. The domestic factors include water scarcity, water storage shortfall, aquifer stress, increase in population, reservoir challenge, high dependence on Indus river, high water for agriculture. Not only domestic factors are creating hydro-political challenge but also regional factors are

posing a threat. The regional hydropolitical challenges due to Afghanistan are formation of dams over Kabul river and no any bilateral treaty related to water exists between Afghanistan and Pakistan. The other regional hydropolitical challenges due to India faced by Pakistan are: suspension of Indus water treaty, using water as a political weapon, river diversion plans and construction of dams over Indus river. However, these challenges must be mitigated by implementing proper solutions such as: implementing municipal, household and industrial water conservation plans, ~~construction of dams~~, artificial recharge programs, population control policies, construct check dams and small reservoirs, diversify water sources and modernize irrigation system. Moreover, regional hydropolitical solutions include: Establishment of joint Kabul river commission, establish a bilateral treaty between Afghanistan and Pakistan. With India,

Solutions include; Renew technical engagement and treaty modernization, strengthen legal diplomacy, regional water diplomacy frameworks and joint water infrastructure programs. "Hydropolitics in south Asia must be tackled with dialogue and diplomacy" as per international consensus endowment.

good in punctuation
good in ideas