Assessing India-China Hydropolitics and Climate Security in the Brahmaputra River Basin

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Abstract: *South Asia is home to one of the strategically significant river basin, the Brahmaputra River Basin which is a major bone of contention between the two major powers India and China. The article explores climate security issues arising in the river basin as a result of hydropolitics between the two countries. China being the upper riparian countryhas significant control over the river basin and has denied hydrological dataon numberof occasionsand has constructed several dams in its quest for cleaner energy which has the potential to socio economically impact the downstream countries in Brahmaputra Basin. At this backdrop, drawing on the securitization theory, the study analyses how hydropolitics between the two Asian powers has been defining climate security in the Brahmaputra River Basin and its consequences in the South Asian region. Heightened floodsduring the monsoons and water scarcity during drought times have affected human lives and livelihood in the river basin and has the potential to affect South Asia in the coming years.Methodologically, the study adopts a qualitative approach drawing upon scholarly articles and policy documents from 2015-2025where India China bilateral relations, hydropolitics and climate security in the Brahmaputra River Basin have beenanalysed. By intertwining securitization theory with hydropolitics the study contributes to the literature on climate security and transboundary water governance in South Asia.The findings suggest that climate risks in the river basin and South Asia at large needs to be addressed through transboundary water cooperation by adopting climate change adaptation and mitigation policies through institutionalized mechanism between the two countries.*

Keywords: Hydropolitics, India-China relation, transboundary water, climate security, South Asia

INTRODUCTION

Amongst the countries in the South Asian region, the relationship between the two consequential powers India and China are shaped not only by traditional geopolitical and economic factors but by the surrounding environmental factors as well. Climate change has emerged as an important arena of security specifically and has opened new domains of contestation that has greater implications than economic rivalry. The escalating risks associated with climate change are manifested in the form of extreme weathers, heatwaves, at the Himalayan frontier and water scarcity. Climate change also arise from the construction of several infrastructure projects like road, dams and hydropower plants as they pose several ecological and strategic risks. India and China stand at a critical juncture in the age of climate security as both the nations face the dual challenge of mitigating climate change along with economic development and here it is important that both the countries integrate environmental concerns in their national security doctrines which will be the guiding factor for the foreign policies of the two countries.

Hydropolitics has garnered immense attention in international politics as sharing of water from trans boundary water resources intensifies owing to growing societal needs. South Asia holds some of the important rivers in the world and the transborder Rivers are of great importance for the geo political stability of the region. Water sharing is a contentious issue between India and China and has been redefined in the era of climate security owing to glacial melts and infrastructural construction in these vulnerable areas. China being the upper riparian country and its control over Tibetan Plateau (majority of the rivers originate from this point) provides a strategic advantage over India as it controls the availability of fresh water in the North eastern region with power in favour of China. As a lower riparian country India faces severe challenge in getting access to shared water from the transborder rivers and China's large scale infrastructural projects escalates the threat. While India has entered into water treaties with its neighbouring countries i.e. Pakistan, Bangladesh and Nepal, India and China do not have any water treaty. Using a qualitative research approach, the article focusses on these hydropolitical complexities which define India China relations in the era of climate change

The article is an intersection of climate security and hydropolitics that are increasing environmental risks in the basin area. Drawing upon Copenhagen's school of securitisation theory, the objective of the study is to examine how hydropolitics between the two Asian powers has been defining climate security in the Brahmaputra River Basin and its impact in the South Asian region.

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REVIEW OF LITERATURE

The present study explores climate security in the context of hydropolitics in the Brahmaputra River Basin by integrating it with the Copenhagen's school of securitization theory.

A large section of the literature on India China relation focusses on the geopolitical state centric security analysis determining the bilateral relation between the two countries (Verma 2024; Saklani and Ram 2023, Qaddos 2018). It examines how border conflicts, lack of transboundary water treaty affects water management in the Brahmaputra Basin creating issues of climate security thus restructuring hydropolitics between India and China. Several research articles on India China relation have analysedhydropolitics by focusing on the historical border disputes (Barua 2025;Reddy 2024; Barua 2018**,**) Scholars argue that the upstream downstream asymmetry in the river basin gives China strategic leverage in dam construction, control over hydrological data during the flood season thus demonstrating indirect coercive power(Shidore et.al.2021, Manhas and Yadav 2024). Climate change is a major concern as it threatens the ecological balance of the region affecting human lives, livelihoods and animals. Studies have shown that lack of cooperation in the transboundary water management has escalated climate changes in the basin region (Arfanuzzaman2025 ; Mahla 2024).

By positioning hydropolitics within the climate security framework it brings out the ecological vulnerability of the river basin and the impact on the South Asian region.

METHODOLOGY

The study adopts a qualitative research design to examine how climate security in the Brahmaputra River Basin is affected owing to hydropolitics between India and China and changing climate in the South Asian region is a matter of concern. The study combines multiple data sources from peer reviewed journal articles focusing on India-China relations, hydropolitics, and transboundary water management. Policy documents and strategic affairs publications and credible newspaper reports are analysed for understanding the present scenario. A detailed literature search was carried out across multiple academic databases which include JSTOR, Google Scholar and Taylor and Francis Online. The search strategy involved using key words like 'hydropolitics','transboundary water', India-China relations, 'climate change in South Asia'. Through the use of these search terms the articles provide the historical background of India China relation and the impact it has on the governance of the Brahmaputra River Basin The study period for the study ranged from 2015-2025 which captures the Doklam tension which affected hydrological data sharing, expansion of Chinese hydropower projects which are the reasons behind climate changes in the region. The qualitative framework provides an explicit understanding how hydropoliticalissues between the two nations transcends to climate securitization in the entire South Asian region.

Theoretical framework: Environment security and climate securitization

The idea of security has always occupied a significant place in international politics and is primarily concerned with the security of the state from external threats. The idea of security underwent change after the end of First World War with the establishment of League of Nations in 1919 thus emphasizing the idea of security at the international level. Subsequently after the end of Second World War the establishment of United Nations was also established to promote global peace and security. The period of Cold War following the principles of the Realist theorysecurity was determined in terms of military strength of a nation. Following the end of the Cold War the security paradigm shifted its lens from the state centric approach to include various issues on the concept of security. Securitization theory gained momentum with Barry Buzan's book 'Man, State and Fear' where the concept of security included political, economic, social and environmental security apart from military security. The understanding of various non state actors like terrorist groups and non-security issues like climate provide knowledge about how national security concerns change and states retort to these grave challenges (Buzan et.al. 1998, 80).

The linkage of security to environment has broadened the traditional idea of security. The global agenda on climate adaptation and mitigation has made it more relevant as states feel the greater urge to provide security to citizens from the threats arising from the environment as well as protect natural resources for economic development. In International Relations environment as a security concern has been developed by the Copenhagen School through the ideas of Barry Buzan, Jaap de Wilde and Ole Weaver. Threat arising out of environmental security has been defined in three possible ways. Danger from the environment not caused by human activity, danger arising from human activity that threaten natural framework and mankind and danger from human activity to the natural system that do not pose threat to civilization. The main idea of environmental security is that it is within human power to control environmental crisis but in most cases 'securitization moves' results in politicization (Buzan et.al. 1998, 82). Securitization moves do not involve making plans but the execution of those plans to avert environmental disaster. Moreover, the threat arising from the environment enables to identify the root cause of threats that manifest in other sectors. According to the scholars, if not dealt with environmental degradation can jeopardize security that can lead to interstate war, economic deprivation and ethnic conflicts. Environmental security is about sustaining the ecosystem and if it fails it will threaten 'nonenvironmental existential values'**(**Buzan et.al. 1998, 82).

Environmental security originally was conceived in the global setting. Although environmental issues require global attention there is a necessity to subdivide their causes and effects. Later it was inferred that the threats arising in the environmental sector are based on issues and are 'seldom universal' ((Buzan et.al. 1998 ,85**).** The importance of regions in securitization theory has led to the development of Regional Security Complexes by Barry Buzan and Ole Weaver.In relation to environmental security, regional security complex involves the idea of threat which will be higher in some regions and lower in some. Secondly, in a region it is necessary that the states cooperate in order to take care of the ecological issue. Lastly if ecological issues

are not settled in the region it can lead to interstate tensions in the region **(**Lee 2002**).**Thus regional environment security is the interaction between states for the protection of environmental resources.

RESULTS

Hydropolitics defining climate change and its implication for the South Asian region

In international politics, the relationship between geopolitics and transboundary river governance is intertwined as geopolitical factors like territorial disputes, power competition and cooperation impact the utilization and allocation of water resources. Understanding the dynamics of Indo-China territorial disputes is crucial to the understanding of transboundary river basin i.e. the Brahmaputra Basin. The border dispute between the two countries is a historically complex issue which has shaped bilateral relation between the Asia's biggest powers. There are significant disagreements between the two countries along the border primarily in the western and eastern sectors which led to the 1962 India China war along the Line of Actual Control (LAC). The Akshai Chin Plateau is the bone of contention in the western sector with Ladakh and Xinjiang on both sides with India and China claiming it a part of their territory. The LAC in the western front roughly follows the Karakoram range an area spanning of 33,000 square kilometers. In the eastern region is the disputed Assam Himalayan Region which India claims to be a part of Arunachal Pradesh whereas China claims ownership as an extension of Tibet. Additionally, there is Tawang in Arunachal Pradesh which is of religious significance to the Buddhist and China's claim adds a religious and political angle to the disputed border areas. For India the McMohan line which aligns with the LAC in the eastern front encompassing an area of 90,000 square kilometers represents the legitimate boundary between India and Tibet thus rightfully claiming Arunachal Pradesh as a part of its territory while the Chinese put forward the historical allegiance of the Tibetans to China thus putting a claim on Arunachal Pradesh. In 2020, border conflicts triggered in the Indian controlled territory in the Ladakh region which escalated security concerns in the region. The overlapping border claims has escalated Indo Chinese disputes which have moved towards the Brahmaputra River basin which runs through India and China.

The Brahmaputra River originating in the Himalayas flows through China, India, Bangladesh, Nepal, Bhutan and Burma and is collectively known as the YarlungZangbo Brahmaputra Jamuna River System. This River basin is of dispute between India and China because of its strategic ecological and hydrological significance as China is the upstream country which controls the flow of the river and is a concern for downstream India and Bangladesh because of water availability, agriculture and overall livelihoods. Water has been the key issue in the diplomatic relation between the two countries. There is no particular treaty signed between India and China related to management of water resources and this has significantly affected the distribution of water within the Brahmaputra Basin. However, India and China have engaged in discussion through Expert level Mechanism (ELM) since 2006 on the sharing of hydrological data of the Brahmaputra related to floods. In 2013, Memorandum of Understanding (MoU) was signed between the countries after the expiry of the 2007 agreement on the Provision of Hydrological Information on the YarlungZangbo/ Brahmaputra River in Flood Season by China to India. In 2015 Beijing hosted the India China ELM to address issues on transboundary rivers. Despite such ventures on cooperation China withheld hydrologic information first in 1963 after the 1962 war. In 2017 after the 73-day Doklam standoff hydrologic data by China was again suspended citing technical reasons which led to flooding in the states of Assam and Uttar Pradesh. (Feng et. al. 2019). In 2019, the 12th Meeting on the India China Expert Level Mechanism (ELM) on Transboundary Rivers was held in Ahmedabad where both the countries signed the 'Implementation Plan on the Provision of Hydrological Information of Brahmaputra River in Flood Season'. Thus, bilateral arrangements on transboundary water management have seen cooperation at peace times and disruption at times of conflict as it does not follow any standard procedure.

In addition to unresolved border conflicts, economic competition between the two countries has affected transboundary water management between the two Asian superpowers. China and India being economic competitors aim for market access, resources and strategic investments in order to enhance their global market stake. The countries have similar interests as they compete for influence in regional forums and align with the super powers for strategic partnerships and expand their influence in the South Asian and Pacific region. India's involvement in the QUAD grouping with US, Australia and Japan is aimed to counter China's influence in the Indo-Pacific region. On the other hand, China's ties with Pakistan are strengthened with the China-Pakistan Economic Corridor (CPEC) where they broaden collaboration in industry, agriculture, mining and green energy which is a major concern for India. The interest of both the countries is competing and overlapping at the same time thus making transboundary water management and mitigating climate changes challenging (Barua et.al. 2025).

DISCUSSION

The unresolved border dispute, economic competition and the subsequent conflict in transboundary governance of water resources have exacerbated climate security issues. Political tensions have heightened in the region with global warming resulting in disruption in seasonal river flow in the Basin. Climate projections predict that with climatic changes the flood prone Brahmaputra River Basin will face extreme rainfall events during the monsoon. The greater impact will be on the downstream Indian states of Assam and Arunachal Pradesh where there can be extreme rainfall and likelihood of floods. Heightened flood risks associated with climate change also raises concerns on bilateral relation between the two countries. Millions of people in India's north east regions to be affected as this will have profound impact on fishing, agriculture and livelihood (Singh 2020). Additionally, China's upstream construction of dam has significant ecological implications on climate security for the region. In the recent years, Chinese government has taken several initiatives to harness hydro power through the construction of large-scale dams

to meet China's energy requirements. Environmentalists have forecasted that the construction of dams affects the natural flow of the river resulting in salinity, degradation of land changing dynamics of sedimentation followed by flood and drought cycles in the lower riparian regions. Conservationists also predict large scale infrastructural developmentscan interfere with habitat of aquatic life and affect aquatic biodiversity.This is mainly due to the changes in the temperature and compositional distinctiveness of the reservoir water which is different from the adjacent river water.With the construction of the Three Gorges Dam several seismic tremors have been recorded in the vicinity of the dam and it has also led to the extinction of the Yangtse River Dolphin **(**Mahla 2024). China has constructed dam in every major river of the Tibetan Plateau and engages in rhetorics that these dams are not capable of diverting or storing large bodies of water to lessen the perception of dams as a threat as in the case of Zangmu Dam. In 2024 China announced the construction of a hydro power project, better known as the 'Super Dam Project' in the lower part of the YarlungZangbo River which will be three times the size of the Three Gorges DamThe region is a seismic volatile area and in 2025 a powerful earthquake struck in Tingri which is 1200 km from Metok county where the Super Dam project will be built. Additionally, Metok county which is located at the bottom of the YarlungZangbo Gorge is one of the most biodiverse regions of the world and home to the Bengal tigers, clouded leopards and snow leopards. (Gamble and Xu, 2025**)**

Low cooperation on transboundary governance of Brahmaputra Basin has escalated issues on climate security in the South Asian region. Climate security issues range from disruption in river flows, negative impact on biodiversity in the region, altered rainfall patterns resulting in floods in the lower riparian regions. In the last twenty years more than half South Asian nearly 750 million people have been affected by floods and cyclones. In Bangladesh millions have been displaced owing to severe floods in the monsoon season and 70% of the population lives in flood affected regions. Projections reveal rainfall in the Brahmaputra River Basin can increase by 25% by the turn of the century thus increasing flood risks which can lead to significant economic loss and displace millions of people. On the other hand, water scarcity increases during the dry season leading to crop failures having major socio-economic consequences for communities living along the river basin. The combined impact of rising temperature, water scarcity and unpredictable precipitation can have devastating effects on agriculture, fishing, drinking water and livelihoods in the South Asian region thereby accelerating tensions in the South Asian region that share the transboundary river basin (Arfanuzzaman, 2025).

Transboundary water cooperation is vital for South Asia's climate change mitigation and adaptation. Management of water in the Brahmaputra River Basin between India and China is guided by the larger territorial and border disputes which is shrouded in ambiguity and mistrust which accelerates the problem of climate security in the region. Moving beyond the complexity of regional geopolitics, it is essential that the river sharing countries primarily India and China share mutual cooperation in the interest of climate security of the region. This requires multi-faceted strategies for ensuring stability, utilization of resources and sustainable development in the region.

CONCLUSION

The Hydropolitics of Climate Security

Blended with the securitization theory, the study assesses that the Brahmaputra River Basin faces significant ecological threats in the absence of no clear agreement between India and China over water management. China being the upper riparian country has significant control over the river basin and has constructed several dams for cleaner energy which has the potential to socio economically impact the downstream countries in Brahmaputra Basin. Through the lens of Regional Security Complex climate security in the South Asian region is dependent on hydropolitics between India and China which is overshadowed by geopolitical conflicts and economic rivalry thereby limiting the scope for climate resilience. Addressing this challenge requires diplomatic engagement and institutional frameworks that promote effective water management between both countries and peaceful resolution of conflict for the larger interest of the South Asian region.

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