WATER SECURITY IN SOUTH ASIA: CHALLENGES AND PROSPECTS

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Abstract

This paper explores the issue of water security in South Asia in the context of the non-traditional security framework. The dynamics of security have witnessed a considerable change in the post-Cold War era. This paper advocates for a broader and more comprehensive approach to understanding national and inter-state security in holistic terms rather than understanding it solely in traditional military terms. The paper attempts to substantiate the comprehensive security approach by analysing the increasing water scarcity between India and Pakistan as an emerging inter-state security threat in the South Asian region. The concept of water scarcity revolves around the depletion of water resources around the world. The water resources of the world are depleting with the passage of time and various factors responsible for this depletion. This paper argues that the major factors behind water scarcity in South Asia are rapid population growth, the process of industrialisation, mismanagement of water resources, climatic changes, global warming, etc. The paper suggests that for regional and national security and stability, water-related aspect of security needs due consideration.

Keywords: *water security, non-traditional security, comprehensive security, water-wars, water-cooperation, Indus Waters Treaty.*

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جنوبی ایشیاء میں تحفظ آب: مسائل اور امکانات

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خلاصہ

اس تحریر میں جنوبی ایشیاء میں غیر روائیتی حفاظتی حصار (سیکورٹی فریم ورک) میں پانی کی حفاظت کے مسئلے کا جائزہ لیا گیا ہے۔ سرد جنگ کے خاتمے کے بعد سلامتی کے محرکات میں ایک معقول تبدیلی دیکھی گئی ہے۔ یہ مضمون ایک ایسی کوشش ہے جس میں تجزیہ کیا گیا ہے کہ جنوبی ایشیاء کے خطے میں پانی کی کمی پاکستان اور بھارت کے مابین سلامتی کے حوالے سے ایک ابھرتا ہوا خطرہ ہے۔ یہ تحریر وکالت کرتی ہے کہ ایک وسیع تر اور جامع سمجھوتے تک پہنچا جائے جو روائیتی فوجی شرائط پر قوم اور ملک کے درمیان قرار پائے پانی کی کمی کا تصور دنیا بھر میں پانی کے وسائل میں کمی کے گرد گھومتا ہے۔ وقت گزرنے کے ساتھ ساتھ دنیا میں پانی کے ذرائع کم ہو رہے ہیں اور کئی عوامل اس کمی کے ذمہ دار ہیں۔ اس تحریر میں دعویٰ کیا گیا ہے کہ جنوبی ایشیاء میں تیزی سے بڑھتی ہوئی آبادی اور پانی کی کمیابی کے پیچھے جو بڑے عوامل کارفرما ہیں وہ صنعتوں کا قیام، پانی کے ذرائع میں بدانتظامی، موسمیاتی تبدیلیاں اور عالمی درجہ حرارت میں اضافہ وغیرہ ہیں۔

اس تحقیق میں تجاویز پیش کی گئی ہیں کہ علاقائی اور قومی سلامتی اور استحکام کے لیے پانی سے متعلق سلامتی کے پہلو لحہ فکریہ ہیں۔

Introduction

In the 21st century, the dynamics of security have changed and, as a result, along with traditional security, the non-traditional aspect of security has also gained substantial significance. The non-traditional aspect of security focuses on non-traditional threats, such as food insecurity, diseases, poverty, climatic changes, population growth, and water scarcity. Among these non-traditional (or non-military) threats, water scarcity is a central and significant issue. Water scarcity includes the depletion of water resources around the world for a variety of reasons. Major factors in this context are rapid population growth, industrialisation, mismanagement of water resources, climatic changes, and global warming. Today, the scholars of security studies consider water scarcity as a challenging issue that needs to be analysed with great care and objectivity. In today's globalised world, national security is understood keeping in mind the different components and aspects of security. One important aspect of national security is a state's security in terms of its water needs and resources. Water insecurity is caused by different factors and the phenomenon of water depletion is an important driver in this regard.

For regional and national security, water-related aspect of security also needs due consideration. This paper analyses water security issues in South Asia within the non-traditional security framework. It is divided into three main sections. The first section presents a review of the existing body of literature on the subject and the conceptual debate around it. The second section elaborates the challenges to water resources in South Asia. The third section discusses water security in the case of Pakistan and India.

Literature Review

Today, the world is facing water depletion crises due to recent trends of climatic changes, rapid growth in population, processes of industrialisation, energy needs, and rising global temperatures. This

depletion in the freshwater resources is referred to as water scarcity. Water scarcity not only has serious consequences for human well-being but is also linked with regional security and stability.[1] Water resources once exhausted cannot be regenerated.

Terrestrial organisms (living beings) use a very little amount of the existing global water resources.[2] The world's freshwater resource is finite because 97.5 per cent of the world's water is salt water and only 2.5 per cent is fresh water, roughly 99 per cent of that freshwater is either trapped in glaciers or located in water tables that are too deep to access.[3] The rapid population growth of about eighty million a year is also negatively affecting the demand for freshwater resources.[4] The issue of global warming also has its share in the problem of water scarcity. With the rising temperature, drastic climatic changes like glacial melt, floods, droughts, and rise in sea levels can be expected.

In the 21st century, the non-traditional security experts link water security with national security. With growing water depletion, competition among states to have access and control of water resources would also intensify. Moreover, there is a possibility that this competition might transform into intra-state and inter-state conflicts. There are about 263 trans-boundary river basins and many trans-boundary aquifers on which more than 3 billion people depend.[5] The literature on inter-state water sharing mechanism can be classified into two broad categories. One is the water war rationale, which argues that future conflicts among states will be related to water resources sharing. The second perspective is water cooperation school of thought, which argues that water resources sharing will promote long-term cooperation among states.

According to the dominant water war perspective, the wars of the 21st century would be fought for water resources. The then UN Secretary-General Boutros Boutros-Ghali argued in 1991 that the "next war will be fought over water, not politics."[6] Similarly, Ismail Serageldin, the first chairperson of the Global Water Partnership said,

"If wars of this century were fought over oil, the wars of the next century will be fought over water—unless we change our approach to managing this precious and vital resource."[7] Ban Ki-Moon, the former Secretary General of the United Nations, has expressed his concerns about the growing water depletion problem in the world. While addressing the World Economic Forum in January 2008, he said, "A shortage of water resources could spell increased conflicts in the future. Population growth will make the problem worse, so will climate change. As the global economy grows so will its thirst. Many more conflicts lie just over the horizon."[8]

The proponents of water cooperation rationale believe that water resources sharing leads to cooperation among states. Aaron Wolf of Oregon University, on the basis of data, maintains that the relationship between water scarcity and war is sketchy.[9] But this perception has been overshadowed by the perspective of water wars which emphasises competition for resources.

Water scarcity has been felt globally with varying degrees. Water levels are falling globally and there are many drivers and catalysts to this process. Especially, the situation in the South Asian region is alarmingly serious and critical in terms of its depletion and management of water resources. This region geographically consists of seven states including Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. The South Asian region is very complex in its nature and there are many inter-related and inter-linked political, geographical, demographic, and environmental factors making it difficult to take on the task of managing water scarcity or more broadly the issue of water insecurity as a functional issue on which there should be cooperation and participation both at intra- and inter-state level. Mismanagement of water inside states is an important obstacle in the way of strengthening the existing transnational water sharing mechanism that regulates the riparian relationship between the South Asian states. These states do not enjoy a good political

relationship with each other and, therefore, feel reluctant to have transparency in terms of water flow and water depletion. This reluctance results in mutual confusion and distrust putting strains on the functioning of the transnational water sharing arrangements. The South Asian Association of Regional Cooperation (SAARC) is not as active and dynamic as the European Union to ensure the required regional cooperation and participation in the political, economic, social, and environmental fields. Newly occurring climatic changes add to the worsening water woes of the region.

The unique problems and complex nature of South Asia make the region different from other regions in terms of its water resource sharing, making water an important issue. Water resource depletion has intensified competition among states to have control of the water resources and some scholars are predicting inter-state and intra-state water conflicts in the region. This water scarcity can be attributed to different factors, such as rapid population growth, climatic changes, trends of industrialisation and urbanisation, mismanaging of water resources inside states, outdated agricultural practices, and over-exploitation of groundwater resources. To tackle the water issues of the South Asian region understanding these challenges is very important and must be kept in mind while formulating any water policy in the region.

Challenges to Water Resources in South Asia

The gap between demand and supply of water is widening day-by-day in South Asia. The phenomenon of water shortage needs an urgent response in the region. One-fourth of the world population lives in South Asia, yet the region has less than 5 per cent of the world's water resources.[10] The water availability has decreased by 70 per cent and it has fallen from 21,000 cubic meters in 1960 to just 8,000 in 2005.[11] If this trend continues, the region might face extensive water scarcity in the approaching decades. The gap between the demand and supply is bound to rise, resulting in more competition

over water resources in the region. So water issue can be regarded as an important factor in the 21st century for the South Asian states having implications for their national policies and security.

Despite the fact that South Asian states face a grave scenario in terms of water, limited attention has been given to the efficient management of water resources. There is a lack of policies in these states that would ensure long term and efficient water management. Defective pipelines, leaky canal system, outdated agricultural practices, and a free hand to use the groundwater through tube wells are some indicators of an alarming situation. A research study suggests that it is not the deficiency of water that leads to conflict, but the insufficient way in which the resource is governed and managed.[12]

When the surface water is not available, there are two options left: either to wait for rain or to rely on groundwater.[13] In the South Asian context, the depletion in the surface water is accompanied by the disappearance of groundwater because of over-reliance on groundwater to satisfy people's needs. Pakistan has low water storage capability and this is regarded as the major reason for Pakistan's increased water losses when compared with the developed states like the US and Australia. A common feature in almost all the states of the region is their increased reliance on groundwater. In Bangladesh, 75 per cent irrigation is done through groundwater[14] whereas in India one million wells are built every year.[15] These figures show an increased use of groundwater sources. This unregulated use of groundwater resources is putting a serious strain on this form of the available water resources.

Although there is a looming threat of water scarcity, the political will to deal with the water issue is seen missing in South Asia. The political and bureaucratic elite of the region take water as a sovereign issue but actually water is transnational in its nature for which a better and viable option for the states is to cooperate. Because the rivers that cater to the needs of billions of people of the region

transcend the political and national boundaries, treating water as a political issue is very risky. Different neighbouring states of the region, while sharing the same river systems, follow, different water policies, which makes water governance weak in the region.

Climate change is also having an adverse impact on the levels of available freshwater resources and with its heavy reliance on the monsoons and snow-fed rivers, water availability in the region is highly sensitive to climate change.[16] It is a newer phenomenon and scientific investigation about the effects of climate change on the patterns of rainfall, melting of glaciers, etc. has recently started. It is believed that as a result, there is going to be an increasing water shortage and rivers are likely to turn drier in the imminent future. The South Asian region may face critical climatic conditions in the near future. Pakistan might face the risk of floods and droughts, whereas the resulting rising sea levels might have drastic consequences for the coastal areas of Bangladesh. An important impact of climatic changes is the phenomenon of glacial melts due to the rise in global temperature. As the three important river systems of the region are partially fed by waters from the melting glaciers of Himalaya and Hindu Kush, this phenomenon would first result in an increased level of water in the river systems and then following this transitional period, the level of water would start falling. The melting Himalayan glaciers, regarded as the water tower for South Asia,[17] would bring a rise in water levels, increasing the chances of floods in the region. Rising sea levels would also be a critical challenge for states like Bangladesh, Bhutan, the Maldives, and Nepal.

The risks of inter-state conflicts would multiply in the 21st century, as water ignores political and community boundaries and the decision in one place has an effect on water use elsewhere.[18] The existing transnational water management mechanisms between the states of South Asia are faced with greater strains. Three important water sharing mechanisms exist in the South Asian region and these

mechanisms are referred to as the Indus Waters Treaty, the Ganges Treaty, and the Mahakali Treaty. The Indus Waters Treaty provides a transnational water-sharing mechanism to the two neighbouring nuclear states of India and Pakistan. The Ganges and the Mahakali treaties regulate the water relationship between India-Bangladesh and India-Nepal, respectively. Bangladesh and Pakistan are lower riparians to India in the case of Brahmaputra and Indus Basins. There are already existing water issues between these states and the current water shortage would intensify their water woes, having a negative impact on their water relations. The transparency in terms of water levels and flow is missing in the region. So, when there will be a decrease in the water levels in the downstream states, they would naturally hold upper riparian India responsible for that. Pakistan has already objected to several Indian projects over the Indus Basin system and the Kishanganga dispute is to be decided by the International Court of Arbitration. India and Bangladesh share 54 transboundary rivers including Brahmaputra, Meghna, and Ganges. They are also having water conflicts, especially regarding the Farraka Barrage, the Teesta Project, and the River Linking Project.[19] There are also intra-state conflicts inside the states of South Asia between different units. Now it is clear that in the near future water conflicts in South Asia are going to be a dominant feature in the region.

The South Asian states have often opted for supply-side solutions to their water woes. The supply-side solution is based on the idea of constructing large engineering projects, such as dams aimed at supplying water from rivers to be used for multiple purposes. The supply-side strategy is just focused on the supply of water. It does not take into account how that supplied water is used. Keeping in mind the effects of water scarcity, it is now postulated by many experts that the supply side solutions should be accompanied by demand-side solutions. The demand side strategy takes into account water-conserving technologies, crop diversification, better investments in

infrastructure maintenance and wastewater treatment, and a stronger embrace of rainwater harvesting.[20] As discussed earlier, there is serious internal mismanagement of water resources in South Asia. Mistaking this mismanagement for water shortage, governments succumb to their supply-side fancies and construct more dams and reservoirs, which often results in intra- and inter-state tensions. The benefits of dams cannot be underestimated but at the same time, they are not without flaws and demerits.

Peter Gleick refers to the demand side strategy as the 'soft path'[21] in terms of water use and according to him, it is the best option in terms of tackling current water challenges. He also argues that the "hard path treats our water problems as a simple issue of getting more from the environment."[22] The hard path refers to the supply side strategy and dams are the principal instruments of this path.[23] In the 21st century, water problems can be best tackled by using a mix of supply-side and demand-side strategies to cope with worsening water challenges.

In this backdrop, it is argued that water security has emerged as a new perspective of looking at the inter-state security and interaction. Especially, in the case of India and Pakistan, the issue of water security is of immense importance as discussed below.

Water Security: Pakistan and India

According to UNESCO's Institute for Water Education "Water security involves the protection of vulnerable water systems, protection against water-related hazards such as floods and droughts, sustainable development of water resources and safeguarding access to water functions and services."[24] Water Security is a broader term. It takes into account the availability of water, access to water, and the protection and preservation of water resources. Different indicators can be used to find out the water security of a specific state. These indicators may include the per-capita quantity of the available water resources, the national and transnational management of water

resources, the effect of climatic changes on the state, and the quality of water.

According to Falkenmark's Indicators or Water Stress Index, the level of water scarcity of a country can be measured "dividing the volume of available water resources by its population."[25] If the result is 1,700 m^3 (cubic meter), the country is 'water stressed' and if the result falls short of 1,000 m^3 (cubic meter), the country is considered 'water scarce' and if the result comes out less than 500 m^3 (cubic meter), the country is regarded 'water poor'.[26] According to this Index, Pakistan has reached the threshold of water scarcity as according to the Economic Survey of Pakistan (2009-10) the per capita availability of water is 1,066 m^3(cubic meter)/person.[27] A report of the Asian Development Bank also tells the same story. In 2007, an Asian Development Bank (ADB) report stated that Pakistan was "nearly at water scarcity threshold of 1,000 cubic meters a year."[28] The report of the World Bank has also highlighted the issue of water scarcity in Pakistan. The World Bank in its report (2005) observed: "Pakistan is already one of the most water-stressed countries in the world, a situation which is going to degrade into outright water scarcity."[29] These details make clear that Pakistan can have some serious problems having a causal relationship with its fast depleting water resources.

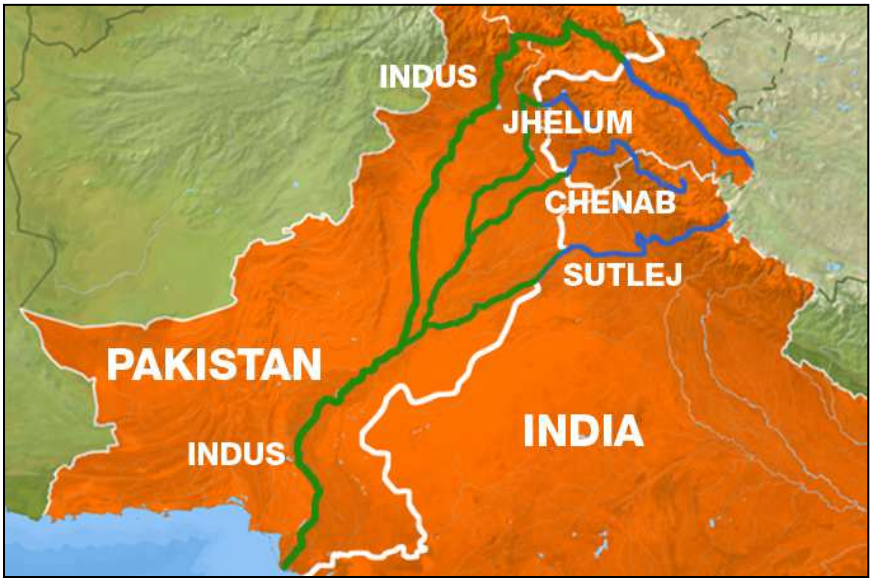
Pakistan is an agrarian country in which the agricultural sector plays a very important role. 21 per cent of Pakistan's GDP (Gross Domestic Product) is contributed by agriculture. Agriculture absorbs 45 per cent of the labour force and the life of 65 per cent of the population is directly or indirectly linked with agriculture.[30] Growing water scarcity can have negative impacts on the agricultural economy of Pakistan. The gap between the demand for water and its supply is increasing with the passage of time. In 2025, the demand for water would be 338 billion cubic meters and its supply would be 236 billion cubic meters, which suggests the shortfall of 100 billion cubic meters

in 2025.[31] It makes clear that the water resources of Pakistan are depleting and Pakistan needs to think seriously about the phenomenon of water scarcity.

In the national policy discourse in South Asia, water is not a priority area. Water is a strategic asset having an impact on human life, agriculture, economy, environment, and even national security. In this context, water deserves to be given its due place while formulating national policies. In the words of Mikhail Gorbachev, "Water, like religion and ideology, has the power to move millions of people. Since the very birth of human civilization, people have moved to settle close to it."[32] To-date, the national policies of Pakistan remained focused on the traditional aspects of security. Consequently, less focus has been paid to the criticality of managing and coping with the non-traditional security threats emanating from intensifying water scarcity. The non-traditional security paradigm puts great emphasis on the management and preservation of water resources. In the field of mismanaging its water resources, Pakistan is considered to be the worst culprit.[33] The outdated infrastructure, leaky canals, water conserving agricultural practices, lack of treatment facilities for waste-water and unregulated use of groundwater resources makes it clear that at domestic levels no serious attention has been given to on the preservation and protection of this precious rather strategic resource.

India and Pakistan share their water by a water-sharing mechanism known as the Indus Waters Treaty. Pakistan is the lower riparian vis-à-vis upper riparian India on the Indus Basin System. The phenomenon of water scarcity and the internal mismanagement of water have put this transnational water sharing mechanism under a lot of strain. This treaty has functioned quite well for the last half century but in the approaching decades, with the water challenges getting critical, it will be faced with a testing scenario. Asma Yaqoob believes that the revocation of the decades-old water-sharing treaty between India and Pakistan will have serious legal, political, and economic

implications.[34] She admits, however, that India and Pakistan will be faced with more water disputes in the future due to the lack of institutional capabilities of both the countries to absorb and analyse the physical changes and variability occurring in the Indus Basin due to climatic changes.[35] Her works illustrate that although unilateral revocation of the treaty is not an option, a serious effort is required to broaden its scope to deal with the emerging challenges of water security in the region. Transnational management of water resources would be difficult keeping in mind the current strained pattern of Pakistan's bilateral relations with India.



Source: Aljazeera.com. "Kashmir and the Politics of Water" published on www.aljazeera.com on August 01, 2011.
Blue lines show the water flow in Indian Jurisdiction.
Green lines show the water flow in Pakistani Jurisdiction.

The above-given map has shown the four major rivers of the Indus Basin system. It not only shows the importance of the Indus Waters Treaty to regulate the water-sharing on the Indus river system between India and Pakistan but also highlights the vulnerable position of Pakistan as a lower riparian state vis-à-vis India. The three western

rivers of the Indus Basin System, i.e., Indus, Jhelum, and Chenab, flow through the Indian controlled territory to reach Pakistan. Both the neighbouring countries, faced with the challenge of water scarcity, have their own viewpoints and understanding of the water scarcity challenge. India, as the upper riparian, interprets water scarcity as a phenomenon related to and affected by climatic changes, whereas Pakistan believes that increase in the number of Indian hydroelectric projects on the western rivers of the Indus System, allotted to Pakistan, is the main factor behind the water depletion downstream in Pakistan. These divergent viewpoints and the absence of good political relations between the two countries have led many people to believe that the Indus Waters Treaty would come under more stress as the challenge of water scarcity intensifies with the passage of time and India and Pakistan might be faced with more serious water conflicts in the near future.

In addition to the Indus Basin System, Pakistan also shares the Kabul River basin with Afghanistan, which roughly accounts for 25 per cent of water needs of Pakistan.[36] On Kabul River, Pakistan and Afghanistan are lower and upper riparian states, respectively. In the very initial years of its independence, Pakistan had to face a water-sharing related conflict with India that was resolved through the Indus Waters Treaty of 1960. This treaty provided a framework for both the countries to share the trans-boundary water resources of the Indus Basin. While in the context of the Kabul River basin, generally, there has been an atmosphere of cooperation between Pakistan and Afghanistan. Pakistan, being the lower riparian country has been at an advantage because of the prolonged instability in Afghanistan. Consequently, Pakistan had been getting and using an unhampered flow of the Kabul River. However, in the post 9/11 scenario, successive Afghan governments have felt the need for utilising the waters of the rivers for agricultural and energy purposes. Rahimullah Yousafzai, an expert on Afghan Affairs, believes that with the increasing water needs

of Afghanistan, the probability of water-related conflicts between the neighbouring Pakistan and Afghanistan would also increase.[37] In this regard, Indian help to Afghanistan in the construction of dams is also a matter of concern for Pakistan. Keeping in mind the growing demand and need of water resources, it is being suggested that Pakistan and Afghanistan should now come up with a written water-sharing mechanism on the pattern of the Indus Waters Treaty and efforts in this regard are underway with the help of third-party institutions like the World Bank. It is argued that the historically existing customary/traditional water sharing and cooperation will not be in a position to sustain the pressures of the growing phenomenon of water scarcity.

India and Bangladesh, as upper and lower riparian states, share 54 rivers through the three main systems of Ganges, Brahmaputra, and Meghna River Basins.[38] On the pattern of the Indus River basin issues between India and Pakistan, India and Bangladesh have also had problems and conflicts with regard to the distribution and sharing of their trans-boundary water resources. The construction of the Farakka Barrage by India in 1975 to divert some water of the Ganges River near the border of Bangladesh was a matter of concern for the newly independent state of Bangladesh. In 1996, both the states succeeded in having a 30-year water sharing agreement known as the Ganges Treaty to address some of their water-related concerns. Bangladesh, as the lower riparian state on the aforementioned three water systems, aspires for a just and equitable distribution and sharing of its waters with India on all the 54 rivers that it shares with India. The limited and time-bound cooperation between both the states in the form of the Ganges Treaty does not guarantee long-term cooperation between them in terms of sharing their water resources. Therefore, serious water-related conflicts between both the states cannot be ruled out in future.

The impacts of climatic and environmental changes vis-à-vis

Pakistan's water resources are quite visible. The devastating floods in 2010 are attributed to the phenomenon of glacial melt and global warming. Yet, in Pakistan, there has been no vigorous and scientific inquiry to analyse the pattern and nature of the newly occurring climatic changes. Pakistan's water insecurity demands serious attention at the national level, otherwise, it can have catastrophic ramifications for the national and regional stability.

Compared to Pakistan, the situation of India is somewhat better in terms of its water quantity. However, India too does not qualify as a water-secure state. The Indian water resources like Pakistan's are faced with the challenges of water scarcity, mismanagement, rapid population growth, and climatic changes. India's overall per capita water availability has decreased from 5,000 cubic meters in 1950 to 1,800 cubic meters in 2005. India might reach the threshold of 1,000 cubic meters in 2025.[39] According to Falkenmark Indicator, therefore, India is also a 'water-stressed' country.

At the national level, India is also faced with critical mismanagement of water resources. Like other South Asian countries, India also relies on an outdated infrastructure for ensuring the supply of water and leakages in pipeline systems result in the loss of a huge quantity of water. For instance, New Delhi supplies 700 million gallons of water to its residents each day and one-third of this supply is lost due to leaks within the ten thousand kilometre system of decrepit pipes.[40] The trend of over-exploiting the groundwater is also snowballing with every passing day. There were two million wells in India thirty years ago; today, there are twenty-three million.[41]This unregulated use of groundwater would result in its disappearance as groundwater-levels are already falling in India.

This mismanagement of water resources in India has an impact on the transnational water-sharing mechanisms. In order to tackle the growing water shortages due to the growing water scarcity issues and domestic mismanagement of water resources, India is focusing on

supply-side solutions. According to Raja Muhammad Khan, "Apart from the 33 projects, nearing completion, India is planning to construct over sixty water dams and reservoirs, on the western rivers."[42] India is constructing an array of new dams. This concentration on the supply side by India will magnify Pakistan's fears. Pakistan is having concerns regarding the dams on the western rivers since these rivers have been allocated to Pakistan by the Indus Waters Treaty. So the Indus Waters Treaty is expected to be under a lot of stress in the upcoming decades.

Besides internal mismanagement and growing water scarcity, Indian drinking water is also low in qualitative terms. India is ranked at 120 among 122 countries having a poor quality of water.[43] Every third person in the world deprived of clean drinking water is an Indian.[44] Moreover, the climatic changes also have a significant negative impact on the water resources of India. The phenomenon of glacial melt has effects on the flow and patterns of the rivers in India since most of the rivers are fed by water from the Himalayan and Hindukush glaciers.

Having analysed the water-related vulnerability of South Asia generally and India and Pakistan specifically, a policy framework is given below to practically manage the water crisis.

Policy Framework

The South Asian leadership needs to realize the importance, vulnerability, and the transnational nature of the precious water resource. The paper has established that in addition to focusing on water issues at the national and unilateral level, the solution to South Asian water scarcity and insecurity can best be found through multilateral engagements at the regional level. The analytical framework of rationalism, which is a mixture of the ideas of liberalism and realism, stresses a regional approach towards water management. It asserts that by cooperating for water resources at the South Asian level, the regional states will be able to enhance their national interest by ensuring long-term and sustainable water security. On the other

hand, unilateral water-related policies of the regional states have the drawback of widening the already existing trust-deficit and thereby making difficult the optimum management and utilisation of their water resources. In light of this framework, the following policy options are recommended:

i) A minimum level of cooperation in South Asia in the limited area of water resources is the need of the day. Most of the water-related conflicts and disagreements can be understood and resolved if the party states share the relevant data with each other. To achieve this objective, the already existing water sharing mechanisms in South Asia need to be strengthened and the institutional frameworks like the Permanent Indus Commission between India and Pakistan need to be empowered to ensure cooperation in having access to the water-related data.

ii) The regional states also need to start negotiations to develop an understanding of the management of transnational water resources by debating the effects of climatic changes and global warming in the future. In the development of such a regional approach, China, though technically not a regional state but a super riparian of South Asia, needs to be engaged.

iii) To tackle the mismanagement of water resources at national levels, the regional states should devise multi-pronged strategies for water conservation, groundwater regulation, replacement and repair of the old water infrastructure, introducing more scientific agricultural techniques, and initiating research on ascertaining the actual impact of climatic changes and global warming on water resources and glacial melt.

iv) In the South Asian context, the importance and management of water resources need to be given priority while formulating the national security policies. Water, until now, has been

categorised as a matter of low politics but in the 21st century, as explained through this paper, water issues are going to have important impacts on the nature of the relationships between the water-sharing states of the region. Due to this reason, water issues need to be given importance by the policymakers and leaders of the South Asian states.

Conclusion

This paper concludes that the South Asian region is faced with a serious crisis of water insecurity in contemporary times. The lack of good political relations among the South Asian states is mainly responsible for the absence of a comprehensive and regional framework needed for the management of their transnational water resources transcending national geographic boundaries. This transnational nature of the precious resource makes it imperative for the regional states to cooperate with each other and adopt a multilateral and regional approach. Such cooperation will not only enhance the national interest of the states but will also facilitate the spillover of the limited cooperation into other areas of hard politics and conflicts.

The situation of India and Pakistan in terms of water scarcity and insecurity needs serious attention at the policy level as recommended above. The contemporary issues and controversies related to Baglihar and Kishanganga hydroelectric projects have clarified that competition for water between the two nuclear neighbouring states would intensify in the near future and consequently the Indus Waters Treaty would come under strain to respond to the growing intensity of such competition. Both the states need to ensure the implementation of the Indus Waters Treaty in letter and spirit to have fair access to and knowledge of their respective utilisation of water resources. Water, as a transnational resource, can be a source of cooperation among riparian states and if not properly

managed it has the potential to ignite fierce conflicts and competitions in the region.

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