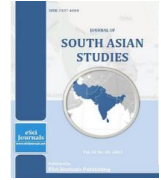




Available Online at eSci Journals
Journal of South Asian Studies

ISSN: 2307-4000 (Online), 2308-7846 (Print)
<http://www.escijournals.net/JSAS>



WAY FORWARD TO SOUTH ASIAN WATER CRISIS

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ABSTRACT

South Asia is an enriched land with abundant manpower, highest glaciated mountains, long blue water coast lines, flowing rivers, vast plains, natural gas reserves etc but unfortunately, the major portion of inhabitants of this region is living below the poverty line and suffering with crises like shortage of food, energy and water. Judicious utilization of its natural resources is the only way to alleviate the basic lives of masses. In South Asia, the state's dependence on water becomes the utmost factor in economy which ultimately assists in achieving the goals like self-sufficiency in food stuff and power production. Consequently, the water issue has given rise to estrangement in South Asia due to heavy dependence on water sources which mainly originate from Tibet and then flow through Indus and Ganga Basins. This study describes how countries like India, China and Nepal while claiming ownership of water resources have manipulated power politics, giving rise to the phenomenon of hydro politics. On the other hand, India thinks China is manipulating water sources and creating shortage of water for her population. She is also interested in redefining or "reimagining" the Indus Water treaty. The water crisis is also a result of mismanagement, unjustified distribution of resources and violation of implementation of existing treaties. In short, the paper is aimed to diagnose and explore water issue and suggest plausible solution.

Keywords: Water crisis, Indus Water treaty, manipulating water resources, mismanagement, South Asia.

INTRODUCTION

South Asian masses are fighting the war of their survival as their governments, instead of trying to alleviate their perpetual poverty and hunger resulting from slow growing agriculture sector, are forced to spend huge amounts on defense because of interstate conflicts. The rapid agriculture growth can act as a catalyst for boosting the economy only when growers have sufficient sources in the shape of water, land, fertilizers and equipment. It is notable that South Asia, despite its large reservoir in shape of manpower and natural resources, is regarded as one of the most piteous and poorest area around the globe (Cheema, 1980).

Unfortunately, despite availability of sufficient water resources in the region, Pakistan, Bangladesh, Nepal and even India are facing water and energy crises due to unjust distribution and inflexible Indian water policy. Moreover, states like Afghanistan and China are also facing same problems of energy and water scarcity.

Water is a very basic need for any country to bring prosperity especially in agrarian economies. The agrarian impoverishment and food anxiety has been compounded thus reflecting a downward trend all over the globe. The countries of this region comprise half of the global population with the growth of 1.4% per year from 1990 to 2010 which, according to the trend, will be slowing down to 0.7% per year in 2020-2025 (United Nation "Food and Agriculture Report", 2010). The metropolitan population will increase from 37% to 51% during the said era. In addition bulks of the worlds' deprived people are living in this area; about 829 million out of the world's total of 1.2 billion are living on an average of just one dollar a day (United Nation "Food and Agriculture Report", 2010).

The disturbing aspect of the problem is that despite having maximal manpower and natural resources, the South Asian countries have not been able to get worthwhile growth in their agriculture sector. Probably, it could be due to the unequal distribution of natural resources like water, ambitious desire for natural resources by powerful countries, mismanagement

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regarding utilization of already held water resources and non-development of water reservoirs. In fact powerful countries do not realize that their wishful thinking of attaining supremacy would not be acceptable to the other regional countries, and could lead to future regional conflicts.

Importance of water in international and regional politics has risen since modern economies by and large depend upon agriculture sector too. Thus, promotion of agriculture sector is connected to the security of irrigation system. Moreover, water also produces hydro energy, which helps in generating others forms of energies. If water security is ensured on the basis of implementation of existing water laws and agreements, the regional stability could get strengthened. But at the same time if water security gets threatened; the social and economic sectors of security can come under strain. Similarly, if political solution of the issue cannot be found, it paves the way for military clash. Egypt-Israel conflicts of 1956 and 1967 are examples of the same. Therefore, security of water energy in the case of South Asia is one of the main geopolitical considerations.

We also know that newly industrialized countries of Asia, especially China, India, Pakistan, Bangladesh and Nepal would be great consumer of byproducts of hydro energy, which depends on water resources. The diversion of water courses and construction of hydro projects without taking care of each other's interest is, on one hand causing ecological changes and environmental problems while on the other hand has put the regional peace at stake. Hence, there is a need to resolve the underlying issues and pave ground for regional harmony between South Asian countries.

Indo-Pakistan perspective in the context of water conflict needs more attention because both the states have already fought three major wars. Instead of seriously adhering to the already agreed water treaties between the two countries, India appears to be more interested in "reimagining" the water issue. It is also a known fact that as yet, Pakistan has not been able to fully mobilize resources for construction of new dams for irrigation of land and generation of hydropower. Managing the ever present threat of heavy floods in summers also necessitates construction of new reservoirs at the earliest. South Asian countries have abundant natural resources but water is a basic necessity for promotion of agriculture sector and generation of Hydro energy, essentially required by developing South Asia. Thus, aim

of the present study is to avoid future war while suggesting ways of resolving the issue with special emphasis on Indo-Pakistan conflict.

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PART-I

SYNOPSIS OF SOUTH ASIA AND ISSUES

Features of Asian Region: South Asia consists of Bangladesh, Nepal, Pakistan, Bhutan, India, Sri Lanka, Afghanistan and Maldives. Economies of major countries like India and Pakistan revolve around agriculture sector. South Asia has nearly continental dimensions with an area spreading to two million square miles. The distance from extreme North to South is approximately the same, just slightly more than 2100 miles (3379) and from extreme North to South is approximately the same, just slightly more than two percent of the total earth surface (Abbasi, 1991). About 1.3 billion people live in South Asian region, which is overall 20 percent of the global population i.e. 6 billion. Annual population growth of three major countries (India, Bangladesh and Pakistan) ranges between 1.6 to 2.5 percent, which has resulted into 50 percent population increase in each country since 1980 (World Development Report, 2010). It is highlighted here that overall water requirement is increasing due to increase in per capita water requirement of each state. Out of total 192 countries Pakistan stands at 114th position in terms of per capita availability of renewable water as well as ability and commitment to improve the situation. India is facing acute water shortage and stands at 133rd position for per capita availability of water, whereas the neighboring China is at 128th and Afghanistan is at 112 (Mehub-ul- Haq Institute, 2001). South Asian countries are predominantly agricultural societies and with the rise of inhabitants, agriculture demand is also rising. Use of land for agriculture is also decreasing as people move from towns to cities. Moreover, water pollution is adversely affecting the purity of available ground water.

By 2015, South Asian population will rise to 1.2 billion: Pakistan 193 million, Bangladesh 160 million and Nepal would be touching the figure of 32 million. Thus it can be stated that increase in population will boost the per capita need. Major river systems, the Ganga, Brahmaputra and Indus, are being shared by most of the regional

countries. India is the largest country with the 76 per cent area of South Asia (Dahal and Panday, 2006). Its size, population, resources, economic development, scientific advancement requires colossal amount of natural resources in the shape of raw material, hydro power and water to cater for her agro based industry. It is also mentionable here that most of the population is living below the poverty line. According to Dr. Abdul Kalam, poverty is a direct correlation between population and ecological exhaustion (Kalam, 1998). In this connection, Homer Dixon stressed that poor countries are more vulnerable to environmental changes hence they are more prone to environmentally induced conflicts (Dixon, 2007). In this regard we can take the example of Indo-Bangladesh Water issue.

As, two regional nuclear powers (India and Pakistan) have not only fought wars over Kashmir and Siachen. The water issue is linked with the Kashmir dispute too since almost all rivers originate from Indian held territory. Moreover, both nuclear powers, located in a tensed security environment where super power like U.S. and others NATO are operating against Al-Qaida and others militant Islamic groups. Thus, any small incident has the potential to take Pakistan and India to the brink of war. The military escalation in year 2001 is a case in point where an attack on Indian Lok Sabha leads to heightened tensions between the two neighbors. Again in 2008 India was determined to carry out air raids on Pakistan after the Mumbai attacks.

This in view, the security situation of India, Pakistan and Afghanistan has also been incorporated in focus of the study. In short, there is a dire need to resolve the most dangerous issue in an amicable manner.

Acquiring water resources in South Asian countries is not only an economic matter; it has far reaching strategic and political dimensions. The dominant factor in this struggle for hydro energy security is geography. Therefore, this study is conducted within the framework of geopolitical school of realist thought. Geopolitics has been explained as, "A theoretical hypothesis in which states' foreign policies are determined by their localities, natural resources and physical surroundings" (Kegley et al., 2008). Thus, South Asian states need to set up a platform to resolve their conflicts over natural resources, for creating regional harmony.

Significance of the Issue: South Asian region is thickly inhabited and its population will increase by another one-fourth by the year of 2025 (Huibers and van Lier, 2008).

But over the period of time scarcity of water resources due to population increase and utility of hydro energy for industrial growth have given rise to claim of natural resources or question of unequal distribution of resources among the states. Moreover, South Asian countries' economies are heavy dependent over agriculture and quality growing of agriculture sector depends upon fresh or more precisely non-saline water. Presently, just 3 % of the world total water resource is clean, of which about one-third is unapproachable. Water is the basic commodity for the agriculture, domestic need and protection of environment (Huibers and van Lier, 2008).

However, forceful control over regional significant geographical resourced enriched locations for the growth of agriculture sector aiming by one of regional power (India) would direct the region towards war. Thus, it would not be wrong in concluding that the problem of unequal distribution of river water has strained the relations in case of India, Pakistan and Bangladesh, in which India is enjoying the status of the upper riparian. However in case of Nepal and China, India is a lower riparian state. Demarcation of boundary line commission of 1947 introduced a new dimension when British rulers defied all logic of geography and unduly favored India in division. India used power politics and after partition, on March 31, 1948 East Punjab government suddenly cut off the water supply to Pakistan. It would not be wrong to say that at that time sole Indian purpose was to merge Pakistan back to Hindustan. All India Congress Working Committee (AICC) in a resolution soon after the announcement of the partitions said, "Congress has consistently upheld that the unity of India must be maintained, geography and the seas fashioned India as she is, and no human agency can change that shape, or come in the way of final destiny" (Slamat, 1992). Again the Hindu Mhasabha revealed their announcement on the resolution while saying: "India is one and is indivisible and there will never be peace, unless and until the separated areas are brought back to Indian Union and made integral parts there of" (Hasan, 1966).

In South Asia rulers are facing difficulties in improving the life standard of their countrymen due to two interlinked factors like increase of population and shortage of food. The hunger is one of the most significant factors which changes human characteristics and gives birth to militancy too. Thus, state has to boost the agriculture sector to overcome the militancy which

results due to the shortage of food. But the country like India has given a new spectrum to the use of force while employing water as tool of war. She has the intentions of converting her neighborhood's land into ruins and deserts through inundation and dribbling of water. India has planned number of dams in blatant disregard of international water pacts. It is also a common regional perception that any future war would be on water issue because none of the country would like to become barren as result of water terrorism. Therefore, it is evident from the prevailing environment that if South Asian Countries fail to settle the water disputes, the resulting food insecurity would demonstrate grave threat for the global peace. In 1995 Ismail Seragldin, a top official at the World Bank pin pointed the water crises and stated that: "The wars of next century will be over waters". Thomas F. Homer Dixon also supports the danger of war over water and stated, "Non-renewable resources, such as oil, bear a high potential for conflict than renewable resources" (Dixon, 1994).

It is further stressed that farming is expected to continue to play the central role in achieving sustainable food security and poverty alleviation by; increasing the foodstuff, improving productivity, expanding non-farm employment and enhancing trade and overall capital formation. However, the capital rise is only possible if water resources are available and accessible to the countries. But in reality, development of any country revolves around water since it's equally good for agriculture, industrial and sectors apart for the daily public needs. Unavailability or shortage of water might lead to ecological dilapidation, erosion of top soils, pollution, starvation and low yield of food.

The third world countries which are already suffering with depleted economies have to take the necessary measures for their continued existence. Water issues of South Asian countries though have been taken up at various international fora but are still unresolved or pending due to disinclination attitude of India towards the execution of already concluded international accords. Indus Basin Water Treaty 1960, Indo-Bangladesh water dispute over the Farakka Barrage (The Ganges Water Treaty) and the Indo-Nepal dispute over the Mahakali River are the glaring examples of Indian refusal to abide by the international agreements. The continuous Indian denial is also endangering regional peace. It is notable here that India has been using water as blackmailing tool against Pakistan, Nepal and Bangladesh. The Indian rulers

exploit this natural resource through blocking the flow of rivers which originate from the Indian controlled territories and claiming their rights of using Nepalese Origin Rivers too.

In short, there is need to analyze the reasons for the water crisis and propose immediate and long-term measures to deal with the situation so that future conflict in South Asia could be avoided. This study is significant in a sense that it addresses the issue in taking a new dimension of the problem in power politics and hydro politics in geopolitical context.

Water Basins of South Asia: Snow covered mountains ranges are primary sources of South Asian Rivers. These water streams are expected to be affected considerably due to climate changes. Water delta is enormously imperative in the Indus basin and important for the Brahmaputra basin. The delta, climatic changes, availability of quantum of water of Brahmaputra basin is different from Yellow Rivers and Yangtze, Ganges. A considerable disparity between basins does exist in the extent to which climate change is predicted to affect water availability and food security. Some more details regarding Indus, Ganga and Jamna Basins are as under:-

Indus River Basin: Indus River originates from Tibetan heights, and merges with Arabian Sea after covering almost course of 3200 km while passing through Pakistan and India. And total area covering by Indus is over 1, 13800 square km ("Asia: International River Basin Register", 2012). Thousands of years ago, the Indus basin was used to be vital element of the life for the ancient civilization of Mohenjo-daro and Harappa. Agriculture was a main form of source of revenue, and the Indus River was a productive region. However, back in 200 years, the British's has promoted agriculture in Punjab (which means Land of Five Rivers) and also developed irrigation system while diverting the main tributaries of the Indus into a web of irrigating canals, and the Punjab converted into a rich agro based of the unpartitioned India. The average year flow of Indus River System is 207 BC. It is the 6th largest river in length and 21st largest river in terms of discharge.

Ganges and Brahmaputra River Basin: The Ganges and Brahmaputra starts from the heights of Himalayas and passes through Nepal, India and ultimately flow down in Bangladesh where they discharge into the Bay of Bengal. It is largest river basin in South Asia and covering course of almost over 1.6 million km. The Bhagirathi and Hooghly are smaller rivers, which flows

through the port of Calcutta before moving in to Bangladesh. Major portion of Bangladesh, is covering by this delta system. Notably, half of the country's GDP is based on agriculture, and 120 million inhabitants using rivers for boosting their country's economy. Bangladeshi geography and topography make it extremely dangerous to natural disasters. Monsoons and Typhoons turn out several floods almost every year.

During May and January the dry seasons affect the water level of Ganges River and causes adverse effects on agriculture and fisheries sectors. Bangladesh also alleges India to divert the main course of the river for her own usages. Therefore, the relationship between Bangladesh and its western neighbor, (India) has been barely cordial, and numbers of talks have been held over the allocation of Ganges water between the two states.

Table Distribution of the catchment area of Indus River Basin

Country	Drainage Area (million hector)	Percent area of Country in the basin (%)	Remarks
Pakistan	59.80	52.48	-
India	38.32	34.35	1600 km ² Indian `control, claimed by China
China	8.58	6.83	9600 km ² Chinese control, claimed by India
Afghanistan	7.21	6.33	-
Total	113.91	100	-

Source: Khan, 2012. (Estimated data obtained from government of Pakistan was provided by the interviewee).

Major South Asian Water Issues: The South Asian rivers systems drain an area stretching about 3,000 km in East to West direction and 800 km in North to South direction. (Umesh Parajuli et al., 2002). India and Nepal want to exploit huge hydroelectric power-generating potential, whereas other countries want better water management.

Indo-Bangladesh Water Issue: The Ganges, Brahmaputra and Meghan are the largest river system of Bangladesh (Shahzad, 2011). The construction of Farakka Barrage by India has reduced water flow in Ganges. The 1977 agreement allocated 63 percent of the dry season flow of Ganges to Bangladesh. However, India did not renew the agreement and has cut the flow of the Ganges at will. Water disputes remain a serious source of conflict between these two countries.

Indo-Nepal Dispute: Three of the Ganges tributaries, namely Koshi, Gandak, and Karnali (Ghagra) cross the Indo-Nepal border. Although both the countries recognize Nepal's right of prior use of water, still Nepal is unable to use waters from some of these rivers due to India's coercion. This has caused serious concerns in Nepal, especially the farmers who are directly affected by Indian manipulations.

Afghanistan-Pakistan Perspective: Pakistan shares water with Afghanistan. Accumulated discharge of River Kabul and its tributaries is more than the inflow of River Jhelum. Afghanistan is planning to build dams on Kabul and Kunar rivers and India is offering technical help in

this regard. Both rivers are the main enters in Pakistan and join Indus River at Attock. Any construction of dams on these rivers will affect the water flow into Indus River would substantially go down.

India - Pakistan Conflict: Non-implementation over Indus Basin Treaty in true letter and spirit has threatened the regional and global peace and serious attention to resolve the issue between two rivalry nuclear states. Both the countries have conflict over the construction, alterations of various barrages and dams over Rivers Chenab and Jhelum. In short, we can say that the International legal system has changed and evolved through modification in the United Nations but still needs to be revised according to the changing political situation or emergence of new states. The recent decision of ICA in the case of Indo-Pak water conflict over Kishangnaga and other projects have not been well received by Pakistan. According to the decision ICA upheld India's right to divert water from the Kishanganga hydroelectric project (KHEP) (Z. Hasan, 2012). In a partial award ICA permitted on 18 February to divert a minimum flow of water from Neelum/Kishanganga River for power generation (Bokhari, 2013). Reportedly, India got benefit of the situation and started construction of three other projects over River Chenab which will likely to further deteriorate the availability of water to Pakistan ("Water Row: Govt. objects to Indian hydel projects on Chenab", 2013). Further improvement in international legal

system can be done while carrying out some modification in the charter of regional organization like SAARC.

India's Latest Policy Document: India's latest thinking on Trans-boundary waters is amply reflected in a recent report by Institute of Defense Studies in India (IDSA) 2010 on water security which elaborates the increasing attention to water issues within a broader geographical context (Sisodia et al., 2010).

The report, while reviewing India's water relations with her neighbouring countries, notes that if not managed well, riparian issues will lead to increased conflicts between the neighbours. It calls for a paradigm shift from the historical supply side considerations in domestic and international agreements, and past investments focused on water sharing among competing interests, to one that focus on benefit-sharing. It stresses that rivers can no longer be viewed as a "soft-component" of a country's foreign policy (Sisodia et al., 2010). Rather they must be seen as intricately linked to development goals and domestic needs impacting bilateral relations.

The report stresses the dire need to re-evaluate existing treaties and reframe them based on current hydrological knowledge and future mutual needs besides adopting sensible riparian policies and 'healthy rivers' schemes as their importance is not less either. India's geographical contours place multiple upper, middle and lower riparian systems within its borders – thus placing it at the epicenters of riparian politics. Therefore, collaborative riparian management will be crucial for setting many of the water induced conflicts in the region; greater hydro-diplomacy both internally and across national borders – will need to balance the region's growing water needs with larger security concern. Moving forward with particular thinking or mind set can never see the end of the path (Sisodia et al., 2010).

The complexities of the issues, lack of political wisdom and will, positional based stands, high level of mistrust, linkages to Kashmir issue, negative public perceptions and deep buried hostilities offer formidable obstacles to cross. Any move forward will require a deep analysis of the mind sets on both sides. India's past history, its respect for already executed treaties and its recent thinking have to be taken into consideration whereas India suggests to adopt a paradigm shift from conflict to cooperation and from water sharing to benefit-sharing, its hegemony in declaring itself as at the epicenter of

riparian politics due to its geographical contours tantamount to a warning to other riparian countries.

India is suggesting re-evaluating the existing treaties and reframing them on current hydrological expertise and future needs. Apparently one can say, India's thinking is in line with the current concepts on trans-boundary water issues but at this point of time, benefit-sharing has very limited international experiences and relatively a new approach. It is a complex issue with multiple parameters requiring to be addressed including economic, social, environmental and political gains. Under these circumstances, the only way forward is to honestly implement the existing treaty in its true spirit rather than "reimagining" the already concluded pacts. India has to play the role of "big brother" if it aspires to be treated like one.

Part-II

IMPLICATIONS OF WATER CONFLICTS

Sensitivity of South Asia: The nuclearization of South Asia has not only brought forward the composite linkages between formal deterrence and nuclear but it also denotes a paradigm shift in conventional form of warfare. Any future conflict over water resources will have the potential to become a cause of major conflicts. In the case of South Asia, an analysis of the irritants brings water crises at the top of the list because it directly influences the economy of any country. The presence of nuclear weapons with the regional players has further increased the danger of nuclear war. Strategic nature of nuclear weapon is intended more for deterrence than war fighting. However possession of such weapons by states does have a bearing on the nature of conventional wars. The presence of nuclear weapons admonishes on the opponent and influences the conduct in battlefield. Having thus established the causes of water conflicts of South Asia, strategic concepts and emerging contours of future war, the paper will aim to establish the response parameters in the light of national interest with regards to water issue and security imperatives of Pakistan and will lay out a suitable strategy where the issue can be resolved by Pakistan and remaining South Asian countries. Agriculture has a major share in Gross Domestic Product (GDP) of Pakistan. High population growth has added further pressure on these resources. But, rivalry for water resources between the nations or within a state is growing. Moreover, the Red Crescent Society in its World Disaster Report 1999 predicts that environmental

changes including the melting down of glaciers in the Himalayas could provoke 40% loss in the flow of the Indus in the new millennium triggering new tension between India and Pakistan. Sensitivity and the gravity of the problem have also been discussed in an unofficial talk between Indo-Pakistan rulers (Zardari, 2012).

Pakistan has a low water storage capacity in comparison to India. She has only 30 days of storage capacity of water in the Indus basin. Pakistan is facing an enhanced demand for water to sustain its ever increasing population expected to grow to 197.8 million by the year 2020 (Elahi, 2012). During recent years, water sharing mechanism has also given rise to disputes amongst provinces, thus threatening national integration. Good water management coupled with equally essential power sector can yield a substantial increase in the hydro electricity generation thus a resultant boost to our ailing industry. Fair distribution, development of additional resources and better management of available water resources therefore, is highly essential to enhance national integration as well as economic security of the country.

Food and energy security are the major concerns worldwide. Growing population and consequent increase in irrigated areas is adding to freshwater scarcity globally. At the same time, the climatic changes, global hydrological cycle coupled with numerous other factors are fast turning the freshwater resources of the world into a precious and fast depleting commodity. Distribution of freshwaters is being perceived as that issue which can even mar the domestic scene of the nations, giving rise to water based conflicts within their communities. But somehow, Asian region, which produce most of food being one of the big agricultural sector, the situation is especially precarious due to persistent disagreements over the river waters.

In *Pakistan*, water plays a significant role in its economic development through irrigation, which is the mainstay of agricultural production and food security. As the country enters the 21st century, it is facing an enhanced water demand to sustain its burgeoning population likely to hit 221 million by the year 2025 (Pakistan Water Sector Strategy: 2002) (Hasan and Khan, October 2002). Ironically, poor management of existing water resources, water-sharing issues between the provinces, and increasing water demand have resulted into a shortfall of 9 million acre feet (MAF) of water, which is projected to rise to 25 MAF by 2020 ("President Musharraf's

Address to the Nation: Guilty until Proven Innocent", 2006). Uneven rainfall and Pakistan's reliance on a single river system, the most exploited in South Asia (Babel and Wahid, 2008), leaves little flexibility to obtain more water than it uses. Excessive mining for tube wells is also depleting the underground water resource, of which 36% (Asian Development Bank Report, 2007) is highly saline and the percentage is on the increase.

Pakistan has a history of water dispute with India, which usurped Pakistan's rights over the use of Eastern Rivers immediately after the independence. Indus Basin Treaty though provided some momentary respite to both the countries, yet in the long term it permanently deprived Pakistan's rights on the three Eastern Rivers. Pakistan is now facing critical situation due to the Indian violation of the Treaty. India is constraining the waters of Pakistan's Western Rivers by constructing dams and siphoning out waters from them. The country is hence confronted with multiple threats to its water resources and needs to take immediate steps to meet the challenge in the long term.

Why Nations Go for War? Water is such a commodity which directly affects the economy and has been proven to be one of the cheapest sources for provision of energy via hydrogenation. The shortage of water has given birth to the conflicts since regional and extra regional powers always tried to create hindrance in the development of third world countries. It is worth mentioning here that according to study in South Asia, the Tibetan Plateau is the source of great river systems like Indus, Brahmaputra, Ganges, Yangtze, Mekong, Huang Ho (Yellow River), Salween and Ayeyarwadi. The Plateau houses the world's fifth largest freshwater resource (5000 cubic kilometer).

Thus, history of global wars reveals that nations go to war either to fight an aggression by another state or to obtain certain objectives not attainable through political means. Energy and agriculture are two basic are directly linked, interdependent and proven as back bone of any economy. At present, about 57% of total water withdrawal and 70% of global water consumption occurs in this region, and the greatest consumers are India, Pakistan and Bangladesh (Shiklomanvo, 1998). Water is the lifeline of these agro-based societies and 70% of their rural population is dependent on agriculture, which consumes approximately 86% of water as compared to 80% globally, and contributes about 40-50% to the GDP of these nations (Shiklomanvo,

1998). South Asia is already a home to one fifth of the world population and it is projected to grow to one fourth by 2025. Hence growing population will make food security via availability of water, a major future challenge for these nations. Thus in case of failure of meeting this challenge can become the cause of traditional first war then nuclear war since three nuclear powers are connected to the under discussion issue of water. In South Asian region major cause of three wars was "Kashmir". The issue of water between Indo-Pak is directly connected with Kashmir because all most sources of rivers are located in this region. Thus, Pakistan has a fear of complete shortage of water in future. Therefore we can say that Pakistan may go for war instead becoming desert.

Indian Need of Water: India has constructed a total of 4,300 dams out of which most were constructed from 1959-990. India has been an active dam building country but lately due to paucity of funds progress of construction has been slow. India has a total water flow of 1593 MAF and has a storage capacity of 144 MAF while another 61 MAF is under construction or near completion. There are yet 107 MAF water reservoirs under consideration for construction. Besides dams, there is a system of tanks to provide minor irrigation storage in India. There are 50,000 irrigation tanks in India which account for almost 81 MAF of water storage, which is over and above 144 MAF storage mentioned above (Ghani, 2012). Since last ten years India is experiencing bitter resistance from a number of organizations on construction of large dams which has to some extent slowed down its progress in certain basins like Narmada River. Unfortunately, despite having abandon of resources as compare to her neighbouring countries, India kept on creating and fomenting water terrorism.

Water as instrument of War: Certain bottlenecks along the Rivers if manipulated can convert green lands to desert and dry to slushy. The use of water for flooding the area and creating water obstacles is one of the most crucial parts of the political situation. According to the confidential reports India has attained manipulation capability while storing water of Chenab River for 27 days (Ghani, 2012). Indian projects like Dul-hasti, Baglihar and Salal reservoirs can also lead to flood of the area above Marala head works due to the sudden harmonized releases from these reservoirs. Acquiring of water storage capacity has given upper edge to India to

store and withhold and release it during excess. Moreover the dam would cause serious setback to wheat production in Punjab, the biggest wheat producing province. The controversial projects which India is trying to undertake have far reaching implications on Pakistan with regards to Pakistan are mainly over River Jhelum, Chenab and Indus.

Similarly, India is now implementing a gigantic project, 'Inter-basin River Linking Project' to divert water from all the common rivers. This project has two components i.e. (i) the Himalayan components and (ii) the peninsular component. In the Himalayan component 14 link canals and in the peninsular component 16 link canals, all together 30 link canals will be excavated within the frame work of the project.

India in its river interlinks project aims to connect 37 rivers by 30 link canals. The total length of these link canals would be approximately 12 thousand kilometers. The breadth of the link canals have been proposed to be 50-100 miles and the depth to be approx. 6 meters.

The upstream withdrawal of water through Farakka Barrage has already triggered desertification syndrome in Bangladesh, intrusion of salinity in the inland fresh water and created many serious environmental problems including the bio-diversity loss.

In addition if India executes the inter basin river link project, then Bangladesh known all over the world as the land of rivers, fish and rice and a beautiful green land stands the risk of losing all its present day identity and also going to cause environmental changes around rivers delta. The above discussion confirms that India can manipulate water as an instrument in peace and as well in war. Water logging phenomena with the purpose of creating obstacles for the armed forces, destruction of agriculture through flooding or stoppage of water can cause a number of devastating militarily and infrastructural consequences for Pakistan and Bangladesh as well (Shahzad, 2011). Will use water as instrument of war at the time of need and can cause inundation effects on the area of her own interest (Sridhar, 2005).

Geopolitical Implications: Colin Flint very rightly gave the true meaning of geopolitics while stating that it is more than the competition over territory and the means of justifying such actions: geopolitics is a way of "seeing" the world (Flint, 2006). According to the dictionary, Geopolitics is the study or the application of the influence of political and economic geography on the

politics, national power, foreign policy, etc., of a state or the combination of geographic and political factors influencing or delineating a country or region or a national policy based on the interrelation of politics and geography (Definition of Geopolitics, 2013). Simply, we can say that geopolitics encompasses natural resources which off course include water resources. Thus unequal distribution of natural resources give birth to the conflict and if it is undermined then the same may prove security dilemma when conflict persists between two major powers. The definition also encompasses the politics of a country as determined by its geographical features. If we follow this definition then Pakistan has long border, many and diverse neighbours, absence of depth, peculiar mountain features like mountains and passes, rivers, trans-continental land routes, deserts and access to warm waters. All these lend a particular stance and bias to the defense requirement and security problems of the country. In the highly volatile and rapidly changing political environment throughout the globe, Pakistan has proven its desire for peace and stability in the region as well as elsewhere in the world.

Regional Geopolitics and Indian Hegemonic Designs:

Thus, study confirms that India is the only country which has come up as center of attention in the South Asian conflicts. She being upper riparian county is influencing Pakistan and Bangladesh while stopping water and at the same time is disrespecting energy treaties with Nepal. It would be not wrong in saying that India is using power politics against the smaller regional countries for gaining geopolitical advantages.

The Indian ambition of acquiring a regional power status enroot to achieving a world power status in the next 50 years acts as a stumbling block to a completion of Chinese designs. Indian perception and interests clash with the Chinese on regional leadership role. India aims to dominate the whole of South Asian region including the Indian Ocean and ultimately becoming a world power is well reflected by the growing strategic military capabilities and the funds made available to the development of nuclear industry and military technology. India has so far refused to be a signatory to the NPT and CTBT. This surely is going to result in an armament race between India and China and Pakistan cannot remain passive.

Irony of the South Asian Security: The South Asian security suffers from an ironical paradox, a situation in which two or more actors, seeking only to improve their

own security, provoke through their words or actions, the other side, resulting in less security all round. Therefore, uncertainty and the anarchic structure of the international system have led to a 'dilemma of interpretation' between India and Pakistan. Even if one side tries to send defensive/mitigating signals to the other, the fear of deception will dominate the other side's approach as long as there do not exist any solid mechanisms of reassurance. The core argument of the security dilemma is that, in the absence of a supranational authority that can enforce binding agreements, many of the steps pursued by states to bolster their security have the effect – often unintended and unforeseen – of making other states less secure. After the nuclearization of Indo-Pakistani relations in 1998, both states seem to be trapped in exactly such a security paradox. The nuclear 'boost' for the South Asian security paradox dates back to the 1970s. When India conducted its first nuclear test in 1974 - it is debatable if this was only for increasing its own security against Pakistan and China, or for reasons of prestige etc. In retaliation Pakistan responded strongly in 1998 and conducted five nuclear tests and thereby, nuclear technology changed the posture of India from conventional to nuclear. Kargil Issue, Kashmir conflict and Water dispute, Mumbai attack and Indian interfere in Balochistan are potential threats and a directly danger to regional and indirectly to global peace, since India and Pakistan both keep on alleging each other for domestic violence (Qamar, 2011).

Chances of Water Wars in South Asia: The major water and energy conflicts in South Asia exist between, Indo-Pak, Indo-Bangladesh and Indo-Nepal. However, minor water crises do exist between Indo-China, Pakistan and Afghanistan too. Numbers of bilateral talks have been concluded between the rival countries without resolving the issue completely. River water disputes on the subcontinent are inextricably woven into the environmental due to their colonial background. The British colonial government institutionalized deforestation and sprawling and inefficient irrigation systems, and these developments degraded the land for more than a century. Soil erosion, water-logging, and flooding are among the serious problems that can be traced to the economic practices of the colonial era. After the Second World War, British India was divided into its component states, producing a sub-continent geographically dominated by a hegemonic India

surrounded by weaker states. War erupted between India and Pakistan over Kashmir at the time of partition in 1947–1948, along the West Pakistan–India border in 1965, and once again in 1971, when East Pakistan seceded from Islamabad’s control and became Bangladesh. Relations between India and Pakistan have been cause for concern for five decades, most recently during the alarming “nuclear crises” of spring 2002 and the bold terrorist attacks in Mumbai in December 2008. All these wars and conflicts resulted due to unequal division of national resources and day by day emerging as serious threat to the regional in the presence of three nuclear powers. With increase in population and industrialization, the demand of water is rising. 71% of our planet is covered by water, but less than 1% is usable freshwater. Future wars are likely to be water based due to mounting water demands by various countries sharing the common rivers such as Nile, Euphrates, Ganges, Indus and Brahmaputra. These conflicts are not likely to be restricted. Even Europe fears next war on water sharing. Without agreed upon criteria for fair ownership and distribution of such a vital resource, a two third of the world's population will be suffering water shortages by 2025. Thus we can chances say that the chances of the war between two traditional rivals India and Pakistan are much more than any other region of the world. India and Pakistan are being forced a solution on Kashmir issue with a sweat talk of ‘Road Map for Peace’ in Kashmir. Pakistan cannot afford the traditional war because she doesn’t have strategic depth. Its stamina of war is just for 7 days where as India has 45 days war stamina. Therefore Pakistan cannot afford conventional war and will go for nuclear war.

PART-IV

WAY FORWARD

Mechanics of Conflict Resolution: Conflict resolution is the process by which states resolve their issues either between themselves or through arbitration by other states/players. The settlement is the only answer which could avoid the nations from landing into war but of course during the settlement processes every state keeps her interest in mind. Historically, water issues have the potential to acquire dangerous dimensions. Numbers of bilateral talks have been conducted between India and her neighbouring states of Pakistan, Bangladesh, Nepal and China on the issues. International fora though tried to resolve the issues but somehow

failed to manage /settle the conflicts. Recently, India and Pakistan have been agreed to devise some regional mechanism consisting of international experts for resolving the water issues of South Asian countries, which can definitely prove a way forward for settling the issues.

Role of International Organizations and Laws: Water remains a basic commodity and proves to be the bone of contention amongst various races. In order to avoid conflicts the states need to acknowledge each other rights over the natural resources like water (Berber, 1959). The problem of upstream and downstream localities can turn into major problem between the states and needs effective management. Water is one of the basic factors which are essential for the growth of the economy since it is directly related to the economic factors like Agriculture and Energy. It was to secure the rights over water that the evolution of water laws took place. In this context F. J. Berber explains the origin of Law, “It is only in the fifty years since the increased development of hydro-electric power and since the introduction of systematic irrigation planning for the large arid areas of Asia, Africa and America that water relations between states have come to form an extensive legal problem” (Berber, 1959).

The development of water laws have taken decades of legal growth. Like all other kinds of international law, it encompasses customs and principals which have been interpreted by academics and refined by jurists, national governments, parliaments and social progress (Eckstein, 2011). It has been stated that development and evaluation of International Law started after World War I. Later on, the organs of International Law have helped in presenting and framing of structuring of worldwide water laws, intensive utilization of water and universal strategy which could be useful for the watersheds (Wolf, 1999).

Major Findings:

- **South Asia is facing acute shortage of Energy:** Outcomes of the analysis of the issue reveal and prove that South Asian countries are facing scarcity of water and hydro energy which is very essential to boost their agro based economies. India mainly considers China, Nepal and Pakistan as hurdles in her way of becoming regional economic power because of obvious reasons; Firstly, China and Nepal are upper riparian countries and can manipulate water flowing down to Indian Territory. Any stoppage or decrease in flow of water by

China or Nepal can cause devastating effects to Indian industry, power generation and agriculture sector. Secondly, China after disintegration of Soviet Union globally has emerged as second super and one of the leading economic powers. Indian past experience about China forced her to reshape her foreign policy in the light of prevailing geopolitical challenges.

- **Geographical Disadvantage:** Pakistan and Bangladesh are lower riparian countries. They believe that India is a main barrier in their growth of agriculture sector and generation of hydro power. Moreover, prevailing security environments do not allow Pakistan to import power energy, gas and oil from Central Asian countries which are the alternative of hydro energy. Notably, Pakistan spends major portion of her budget in importing Furnace Oil which is an essential element of power generation.

In fact, insecurity and instability in Afghanistan, Pakistan and Bangladesh are as the result of Indo-US collaborations and hypocritical policies. Pakistan, India, China, Bangladesh, Nepal and Sri Lanka should announce the construction of a new block for the peaceful and amicable solution of ongoing conflicts. They have must know that elevation of human lives and development is only possible if they consolidate and reestablish their relationship while redefining foreign policies, removing bugs and reorientation of domestic policies. It is also a known fact that geographic location is giving upper edge to Pakistan to play a dominating role in South Asia. She cannot accept Indian hegemony in the region and has good relations with China, Nepal and Bangladesh. Therefore, according to the theory, her explicit geographic location or its salient environment has a particular bearing on its political status, history, institutions, and relationship with other states. Adequate water resources are the requirement of booming and elevating the life of South Asian masses. But unequal distribution diverting the flows of water, carrying out illegal storages of water, construction and designing dams by violating the clauses of IWT by India emerged as some of the main hindrances in improving upon the agro based economy of South Asian countries. Water issue in the case of Indo-Pak is also linked with Kashmir that remained the root cause of three wars among two neighbours. Emergence of India and Pakistan as nuclear powers after 1998 has given another dimension to the power and war phenomena in South Asia. Any serious nature of issue can lead firstly towards

conventional war and later on the same conventional war can be turn into nuclear conflict (Anjum, 2012). Moreover, water conflict came out as a serious threat to regional and global peace due to the involvement of South Asian countries. Presently, it's being undermined and need wholehearted global and regional efforts to readdress it.

India and Pakistan lakes trust on each other. They fought three wars over Kashmir issue. Major rivers of Indus Basin originate from the conflicted zone of Kashmir. Both the countries have always shown reluctance in permitting the inspection of under construction projects on the pretext of sensitivity of defense areas. The same problem persists in the cases of Bangladesh and Nepal since they are also pointing out their fingers towards India and allege her for not implantation of existing agreements on water and energy issues.

- **Diversion of Rivers Flow affects Environment and River Biodiversity;** India during low flows diverts almost 100% of the waters of three eastern rivers leaving vast stretches of land in Pakistan are completely dry. Bangladesh has also in the opinion that India has violates the International River laws which resulted into ecological changes of affected areas of Ganga basin. Whereas according to the international laws environmental flows and mainstreaming rivers health is mandatory for the riparian states. IUCN, WWF, GEF, UNEP, UNDP and many other organizations are strongly advocating the stated views. Pakistan can raise this issue internationally with these organizations (Anjum, 2012).

RECOMMENDATIONS

1. Distrust regarding data exchange must be reduced. Satellite based data collection system should be installed by both the countries to gather real time data information which should be shared efficiently. Efforts should be made to hold bilateral talks and remove the trust deficit to settle the outstanding water issue among South Asian Countries (Tariq, 2012).

2. Incidentally, timing of storage for flushing sediments allowed to India is crucial for Pakistan's agriculture. This should be resolved amicably with the help of bilateral talks. The process would further ease up once real time data becomes available. Otherwise, the multiple hydropower stations on the western rivers with cumulative storage can impose major reductions on water availability in Pakistan during critical planting season.

3. The timings of water discharge are a crucial issue since hydropower does not consume water. Agriculture in Pakistan depends not only on quantity of water coming but the timings also as it is needed most in the initial periods during the planting season. India could increase low-flows during the critical planting season with significant benefits to Pakistan and little impacts on power generation in India. This would only be possible under normal and trustful relations.

4. Currently, there is an uneven playing field. The Institute of Defense Studies in India has clearly termed India as the "epicenter of riparian politics". India is the regional hegemony in the upper riparian who has all cards in her hands. This asymmetry means that the headworks must remain in India. India hence needs some daring and unprejudiced Indian scholars who realize and explain to the public why this issue is critical for Pakistan and others South Asian countries.

5. If there is goodwill, there are multiple ways in which the existing treaties could be maintained. If not both countries would be dragged into an unending processes of litigations. Consequently, India is advocating and interested in the "reimagining" of IWT instead of carrying out implementation of treaty in true letter and spirit. Hence, she is looking for grey areas in the treaty which is having negative impacts on Pakistan thus leading towards serious conflicts.

6. Discussions on IWT, between India and Pakistan, should be delinked from historic grievances especially from the other Kashmir related issues, both sides must show sign of patience and statesmanship and move forward considering water as a catalyst for development and not cause for conflicts.

7. Pakistan and Afghanistan have concerns over the issue of the usage of Kabul River since Afghanistan intends building dams over it. Notably, Kunar River which originates from Chitral (Pakistan) after joining Kabul River abandons north east of Jalalabad (Afghanistan). Similarly River Kabul (Afghanistan) joins Indus at Attock.

Thus, both the countries should evolve some strategy to develop the water resources and construct the dams to elevate the life standard of both nations. Both the countries should also protect the historical rights of Kunar and Kabul rivers on water uses. This is also a priority area where Pakistan must initiate dialogue with Afghan Regime.

8. Earlier, water Issue has not been reflected in the

charter of SAARC due to inflexible Indian approach. However, lately SAARC platform has started discussing the issue but with much less intensity and the weightage than the issue actually deserve. Thus, there is a need of revision the charter of SAARC for incorporating all sensitive nature of issues like water.

9. The settlement of issue be timed, overshooting of timings should allow the affected country to go for arbitration through third party earmarked by water issue resolving bodies under UNO charter.

10. In the Flood 2010 more than 1,800 people died and over 20 million became homeless in Torrential monsoon rains really reeled out the life of affected area flood proved so far is one of the major natural disasters of history of Pakistan. In this regards, the Former Prime Minister, of Pakistan Yousuf Raza Gilani, stated that Pakistan faced challenges similar to those during the 1947 partition of the subcontinent when as many as 500,000 people were killed. Consequently, enormous loss of life, massive destruction to property, ruining towns and villages, smashing industrial machinery and shattering power plants made the country's functions freeze.

CONCLUSION

In South Asian region territorial and water disputes are very much interrelated and need particular attention. The water conflict is the major problem which influences the remaining regional issues too. The world community remains concerned over water conflicts since it could be one of the major causes for future wars. Chances of conversion of traditional war to nuclear war increase manifold since the rivals of South Asia are nuclear powers. Pakistan and China always tried to avoid war over water issues despite knowing that India never paid any heed to the demands of her neighboring countries. Continuous violation of international water laws by India has put the regional countries' interests at stake. Pakistan and Bangladesh have alleged India for using water as instrument against them which resulted into shortage of water and cause of environmental changes in the area. Pakistan also alleged India for helping Afghanistan to build dams and headwork's to control the Kabul River which is one of the major sources of water for Indus River. Similarly India assumed that China is playing with water and creating shortage of water for her population. She is also interested in reimagining of the treaty over Indus Waters.

A point to be noted is that good geopolitical

management however, is only possible when countries successfully manage their myriad domestic water challenges. Currently complex national level issues of food, water and energy tend to be addressed in a cylindrical fashion by sector focused ministries when cross sectorial analysis and solutions are urgently needed. Pakistan therefore, needs to address its domestic water challenges seriously in an integrated and coordinated manner. Every drop of water needs to be utilized most judiciously to achieve more food, more value and more jobs. Pakistan needs an immediate "course correction" in managing its national waters, else its position on trans-boundary negotiation will remain on weaker wicket. Over the last 32 years makes Pakistan's case extremely difficult for securing any international support. Pakistan is also one of the few countries in the world which does not have a National Water Policy (Shah, 2011).

South Asian region is strategically and politically very significant; therefore, it has become an arena of geopolitical rivalries. Advancement in industrialization along with rising population growth has made issue of energy security highly significant in geopolitical and geostrategic calculations. Global competition for securing affordable and dependable sources of energy has interlinked politics with energy security and decisions regarding the latter are taken in geopolitical context. India, Pakistan, Bangladesh and China have already been passed through the open wars and border conflicts. Reality is that out of revealed countries China, Pakistan and India are nuclear powers and key to the global peace lies with better relations in these Asian nuclear powers. Thus, priority should be given to the resolution of conflicts for a peaceful co-existence.

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