

Hydro-Politics of Trans-Boundary Water Resources in South Asia: A Water-Energy-food Nexus of Cooperation

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Abstract: *Water is a vital resource for 1.9 billion, 24.89% of the total world population residing in the South Asian states and the geopolitics of the region primarily is hydro-politics. The water geography of the region comprises river basins like the Indus, Ganges, Meghna, and Brahmaputra, acting as capillaries responsible for the flow of life in this gigantic region. Allocation of water resources is an external as well internal policy challenge for South Asian states. Taking a view of the water geography of the region and treaties governing transboundary water flow, the paper aims to address the question of whether the water problem can be dealt only with the traditional security paradigm, focusing on water conflict through the state-centric lens; or the issue can be reflected with the prism of unconventional security paradigms as waters are integral to economic, food, environmental and human security. Human security combined with Liberal-Functionalist approaches may transform the crisis into a prospective scenario of peace and cooperation in the region.*

Key Words: Hydro-politics, South Asia, National Security, Human Security

Introduction

The freshwater systems all over the world are facing immense pressure due to human exploitation caused by massive development, urbanization and industrialization. This growing pressure on freshwater resources causes strain on nation boundary but also cause inter-state conflicts in the absence of institution of mediation and arbitration and consensus on formula of water sharing within and between states. The whole world is facing the problem of these transboundary water disputes due to fact that natural world is divided on political lines and territorial political map do not coincide with world natural geographical divides. "Water, water, everywhere, nor any drop to drink", famous lines coined by Samuel Taylor Coleridge, aptly describe the water crisis of South Asia. ([Taylor](#)

[Coleridge, n.d.](#)) South Asia, home to 1.9 billion people approximately and emerging economies of the world, is facing its biggest problem in the form of water scarcity. The South Asian region is unique in its geography as it has a vital source of clean water spread throughout the region interlinking almost all the countries of the region. Simultaneously, in South Asia there is lack of mutual trust and cooperation among the riparian states either due to indefinite international laws, enforced conventions or inequality between partners. Despite all these issues the cooperation in the field of river water management is very common, one such example is of Indus water treaty among India and Pakistan, which resulted in river water management between the two states. ([Parajuli JVS et al., 2003](#))

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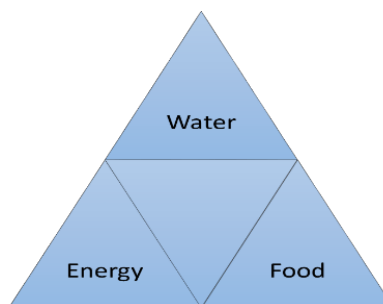
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It is also a key political issue under pinning peace and stability of South Asia and has major political and economic ramifications. Unique geography of South Asia comprises many major river basins like Indus, Ganges, Brahmaputra, and Meghna connecting major countries of the region and are also a source of new raging debate for water security among the countries. The trans-boundary nature of these water resources in South Asia, arises some main challenges to mitigate the gap between demand and supply of water resources for such massive populations residing in different nation-states. (Nambyar & Centre, n.d.) The IGBM river system has a unique distribution of water flow varied across time and space. This temporal and spatial variation of water flow generates uneven resource distribution across time and space where 80 percent of the annual water flow occurs during July to September and remaining 20 percent occur during remaining months. This spatial-temporal variation in water flow exhibits many problems between co-basin countries. Between Junes to September during Monson period the water flow is harsh and is prone to floods in many of the river basins, further in dry months the water level is freshwater stream is low and water became scarce in many regions, aggravating the issues of water distribution and management among the riparian states. (Parajuli JVS et al., 2003)

The water is not only the source of life but is considered as the backbone of development for any country as many of the South Asian states rely on water as the cleanest source of energy for their industrial and domestic use. On the other hand, this freshwater stream is also responsible for food of approximately 1.9 billion people South Asian region. This trichotomy of water-energy-food creates a perfect balance for a stable and prosperous life. Energy sector of South Asian region majorly depends on these co-basin water streams, which further complexes the situation and increases chances of conflict among upstream and downstream states. This upstream-downstream syndrome results in selfishness of the states for more and more usage of water stream ignoring the fact that this water stream is also important to the other state for the same reason as it is important to one

state. Water ways open a spill over effect on the overall development of the region as water is the base source of energy and food in the region. This water-energy-food nexus can create a sense of balance among the regional powers sharing the same water stream.



Water is normally taken as a resource to be in possession of states and trans-boundary river systems invoke Hydro-politics as a geopolitical concern, to be dealt with traditional security lens of international politics. But Water cannot be treated as a mere resource as it is an economic resource necessary of industrial development and agricultural production. Water like food is a human security concern and water security is essential prerequisite for food security. Hence water security is non-traditional security concern as well.

Review of Literature

Hydro-political domain of international politics is under a great debate concerning the conflict-cooperation dichotomy over trans-border waters. Warner in his writing sheds light on the competing world views over the same phenomena, justifying that these arguments are not objective facts but are narrative that can explain the phenomena from different stand points. He explains a third critical narrative approach based on the neo-realist and neo-liberal institutional schools that neo-neo consensus can be can best explain the phenomena of water-wars and water-peace. He argues that this critical consensus has a very different interpretation of the water conflicts that how local forces express their global hegemonic struggles? Also, why there is been no violent conflict among states in presence of some hegemonic powers? During 1960's Tennessee Valley Authority has become

the prime model for water-based development in the regions, later this model was adopted by Russia and USA during cold war to be implanted in their ally states of Asia and Africa. This sort of development among trans-border countries sharing same water resource has opened a new arena of conflict among them but in contrast to that world has also seen a lot of cooperation been made and a lot of treaties being signed by the states to settle on win-win situation. ([Warner, 2012](#))

Michel and Pandya in their book build a strong case around the triangular relationship between climate change, hydro-politics and trans-boundary resources. The book is divided into two sections, one is related to the perspective from the regions of South Asia, South-East Asia and Middle East; second section is about the interpreting the trends for integrated water management and climate risk. ([Michel & Pandya, 2009](#)) South Asian region is vulnerable due to the water-stress and climate constrain due to the population growth, vast agricultural base and industrialization. Jaitly argues that the region is facing this problem due to two major shortcomings, poor water regularity mechanism and fragmented institutions. He further argues that in order to resolve this water crisis, South Asian region has to indulge into cooperation and negotiation over their shared resources. ([Michel & Pandya, 2009, p.17](#))

Mehsud and Khan argues in their article that water crisis coupled with population growth and climate change results in water disputes around the globe. Absence of cooperation and treaties on trans-boundary resources like water snowballs the with the regional disputes, external pressures, local water disputes and lack of trust on international water laws by the states to convert water crisis into water wars. One such vulnerable region is South Asia, where all the factors that can contribute to the water war thesis are present and can convert the water crisis into ware wars. The South Asian premise needs serious consideration of regional powers to increase cooperation on water issues as it is common source of survival and security for all the region. ([Mehsud & Khan, 2019](#))

Nagheeby and Warner argue that control over the Harirud river basin (HRB) is proportionally related to the development of the regional powers sharing this major resource of clean water. HRB spans between political borders of Iran, Afghanistan and Turkmenistan, creating a common sense of cooperation and conflict among them. The upstream and downstream of the river are of great importance for the countries as it decides the prime geographical use of the river flow. For example, for Afghanistan it is of prime value to build dams over the upstream of the river, as it symbolizes their nation-building efforts for the ruling elites and a way of staying in power. Also, his resource of clean water is a source security interest for the foreign powers like USA and India due to its geographical reasons. (Nagheeby & [Warner, 2018](#))

Jha in his thesis analysis the water management system on trans-boundary Ganga River Basin, spanning between India and Nepal. The shortage of water for agriculture, daily use and industry is prone to conflict for both of the countries. So far both countries have signed four major water treaties to deal with the issue of water management. Simultaneously, water stress indicator and resource variation data sharing among states has allowed to deal with the bio-physical challenges. In this paper he analysis the indicators that can beneficial for both countries development. The main finding of the study was to prioritise the trans-boundary water resource development and management. Being hydro-hegemon of the region India should opt for more open and generous attitude towards small stakeholders like Nepal. ([Jha, n.d.](#))

The state security framework is of the view that environmental problems are a vital source of inter-state and intra-state conflicts, on the other hand the human security framework focuses on the impacts caused by these environmental concerns on people's life. Clean water is of vital importance for human life, development and survival. Implications of water security on any region can be studies by bridging the gap between the paradigms. By taking in view the issues of water scarcity in Chile, Zambrano Ramírez, in his thesis argues that nexus between state and human security can bridge the gap between state insecurity

and human development at the same time. By using hydropathical security complex as the theoretical framework for the study the researcher further analysis the effects of water scarcity in the country. ([Zambrano Ramírez, 2012](#))

Naz believes that the second largest glacier of the world, Siachen, is a permanent battle field for India and Pakistan. Both countries subconsciously knew about the importance of this huge water resource. Historically, Indus River Basin is one of the earliest conflicts between the two states, arbitrated by the World Bank the two states signed the Indus Water Treaty in 1960. It was supposed to resolve the issue of water management and usage but with the passage of time due to increased demand, many constraints and violations of the treaty has been seen. Naz explores the scope of Hydro-politics in South Asia by profiling the conflict between India and Pakistan. Also, she focuses on cooperation on the trans-boundary environmental concerns for sustainable development and to strategize to counter external as well as internal water security challenges to Pakistan in the region. ([Naz, 2014](#))

Research Objectives

The paper aims to

- Understand the hydro-politics of South Asia keeping in view the water geography of South Asia
- Examine the present scenario of water security in South Asia.
- Consider Water as potential source of conflict in South Asia.
- Construct the future scenario of cooperation based on functionalist perspective and hydro-diplomacy.

Research Questions

The paper aims to address the following research questions.

- Can Water security be analysed in traditional state-centric paradigms of conflict and is an interstate concern?
- Hydro-politics if dealt with traditional lens of conflict can make the South Asian region secure or it can cause a human crisis?

- Does interstate conflict on water resources has the potential to become state internal human security concern?
- Can Liberal perspective combined with human security/human development approaches provide sufficient analytical tools?

Analysing the water geographies of South Asia, the supposition of study is that water is one functionalist feature of south Asian region that can make the interdependency of South Asia possible. Hydro-diplomacy at present working at reductionist managerial level can be comprehensively enhanced as water security and management of water resources has social, political, human, and environmental dimensions.

Theoretical Framework

Hydro-politics like previous geopolitics on land

and resources is about the politics of control of vital resource essential for survival and development. In 1995, World Bank's, then vice president, Ismail Serageldin want that 21st century wars will be on water. ([Chellaney, 2011, p. 49](#)) As water will become increasingly rare, it will be source of unleashing bitter conflicts. Water is not a resource in control of a given state but water bodies traverse through state geographies forming water geographies beyond state control, making it more of a regional concern. Yet traditional paradigm of security wants to deal water as a strategic issue making it a reason of war. Water security can't be dealt with traditional state-centric realist paradigm that believes that to be secured means preparation of war to counter threats emanating from outside. ([Walker, 1992](#))

Water security according to R. B. J. Walker comes in a ray of new dangers, new contexts, new geopolitical configurations that blur the traditional Hobbesian dichotomy of inside/outside. Hence, in presence of these *new enemies*, claims of security by traditional realist paradigm encompass both everything and nothing. Horizons of security theorizing must be broadened as emerging security threats require global reasoning in place of reason of state. Walker asks the vital questions whose security is at stake. i.e., people in general or

citizens of a particular state. To him state is both the source of security dilemma and solution to insecurities of modern life. (Walker, 2018) Kenneth Waltz in his famous book 'Man, The State and War' refutes the classical realist dictum that war is the product of human nature, governed by passion. Waltz is of the view that men are intermixed of reason and passion were passion repeatedly triumphs human nature is neither good nor bad it is the society that degenerates human but waltz is of the view that society can be a moral community. (Waltz, 1959)

To Walker the concept of security involves what it means to be secure as well as what one is to be secured from. Mere physical survival is not enough and construction of pressing danger does not involve war at large scale but also "minor tragedies of forgotten thirsty people whose poverty, sickness and exclusion demands to be counted as state of emergency". Walker suggests a shift from self/national to common interests marked by commitments to interdependence and understanding of a more inclusive form of political community. (Walker, 2018) Walker views resonate with liberal paradigm. For liberals' peace not war is normal state of affairs and is perpetual in Kantian Phrase, the laws of nature dictates harmony and cooperation and war I irrational and artificial; hence war is not the product of some peculiar nature. Liberals have a belief in human capacity to reason and believe that state of war can be avoided by removal of barriers to commerce and free trade and creating an interdependent world. Mitrany argue that the initial cooperation between states can be achieved in technical areas where it is mutually convenient by adopting the functionalist view of cooperation. (Burchill et al., 2013, p. 39)

Europe moved from passion to interest by becoming a union adopting the neo-functional approach. The approach identifies the causal factor that interact and create integration stimulus between nation-states; growing economic interdependence between states involved; organised capacity for resolution of regional disputes; and the capabilities to build a legal regime through commonly accepted judicial institutions. The functionalism implicitly believes in openness

of region with localized governance system and socio-economic assets, also sharing the problems that can be addressed by a holistic approach. The factionalists are of the view that mutual trust and habit of cooperation is likely to enhance by sharing public sector responsibilities and functions like collecting meteorological data, prevention of pandemics and promotion of sustainable development. These functionalist aspects deal with non-traditional security threats, and requires more than *raison d'état*.

Analysing hydro-politics between South Asian states in traditional realist security paradigm is not without hazardous implications as water can't be treated like land and resources like oil. No one is victor in war but there are varying degree of defeat; and water wars can generate a crisis of human security as water is not a resource but need. So, hydro-politics must involve an ethical-moral, normative response and can be dealt by a combination of functionalist liberal approach combined with the human security. Human security paradigm demanding a pervasive role of state, to create a state free from fear, want and based on human dignity. (Tadjbakhsh & Chenoy, 2007)

South Asia is the home to 1.9 billion people divided in eight nation-states involved in multitude of bilateral conflicts on territories. Water is one vital resource needed for agriculture, hydro-power, industry and domestic needs. It can add to existing conflicts in South Asia on inter and sub-state level but it can also serve as the functional feature to promote harmony though joint public management and legal institutions creating the regime under the auspices of regional organization i.e. SAARC leading to regional peace.

Methodology

The paper establishes a water-energy-food nexus vital for economic and human development. Employing the normative approach of human security, the paper is a descriptive analysis of most pressing issue of hydro-politics between South Asian states. The paper aims to construct a prospective scenario of peace and interdependence using SAARC as

a viable international organization for the distribution, management and arbitration of water resources among South Asian states based on a Neo functionalist approach.

Discussion

Hydro-Geography of South Asia

The South Asian River streams includes some of the world's major river basins like Indus, Ganga, Brahmaputra and Meghna extending

across six major countries of South Asia. The remaining area comprises of different water sheds and other river basins mostly present in India, Pakistan, Bangladesh and Afghanistan. Majorly, if classified the mainland South Asian water ways are distributed into three major classification Ganges-Brahmaputra-Meghna (GBM), Indus River basin and Helmand River basin. ([Masud, 2018](#))



Figure 1: GBM River Basin

The GBM river basin originates mainly from monsoon rains from June to September and has an average flow of 1310 cubic kilometers. The Ganges River basin spans between India and Nepal, whereas Brahmaputra flows through Tibet encompassing east of India, where it meets Ganges and flows into Bay of Bengal. Indus River basin also starts from Tibet and flows through the centre of Pakistan, Meghna in the Ganges delta joins Bangladesh from India. Natural water ways of South Asia spans through major countries of the region from Bangladesh to India, Nepal to Bhutan. Ground waters of Brahmaputra in Bangladesh is estimated to be at least 21 cubic kilometres per year. ([Davis & Hirji, 2019](#))

Similarly, the Indus River basin starts from Tibet and spans between India, Pakistan and Afghanistan with the minimum flow of 2469 cubic meter per second. Almost 40 percent of the water flow in the Indus River Basin comes through the melt down of glaciers of Hindu Kush-Himalayan Mountain ranges also

providing water to its left tributaries of Zaskar River in Ladakh region of India and in plains Panjnad Rivers in Punjab region of Pakistan. ([Masud, 2018](#)) Major use of this water ways are for irrigation purpose followed by domestic use then industrial usage. The water table of the region is also dependent on the Indus River Basin flow, due to development of one of the world's major irrigation system and wells and tube wells for irrigation also made stress on the ground water level as well as water flow in the river basin. Pakistan is the largest user of this river basin water at almost 63 percent of the water being used for irrigation, domestic and industrial usage, followed by India at 36 percent, Afghanistan 1 percent and China less than 1 percent. Due the huge percentage share between the two states India and Pakistan Indus Water Treaty was signed under the arbitration of World Bank for water management in the region. Under the treaty eastern and western rivers were divided among the two states to manage water disputes. ([Davis & Hirji, 2019](#))



Figure 2: Indus River Basin

Indus, Ganges, Brahmaputra, Meghna River basins are the prime focus for major needs for South Asian states like food, energy and development. Geography of South Asian region is so deeply entwined that water resources are neither solely owned by the states nor there are agreed principles for water sharing and water becomes a concern of geopolitics. Water is considered to be the battleground for future wars of nuclear South Asia. Without taking into account the Hydro-politics of the region viable peace is a rarely possibility. (Masud, 2018)

Analysis of Water Management Measures at Sub-state Level

About 10 percent of the world population resides in the IGBM basins, where major

population analysis depends on irrigation but the growing industrial potential and hydropower demand is creating enormous stress on the water stream of the region. An increase in population and growing environmental concerns further intensify the situation. Resulting in tension among the states sharing the common water resource for domestic, industrial and irrigational usage. Therefore, river basin water management and planning are much needed to loosen up the situation among the states. The following table represents the average freshwater flow in the country needed to cater to the needs of the state regarding water. (Htts://Www.Fao.Org/, n.d.)

Table 1. Pressure on Freshwater Resources due to Irrigation

Country	Total actual freshwater resource (km ³ /year)	Irrigation water requirement (Km ³ /year)	Water Requirement Ration (%)	Irrigation water withdrawal (km ³ /year)	Pressure on freshwater resources due to irrigation (%)
Afghanistan	65.000	10.901	55	20.000	30.77
Bangladesh	1227.000	24.562	78	31.500	2.57
Bhutan	78.000	0.104	33	0.318	0.41
India	1911.000	370.843	54	688.000	36.00
Nepal	210.200	5.428	58	9.320	4.43
Pakistan	246.800	126.891	74	172.400	69.85
Sri Lanka	52.800	3.819	34	11.310	21.42

It is evident from the table that major countries like India, Pakistan and Sri Lanka face huge

pressure on their water resources that is directly proportional to the development of the

countries. If the freshwater need of the countries is not fulfilled it will have a spill over effect on agriculture, hydropower, industrialization and development. (Water Requirement Ratio and Comparison with Water Resources by Country (165 Countries and 2 Territories in This Review), n.d.)

Uneven distribution of water resource among lower and upper riparian states, geopolitical tensions and socio-economic impacts of hydro-infrastructures on water streams are some of the issues that can elevate the trans-boundary tension among states sharing water resource. States at the national level take many steps to manage their water resource and share it among different regions and sectors. Still water disputes mar sub-state level as upper riparian regions deprive lower riparian regions and release excessive water during flood times towards downstream. These sub-state level issues of hydro-politics are addressed under the ambit of law and constitutional bodies by policy making, strategic plans and legislation. Every country deals with its water management issues at the sub-state level according to their need and capacity. (Davis & Hirji, 2019)

Afghanistan is one such example where political and economic instability has been at play from last two decades, apart from this socio-political turmoil Afghanistan has made two major legislations regarding water and environment named as Water Laws 2009 and Environment Laws 2007. These legislations were made keeping in view the international order of doing things and managing water ways in the country for better water management. Some of the policy frameworks developed by the Afghanistan are *Strategic Policy Framework for Water Sector* and *Groundwater Development Policy*, these policy frameworks were lately developed in the last decade due to political and economic instability in the country, as Afghanistan at first place is struggling for water sources for fulfilment of its domestic needs. (Davis & Hirji, 2019)

The condition of Bangladesh is way far better than of Afghanistan, as Bangladesh has emerged as one of the leading economies of South Asian since last two decades. Developing industrial sector is synonymy to economic development of the country that requires more and more hydro-powered energy for the

domestic industry to develop. Due to development nature of the country's economy, we can see more and more legislations been made to preserve and manage their fresh water resources. Some of the most recent are *Water Act 2013*, *National River Protection Commission Act 2013* and *Water Development Board Act 2000*. Major strategic plan to ensure water security was laid in *National Water Management Plan 2001* that laid down the foundation of water management in the country. Policy measures are also been taken to improve the situation of water such as *National Water Policy 1999*, *National Policy for Safe Water Supply and Sanitation 1998* and *National Agricultural Extension Policy 2012*. (Davis & Hirji, 2019)

India with the most populated area of the region has its own constrains on freshwater sources for its domestic and industrial usage as well. Yet the country is home to GBM River Basins. The huge difference between demand and supply to cater to the needs of almost one billion population has its own ramifications. This sort of problem needs special attention at legislative level where interstate water despites are o addressed and the region is prone to Monsoon rainfalls that can cause an internal unrest to the country. India has managed to legislate *Interstate River Dispute Act 1956* to settle interstate water disputes and manage water to cater the needs of each state. Other measure includes *National Water Framework Bill 2013* and *Model Bill for the Conservation, Protection and Regulation of ground water 2011*. Policy framework measures to manage water resource are *Nation Water Policy 2012*, *National Urban Sanitation Policy 2008* and *National Agriculture Policy 2008*. The strategic plan to enforce water management was laid down in year 2011, named as *Ministry of Water Resource Strategic Plan*. (Davis & Hirji, 2019)

Pakistan has laid down its *National Water Policy* in the year 2006, followed by *National Drinking Water Policy in 2009* to protect the ground waters. In the recent decade Pakistan has taken into account the environmental protection measures to protect the natural habitat of the country and protect the environment for the future generations. In this regard, the *National Environment Policy 2005* was laid down and in recent years *Billion Tree*

Tsunami project has proven to be a game-changer for environmental protection. Furthermore, Water Sector Strategy 2002 has been implemented to ensure water management and resolution. Future scenario for Pakistan is also seems prospectus for Pakistan has laid down the visionary outlook of the country for 2025 in year 2014 as *One Nation One Vision 2014*. (Davis & Hirji, 2019)

It is evident from the above analysis that major countries of South Asia are concerned about the importance of freshwater sources and their overall impact on the country's development. The spill over effect of water management on energy sector and agriculture sector is of core value that no country can meet

its energy or food needs without sufficient supply and management of water resources.

Water Security as an Agent of Integration among the South Asian States

Moving from sub-state level to interstate level, each state uses the protectionist approach to address the issue of freshwater management. Due to the shared nature of the freshwater sources among the South Asian States, all states try to hold on to more and more water for domestic, industrial and energy usage. This self-centric approach can result in conflicts and increased stress among states. Before concluding any results, one should see the projections of waters availability and requirement for South Asian states by the year 2025, which are as follows. (Adhikari, 2014)

Table 2. Demand and Supply Gap

Country	Average Annual Water Potential (BCM)	Present Use of Water (BCM/year)	Projected Demand in 2025 (BCM)
Bangladesh	373	40	161
India	1870	629	1060
Nepal	237	39	60
Pakistan	236	158	337.9

As it is evident from the stats that projected demand of water for major countries of South Asia has increased massively. To fulfill this huge demand, sub-state level water management or policy making is not enough but the region should adopt an interstate level water security paradigm that can take into account the needs and demands of all the states and then manage the water resources on equity bases. So, the region can grow exponentially side by side. This water security paradigm has been taken into account on many occasions by different states in terms of agreements and treaties.

As part of subcontinent both India and Pakistan share a conjoined geography, where one country is inevitable for another state being part of a natural region. Further, sharing the common freshwater stream makes the situation more complicated. The concern was over six rivers in the Indus River Basin; Indus, Jhelum, Sutlej, Beas and Ravi. (Adhikari, n.d.)

This dispute of water ways settlement was resolved under the arbitration of the World Bank and both countries signed a treaty named Indus Water Treaty in 1960. Both countries restricted the proposal of taking the Indus Water dispute to court and settled upon the assignment of three western rivers to Pakistan and restricted India from using these waters for the purpose of hydroelectric power. The case of the Indus Water Treaty is well appreciated by the international community and opened up a new way of conflict resolution. International Law Commission termed this treaty as the prime example of equitable apportionment or utilization. (Pratap, 2017)

Another example is of Ganges Treaty between India and Bangladesh over the water dispute of Ganges waters at Farakka. Both countries signed the treaty in 1996 for a period of thirty years. The issue was raised due to the construction of Farakka Barrage by India. This treaty looks after the flow of water at the

Farakka to note that water will not be reduced at the Farakka from India's side. This treaty proved to be the first mechanism of dispute resolution between the two states, as any the unresolved issues shall be referred to the joint-river commission and then to the governments. The Ganges treaty is also guided by fairness and equity for both parties. ([Pratap, 2017](#))

Nepal is a land-locked country that has its entire dependence on freshwater resources for domestic and industrial use. Nepal and India converged on three water treaties in years 1954, 1959 and 1996. The agreement on the Kosi River Project was made in 1954 that was revised in 1996 was signed to control floods, irrigation and hydropower generation. Similarly, in 1959, the Gandak River Treaty also concerns power and irrigation among the two states. The most important of all was the Mahakali Treaty that equal utilization of the resource is on the bases of equity. ([Pratap, 2017](#)) ([Rai et al., 2017](#))

Water can be categorized as a core nation intrust because it is the life line for human habitats as well as it is the core element needed for all the aspects of human activity i.e., agriculture, industry and energy. Seen from the lenses of human security paradigm that focuses on food, economics and environmental threats; water becomes to be analysed on individual, sub-state, interstate, regional and international levels of analysis. ([Azharul Haq, n.d.](#)) It not only requires state's internal policies to conserve and distribute water resource among different regions and sectors on the bases of equity but also become a cause of tension of interstate politics. Mechanisms to distribute water resources that are trans-boundary in nature not only leads to conventional security solutions but also solutions that are liberal and functional in nature; as water dilemma resolved from conventional strategies can evoke a human crisis. Despite the conflicts between South Asian states believing in conventional strategies of deterrence, one can see a lot of cooperation of functionalist nature even among the two nuclear rivals i.e., India and Pakistan. ([Zambrano Ramirez, 2012](#)) So far bilateral treaties are signed to share freshwater resources, under the auspices of international organizations like World Bank. But water issue can be most effectively resolved if indigenous initiatives by the stakeholders are taken to

protect human and economic development of South Asian region. ([Sarada & Das, 2016](#))

Conclusion

Security in the present world has become an elusive concept as what is meant to be secure? And what is to be secured from? The means and strategies devised for security like an arms race, the balance of power and nuclearization itself constitute insecurity. The problems related to Water security can turn into a crisis if traditional measures of war are taken to protect the state's water resources. Not only for the states involved but for the world at large, as water is intrinsically linked with economic, food and environmental security. Hence, the conflict-cooperation dichotomy of neo-realist & neo-liberal paradigms cannot be clearly adopted to analyse water security because water security is not an objective, knowable reality to be analysed by facts. Rather water security is a phenomenon that is the concern of normative epistemologies involving moral and ethical solutions. Thinkers like Warner develop a neo-neo consensus to explain water war and peace. ([Warner, 2012](#)) Water, according to Walker, water insecurity a new enemy, new danger and a new threat to be gazed only through a human lens. It is evident from Post WWII history that water is often predicted as a cause of future wars but no violent conflict on water occurred during recent times. It is due to cooperation on functionalist lines that states have avoided water conflict and tension. ([Walker, 2018](#))

Water is one of many fault lines i.e. cultural, political & territorial exiting between states of south Asia. One such example is two of the nuclear powers of the region, India and Pakistan, signed Indus Basin Treaty in 1960. The countries develop a mechanism of information sharing and institutions to mitigate water disputes. Yet, according to Chellancey, "Pakistan-India water ramblings is just regional politics by another name." In the case of other disputes between these states, water politics is used as a threat to mount pressure on the rival state. ([Chellaney, 2011, p. 286](#)) further, water treaties between states are also manifestations of power hierarchy India being the powerful actor in most of the treaties, is in a position to define terms and conditions like Nepal and Bhutan. In the case of the Indus

Basin Treaty, the treaty take account of only the two powerful contenders, India and Pakistan, ignoring the 1 percent stake of Afghanistan. The treaty should have considered a human approach toward Afghanistan with a low stake of 1 percent. Further, these treaties partitioning rivers prove to be detrimental to the adoption of an integrated basin management system regionally. Water is not the problem but integrated basin management is necessary because water is not only a stress for development, irrigation and energy but is interlinked with environmental hazards. The snow melting of glaciers due to climate change can result in unseen issues.

The study identified certain reasons that proved detrimental to the evolution of the integrated basin management system in the region: one limited interstate and regional

dialogues as states often threats each other to revoke treaties but paid the least attention to dialogues as trust and confidence-building measures to ensure water security; second limited knowledge sharing as states take protectionist measures for knowledge sharing; third minimum basin level cooperation due to traditional security concerns of nuclear (south)Asia; fourth limited information disclosure of national water management projects like dams and canals; fifth access to information a tangible need for water cooperation and security is missing due to state-centric policy on water resources. All these issues indicate problem-solving in the adoption of a liberal-functionalist approach based initially on water information-knowledge sharing among technocrats later enhanced in other areas of broader cooperation amongst states of the region.

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