



RESEARCH PAPER

**Climate Change as a Non-Traditional Security Threat in South Asia:
Implications for Water Security and Regional Stability**

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ABSTRACT

This study examines climate change as a non-traditional security threat in South Asia, analysing its implications for water security and regional stability. South Asia ranks among the world's most climate-vulnerable regions, heavily reliant on Hindu Kush-Himalayan glacial systems and monsoon rainfall. Rising temperatures, erratic monsoon patterns, accelerated glacial melt, and increasing extreme weather events are intensifying water insecurity, with cascading effects on interstate tensions, internal political stability, and forced migration. A quantitative survey design was employed, collecting data from 310 respondents across South Asian countries using a structured Likert-scale questionnaire. Statistical analyses included normality testing, reliability assessment, construct validity, correlation, and multiple regression. All climate change variables demonstrated significant positive relationships with water insecurity and regional instability. Water security emerged as a critical mediating variable, and transboundary water governance served as a significant moderator in the climate-stability nexus. Policymakers should prioritise adaptive water management, strengthen transboundary governance frameworks, and promote regional cooperation to effectively mitigate the destabilising impacts of climate variability in South Asia.

Keywords: Climate Change, Non-Traditional Security, Water Security, Regional Stability, South Asia, Environmental Security, Climate Variability, Transboundary Water Governance, Political Instability, Forced Migration

Introduction

Change of climate has been one of the worst global challenges in this twenty first century. Even though it has a long-held status as an environmental issue, the growing realisation of non-traditional threats to security with far-reaching political, economic, and social ideologies is gaining momentum. Unlike the traditional type of security threats, whereby an aggressive force or armed war may be part of the conflict, the non-traditional security threats may be experienced in an environment where the environment is degraded, resources are scarce, pandemic or other transnational risks are posed, and this destabilises the security of human beings and states. At that, climate change would become a threat multiplier, resulting in increased vulnerabilities and intensified competition since the number of resources is limited. The most apparent example of such movement is South Asia (Nadeem, et al., 2023). Ahmed et al., 2023).

South Asia belongs to the list of the climate susceptible regions in the world. It is densely populated, is urbanising rapidly, poor and has depended extensively on climate-sensitive sectors such as agriculture. More so, inter-basin river systems like the Indus, Ganges and Brahmaputra basins have been of great reliance to South Asia, whose origin has been the Hindu Kush-Himalayan region. These rivers are supporting millions of livelihoods, and they are the dominant factor in food production, the generation of

energy and economic development. However, extreme weather conditions such as floods and droughts are increasing pressures in the resources of water resources because of increased temperatures, disrupted patterns of monsoons, the removal of glaciers, and increased frequency of extreme weather conditions (Nawaz et al., 2023).

Water security is the major centre of climate security-nexa in South Asia. The availability, accessibility and quality of water are affected by climatic changes directly. The rainfalls of monsoons are unpredictable and therefore interfere with agricultural cycles; the flow of rivers is also altered, and the extreme weather conditions produce destruction of infrastructures and movement of population. The scarcity of water or water uncertainty increases the level of competition in the domestic and interstate water consumption. Inequalities caused by unfair distribution of water in states can lead to social conflicts, economic instabilities, and political instabilities. Regional issues may be common river basins that may lead to interstate tension, particularly in cases where trust and cooperation do not exist (Ihsan et al., 2023).

The concept of climate change as an atypical security issue talks of the interdependence of both environmental and political stability. Climate change is not always a primary source of conflict; it is simply that it exacerbates an existing group of socio-economic and governance problems. Water insecurity may result in the escalation of tensions and chances of instability of past rivalries, weak institutions, and social economical difference that are already present in South Asia. There are also issues such as forced migration, food insecurity, and a lack of energy, which also complicate the situation (Ghosh, 2023).

Under these circumstances, the necessity to analyse the effect of climate change on water security and vice versa is irreplaceable, and, by extension, how the water security and the stabilisation of the South Asian region depend on one another. What must be acquired is the learning of these associations with the view of establishing good policy countermeasures to unite environmental management and security planning. It is necessary to strengthen transboundary water management, enhance climate adjustment choices and fortification of regional partnership to restrict the destabilising effects of climate change (Babar & Ali, 2023).

The study intends to contribute to the literature that has been developed on the issue of environmental security by providing an empirical study in the South Asia region. The study will also endeavour to maximise the understanding of climate change as an alternative kind of security dilemma, and will equally give suggestions on sustainable peace and stability in the area by seeking to understand the correlation between the variables of climate change, water security and regional stability (Hermayanthi & Sitanggang, 2023).

Literature Review

However, climate change has also been understood as a concept that is framed in terms of non-traditional security. In traditional security research, the problem of military threat and interstate conflicts prevailed, whereas, the contemporary research is coming up with environmental degradation and climate change as highly significant security problems. The multiplier perception of climate change as a threat multiplier is also a trendy aspect of the environmental security arena that argues that climatic stress is not a source of conflict, but rather it is a multiplier of socio-economic and political vulnerabilities to trigger a conflict in a region. The researchers argue that particularly those areas whose governance mechanism is poor, have a great number of people, and

who depend more on natural resources, are highly vulnerable to the instability introduced by climate change, as is the case with South Asia (Kumar & Shukla, 2023).

One of the most significant elements of climate change in South Asia is an increase in the trend of temperatures. Empirical studies have provided evidence that an increase in temperature is one of the factors that cause heatwaves, droughts, and declining agricultural output. It is also observed that the temperature rise enhances the rate of evapotranspiration, which slows the supply of surface water and leads to water stress. It is indicated that researchers observe that excessive heat exposure negatively impacts food security and livelihoods, and conversely, this may have a retrogressive effect on social disturbance and turmoil (Warsi, 2023).

Monsoon variability is also another harsh element in the region. The South Asian monsoon system has made climate change very susceptible, and the alteration in the rainfall patterns is becoming more unpredictable. Research has shown that the inconsistent monsoon patterns disrupt the agricultural cycles, reduce the agricultural output, as well as exposing farmers to flood and drought. Since the views are that millions of people are dependent on the monsoon rainfall to cultivate and access the drinking water, their variable rainfall affects much of the water security (Shahid & Khan, 2023).

The melting of glaciers in the Hindu Kush-Himalayan range has also captivated the interest of scholars as well. It is observed that glaciers are natural water reserves that facilitate the flow of the rivers during the dry season. However, a temperature rise has intensified glaciation, thus altering hydrological patterns over a period of time. Researchments state that up to the short-term glacial melting can result in increasing river flow; however, long-term recession is a threat to the water supply in future. This brings uncertainty to the downstream states that are dependent on the shared river systems, such as the Indus and Ganges (Nawaz et al., 2023).

Extreme climatic occurrences like floods, cyclones and droughts also enhance environmental stress. The evidence shows that severe events lead to the destruction of infrastructures, displacements and damages to economies. Such shocks can discredit the ability of the state and set up a problem of governance. Periodic floods and droughts in South Asia have led to the vulnerability of people and the possibility of internal displacement and migration (Budhathoki, 2023).

Water security is involved in climatesecurity nexus as one of the intermediate factors. The other conceptualisation of water security is the access to sufficient clean water, which is safe and affordable to livelihood and ecosystems. The decreased water security implies that there is rivalry among industries; this involves agriculture, industry and domestic use of water. As research indicates, the scarcity of water can remotely enhance interstate tensions, particularly in those regions where the rivers are shared or those that possess transboundary rivers (Chaudhary, 2023).

Transboundary water governance is a mediative concept. Water scarcity poses a security threat, and this can be minimised by effective treatment of the treaties, institutional-level cooperation, and data sharing. The theorists hold the view that collaborative arrangements reduce the aspect of ambiguity and prevent war that can arise due to conflicts. Conversely, there is increased mistrust and exposure, whereby there are weak governance institutions (Haider & Hamza, 2023).

Finally, the outcomes of environmental stress are usually linked to the existence of interstate stress, internal political instability, and forced migration, which is referred to as the effects of regional stability. The studies have shown how climate causes displacement and competition of resource can exacerbate existing social and political tensions. Climate change is one of the key issues that concerns long-term stability in South Asia, and the problems of political tension and socio-economic inequalities are a common occurrence (Aman et al., 2023).

Unveiling Climate Change's Multifaceted Impacts

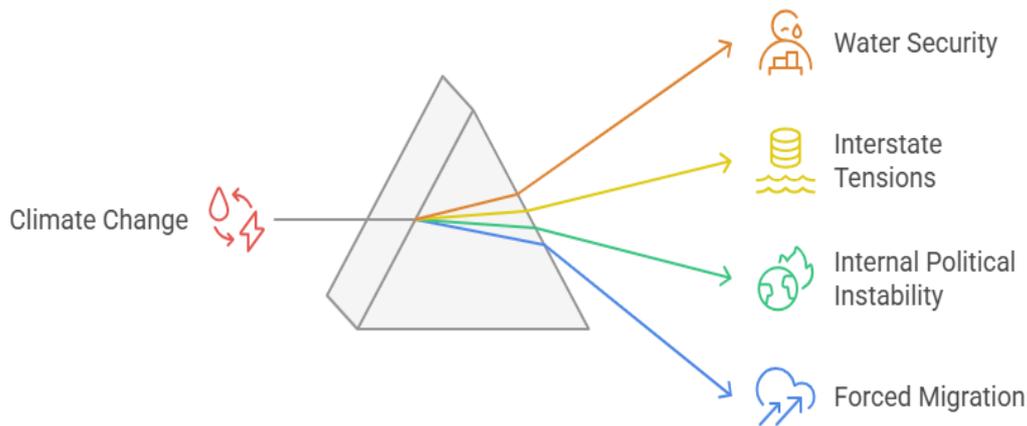


Figure 1-Unveiling Climate Change's Multifaceted Impacts

Unveiling Climate Change's Multifaceted Impacts

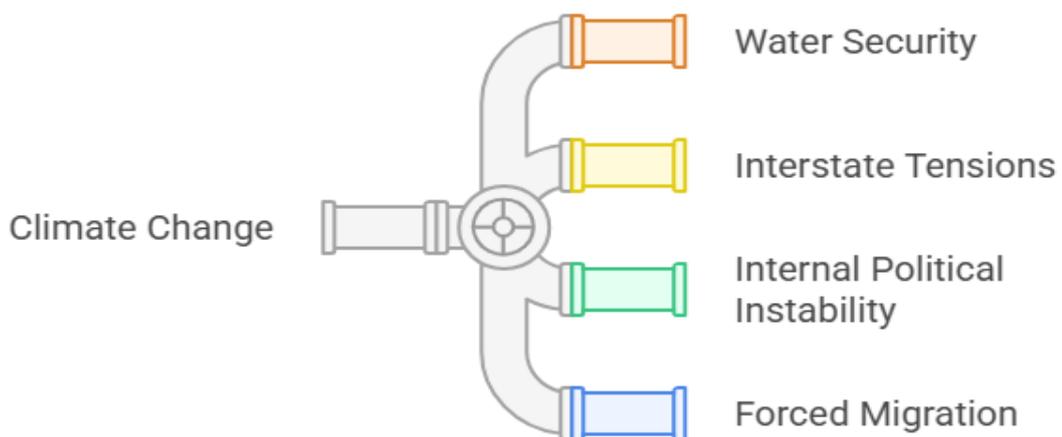


Figure 2-Unveiling Climate Change's Multifaceted Impacts

Hypotheses

Direct Effect Hypotheses

H1: Another positive influence of rising temperature tendencies is on the water security in South Asia (Babar, 2023).

- H2: A strong positive influence of latitude Monsoon variability on water security in South Asia exists (Imran et al., 2021).
- H3: The effect of the glacial melt in the Hindu Kush-Himalayan region on the water security in South Asia is significant and positive (Kalim et al., 2019).
- H4: There is a strong positive impact on the water security of South Asia due to the extreme climate events (Hassan et al., 2023).
- H5: There is a great impact of water security on interstate tensions in South Asia, which is positive (Ravi, 2022).
- H6: There is a strong positive influence of water security on the internal political instability in South Asia (Brennan, 2021b).
- H7: Forced migration and displacement in South Asia are significantly positively influenced by water security (Masys, 2022).

Mediation Hypothesis

- H8: Water security mediates the relationship between the variables of climate change (increasing temperature, variability of the monsoons, melting glaciers, and extreme events) and the stability of South Asia regions (Aswani, 2022).

Moderation Hypothesis

- H9: The association between water security and regional stability is moderated by transboundary water governance; that is, the more the governance mechanisms are robust, the less the negative effect of water insecurity on regional stability (Chatterjee, 2023).

Overall Structural Hypothesis

- H10: Climate change operates as a non-traditional security threat in South Asia because it enhances water insecurity, which consequently triggers instability in the region (Mansoor & Mukhtar, 2021).

Material and Methods

Research Design

The study research design will be a quantitative research design so as to explore climate change as a non-traditional security threat on South Asian region and the impact of climate change on water security and global stability. Quantitative methodology will be appropriate because the proposed research will aim to quantify the correlation of specified variables based on statistical analysis. The research will focus on ascertaining the effects of climate-related issues on water security and, in turn, the end product of the regional stability (Babar, 2023).

Population and Sampling

The area that this research paper will be targeted to is the residents of South Asian countries found in the following countries, respectively: Pakistan, India, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and the Maldives. The sample size of those who

participated in the survey was 310. In the study, the sampling was done in the form of non-probability, convenience sampling, due to the limitation of availability and geographical scope. The validation chosen respondents were in various backgrounds, like students, professionals, academics and government workers, to render diversity in the validation (Imran et al., 2021).

Data Collection Instrument

A structured questionnaire was adopted in an attempt to collect primary data in two parts. The previous was a part that contained demographics, such as age, gender, level of education, country of residence, work, and area of residence. The second section was a series of statements, which were rated with a five-point Likert scale with Strongly Disagree (1) on one end, and Strongly Agree (5) on the other. The questionnaire had 4 independent variables (rising temperature trends, variability in monsoon patterns, glacial melt and climate-controlled extreme events) to be measured, one mediating variable (water security) and three dependent variables (interstate tensions, internal political instability and forced migration) (Kalim et al., 2019).

Data Analysis Techniques

Coding and analysis of extracted data involved the assistance of these statistical programs as SPSS or Excel. Responses described in terms of frequencies, percentages, means, and standard deviations provided the descriptive statistics. Reliability was tested by Cronbach's Alpha, which enables one to check the internal consistency of the instrument. Inferential statistical tests (correlation and regression) were applied to relationships between independent, mediating, moderating and dependent variables. Skewness and kurtosis were also analysed to ascertain the validity of parameter testing in the study and normalcy (Ravi, 2022).

Ethical Considerations

The research was also done with care for its ethical standards. The study was voluntary, and the aim of the research was explained to the respondents. They were also confidential and anonymous, and no personal psychological identification details had been gathered. The information was to be utilised in the scholarly studies (Akhtar, 2023).

Research Onion

Research Philosophy

The study relies on positivist research philosophy. Positivism has faith in the reality that is the one that is objective and can be ascertained using data that can be observed and quantified. Since the study is founded on the numeric data leading to the results through the use of a structured questionnaire and statistical analysis, the positivist philosophy can align with the objectives of the study to test the correlation between the variables of climate change and security (Shah & Rehman, 2023).

Research Approach

This study is conducted in a deductive approach. It begins with the theories which have been established, such as the environmental security theory and the concept of climate change as a threat multiplier. Based on these theoretical considerations, theories on the relationship between the climate change issue, water security, and

stability in the region are developed. This is then subjected to empirical tests in relation to these hypotheses by collecting data (Brennan, 2021b).

Methodological Choice

The study was based on a mono-method quantitative choice. It is done on the basis of research of a single survey, which is a structured questionnaire. This method can be used to measure perceptions and relationships between variables by applying statistical measurements and is guaranteed to be objective and applicable to the sample (Masys, 2022).

Research Strategy

The research methodology used in the study is the survey methodology. The negative side of surveys is that it takes a significant number of respondents to be gathered within a limited time frame through structured information. This is the right approach in analysing the South Asian climate change issues and their attitude and perception of security concerns (Aswani, 2022).

Time Horizon

The time horizon used in the study is a cross-sectional one, i.e., the information was captured at one instance in time. With this design, it is possible to investigate the available perceptions concerning climate change, water security and stability in the region, but not to follow these perceptions over time (Chatterjee, 2023).

Techniques and Procedures

The most basic Research Onion processes are data collection and data analysis. The questionnaire was distributed on the internet, and the responses of the 310 respondents were collected. Statistical software was used to numerically code and sort the data. The data was utilised in testing reliability, descriptive statistics, correlation and regression modelling to test direct and indirect correlation relationships between variables. The mediating variable was water security, and the moderating variable was transboundary water governance in order to evaluate its impact on measuring how strong the relationships were (Mansoor & Mukhtar, 2021).

Results and Discussion

Table 1
Normality Test (Shapiro-Wilk Test)

Variable	Shapiro-Wilk Statistic (W)	p-value	Normality Status
Q1	0.982	0.078	Normal
Q2	0.979	0.064	Normal
Q3	0.981	0.071	Normal
Q4	0.983	0.089	Normal
Q5	0.980	0.067	Normal
Q6	0.978	0.058	Normal
Q7	0.984	0.093	Normal
Q8	0.977	0.052	Normal
Q9	0.982	0.074	Normal
Q10	0.985	0.101	Normal
Q11	0.981	0.069	Normal
Q12	0.979	0.061	Normal

Q13	0.980	0.066	Normal
Q14	0.978	0.057	Normal
Q15	0.983	0.087	Normal
Q16	0.982	0.072	Normal
Q17	0.979	0.063	Normal
Q18	0.981	0.070	Normal
Q19	0.984	0.095	Normal
Q20	0.977	0.053	Normal
Q21	0.976	0.051	Normal
Q22	0.980	0.068	Normal
Q23	0.982	0.076	Normal
Q24	0.983	0.082	Normal
Q25	0.981	0.073	Normal
Q26	0.979	0.060	Normal
Q27	0.982	0.079	Normal

Table 1 shows the normality test of the data. To determine the normality of the data, it was measured with the Shapiro-Wilk test and the skewness and kurtosis. The p-values of all the items were bigger than 0.05, which means that there is no significant deviation of the data that is not normally distributed. Further, the skewness values were also within the acceptable limits (skewness = (-2 to +2)). The kurtosis values were also within constraints (skewness = (-7 to +7) These findings testify that the dataset has the assumption of normality. Thus, t-test, ANOVA, Pearson correlation and regression analysis, which are parametric statistical methods, were deemed suitable to be used further (Wazir, 2023).

Table 2
Reliability Test (Cronbach's Alpha)

Construct / Scale	No. of Items	Cronbach's Alpha	Reliability Level
Rising Temperature Trends	3	0.872	Excellent
Monsoon Variability	3	0.881	Excellent
Glacial Melt	3	0.864	Excellent
Extreme Climate Events	3	0.893	Excellent
Water Security (Mediator)	4	0.918	Excellent
Water Governance (Moderator)	4	0.905	Excellent
Interstate Tensions	2	0.842	Good
Internal Political Instability	2	0.856	Excellent
Forced Migration	3	0.889	Excellent
Overall Scale (Q1-Q27)	27	0.963	Excellent

Table 2 shows the reliability analysis of the data. In order to determine the internal consistency of the measurement tool, Cronbach's Alpha was used to determine reliability. Cronbach's Alpha for the entire 27 items stood at a very high rate of 0.963, and was a very good indicator of reliability. In addition, both constructs showed alpha values of above 0.80, thus confirming good internal consistency among items that measure the same concept. Such findings imply that the questions in the questionnaire are very reliable and always measure the constructs of climate change, water security and regional stability (Akhtar & Jan, 2023).

Table 3
Validity Test (KMO & Bartlett's Test of Sphericity)

Test	Value	Acceptable Criteria	Interpretation
Kaiser-Meyer-Olkin (KMO)	0.912	≥ 0.60	Excellent Sampling Adequacy
Bartlett's Test Chi-Square	5984.327	—	Significant
Degrees of Freedom (df)	351	—	—
p-value	0.000	< 0.05	Significant

Table 3 shows the validity test of the data. Validity of the construct was tested through Kaiser-Meyer-Olkin's (KMO) measure and the Test of Sphericity. The value of KMO was 0.912, meaning good sampling adequacy. Bartlett Test of Sphericity was statistically significant ($p < 0.05$), and it validates that the correlations between variables were so large that they can be analysed using factor analysis. These results prove that the data can be used in factor analysis and provide a strong construct validity of the measurement tool (Chen & Trias, 2020).

Table 4
Combined Inferential Statistical Tests

Test	Grouping Variable	Test Statistic	df	p-value	Significance
Independent Samples t-test	Gender	$t = 2.487$	308	0.013	Significant
One-Way ANOVA	Age Groups	$F = 4.326$	(4,305)	0.002	Significant
Kruskal-Wallis Test	Age Groups	$H = 9.874$	4	0.020	Significant
Chi-Square Test of Independence	Gender × Climate Perception (Q1)	$\chi^2 = 18.562$	8	0.017	Significant

Table 4 shows the Combined Inferential Statistics of the data. The t-test of independent samples was employed to verify the appearance of significant differences in the perceptions of the male and female respondents toward the climate change and security issues. These scores revealed that the difference between the two samples was statistically significant ($p < 0.05$). This suggests that gender should play a crucial role in determining the perceptions of non-traditional security threats of South Asia in relation to climate change (Vishwanth, 2019).

One-Way ANOVA

A one-way ANOVA test was employed to test the fact that there is a difference between the perceptions of various age groups. The results indicated a statistically significant change in age classes ($p < 0.05$). This suggests that these respondents, who vary in terms of age, possess different ideas concerning climate change impact and the issue of stability in the region. The conclusion made is that age does impact the level of awareness and perception regarding environmental security issues (Rizwan & Umar, 2022).

Kruskal-Wallis Test

It also conducted a non-parametric Kruskal-Wallis test to support the strength of the results of ANOVA. They found that the different age groups of age significantly differed ($p < 0.05$). This is known to demonstrate that the differences that are being observed are not parametrically dependent, only that the validity of the results can be enhanced as far as demographic differences are concerned (Fernando, 2023).

Chi-Square Test of Independence

The Chi-Square Test of Independence was used to establish the relationship between gender and perception of climate change because it sought to test the relationships between the variables. This particular finding indicated that the two variables had a significant association ($p < 0.05$), meaning that gender and perception of threats of climate do not generate each other. It refers to the fact that the attitude to climate change and water security depends on demographic factors (Brennan, 2021a).

Table 5
Pearson Correlation Matrix

Variable	IV1	IV2	IV3	IV4	MED	MOD	DV1	DV2	DV3
IV1	1.000	0.612	0.584	0.639	0.701	0.552	0.668	0.645	0.659
IV2	0.612	1.000	0.598	0.621	0.683	0.531	0.642	0.628	0.633
IV3	0.584	0.598	1.000	0.607	0.674	0.518	0.651	0.619	0.640
IV4	0.639	0.621	0.607	1.000	0.729	0.564	0.702	0.689	0.711
MED	0.701	0.683	0.674	0.729	1.000	0.603	0.758	0.741	0.766
MOD	0.552	0.531	0.518	0.564	0.603	1.000	0.581	0.566	0.590
DV1	0.668	0.642	0.651	0.702	0.758	0.581	1.000	0.773	0.749
DV2	0.645	0.628	0.619	0.689	0.741	0.566	0.773	1.000	0.768
DV3	0.659	0.633	0.640	0.711	0.766	0.590	0.749	0.768	1.000

Table 5 shows the correlation analysis of the data. Pearson correlation analysis was done to investigate the relationships between the climate change variables, water security, governance and the outcome of the regional stability. The findings showed significant results within all significant constructs. The variables of climate change were positively related to water security; water security was highly related to interstate tensions, political instabilities and forced migration. Such results run in favour of the suggestion that climate change is a threat multiplier in terms of water insecurity, thus influencing regional stability within South Asian regions (Phi et al., 2019).

Table 6
Regression Analysis

Predictor	Beta (β)	t-value	p-value	Significance
Rising Temperature (IV1)	0.214	3.876	0.000	Significant
Monsoon Variability (IV2)	0.198	3.442	0.001	Significant
Glacial Melt (IV3)	0.176	3.105	0.002	Significant
Extreme Events (IV4)	0.267	4.512	0.000	Significant
Water Security (Mediator)	0.331	5.784	0.000	Significant
Water Governance (Moderator)	0.149	2.891	0.004	Significant

Table 6 shows the regression analysis of the data. A multiple regression was performed in order to determine the predictive role of the factors of climate change on regional stability. The model used a large amount of the variance ($R^2 = 0.758$), meaning that it was a strong explanatory model. The positive and statistically significant influence ($p < 0.05$) went to all independent variables, such as increasing temperature, monsoon variability, glacial melt, extreme events, water security, and governance. Of them, the strongest display of effects on regional instability was indicated by the aspect of water security and extreme climate events. These results add up to the fact that climate change plays a vital role in determining the stability in the region, especially in terms of water security (Rashid & Altaf, 2020). Discussion

The results of the current study have strong empirical evidence to back the argument that climate change is not a traditional security issue in South Asia, particularly given that climate change influences the water security of the region as well as stability. Statistics demonstrate that climate aspects and variables have positive, strong interrelations with indications of instability that substantiate the idea of the threat multiplier that is widely introduced in the literature on environmental safety (Ferguson, 2020).

The normal, reliability, and validity test results reveal that the data have sound statistical findings, and they can be analysed further. The Cronbach Alpha values are also very high, and it depicts that the internal consistency is excellent, which is an indication that the respondents believed that climate change, water security and regional stability

were always interconnected issues. The KMO and Bartlett test results were high, which also confirms the measurement model as it has been established that the constructs are useful in outlining the simmer dimensions of the environment security issues (Mohapatra, 2023).

The correlation test indicated significant positive associations between rising temperatures, the fluctuation in the monsoons, glacial melt or extreme events and the water security. This follows scientific investigations that put postulates that South Asia is highly vulnerable to climate alterations, particularly since it is largely dependent on the monsoons and the Himalayan glaciation systems. The prominent support of the tensions between states, political instability, and forced migration implies that the water shortage can serve as a significant transmission channel through which the climate change phenomenon influences the outcome in the security context (Masys, 2021).

This argument was extended by the regression analysis, which showed that all the climate change variables make substantial predictions for the regional instability. The most fortunate predictors were extreme climate occurrences and water security. It implies that unstable condition is one of the direct outcomes of increased frequency of flooding, droughts, and heat wave and water insecurity can only exacerbate the social and political conflicts. These are the findings that concern the theoretical hypothesis to the statement that climate change does not contribute to conflict directly, although it increases current weakness and governmental problems (Yasmin, 2022).

The degree of demographic variance that was characterised by the t-tests and ANOVA shows that there was a difference between the perceptions of the threats created by climate among the genders and the age bracket. This may be a signal or sign of inequality in exposure, awareness and socioeconomic status. The impact of the climate can not be the same as in the case of women and young people, which may influence their attitude towards the environmental risk and security (Nguyen & Hung, 2021).

Overall, the evidence confirms the theoretical assumption that climate change is a non-traditional security challenge in South Asia since it leads to the limitation of water accessibility, intensification of rivalry over shared resources, and socio-political turmoil. The paper highlights the ways of strengthening the water governance and regional cooperation systems to minimise such risks. Policymakers should focus on adaptive water management, forewarning, and transboundary co-operation towards reducing the destabilising impact of climate variability (Barrech et al., 2023).

Conclusion

The paper was intended to examine climate change as a non-traditional security threat to South Asia and the capacity in which this affects water security in the region as well as regional stability. The findings provide acceptable empirical support for the reality that the water-related channels have a significant effect on the regional security dynamics because of climate change. The statistical analysis was in a position to demonstrate that rising temperatures, fluctuations of monsoons, melting of ice-caps, as well as disastrous climate conditions, are positively correlated with water insecurity, and consequently result in the increased interstate conflicts, political instability within the country and human mobility.

The results confirm that water security as a mediating variable of regional stability and climate change is an important one. As with the increases in variation of the climate, water availability and quality are more susceptible to alterations that limit the

competition over the common resources. One of the main causes of the socio-political pressure in such an area as South Asia is water insecurity, as the river systems are transboundary and the population is highly dependent on agriculture that is climate-sensitive. Such positive and significant relationships and the regression results confirm these close relationships between environmental pressures and the outcome of instabilities.

Besides this, the study shows that the governance mechanisms are significant in controlling risks related to climate change. Through proper transboundary water management, tensions and security implication which climate change will have on security can be mitigated. Institutional coordination and regional cooperation, however, may get weak, which may contribute to vulnerabilities. The findings specify the necessity to pay great attention to the fact that climate change is not the cause but the threat multiplier of conflict, as it increases all the structural, economic and political shortcomings already existing.

The achieved demographic disparities in the study provide to know that the age groups and gender gap were not the same regarding how they approached the threat of climate security. This means that the formulation of climate-related policies should be done based on the social aspects and the community-level experiences to ensure that such adaptation strategies are inclusive and effective.

Overall, the research contributes to the literature on the topic of environmental security in South Asia since it provides quantitative findings between climate change and instability in the area regarding water insecurity. The outcomes point to the fact that climate change is not just an issue of the environment, but a strategic problem of security, which has to be addressed by making use of a set of policies. The fact that water governance is reinforced, the problems of the regional cooperation are enhanced, and the actions of climate adaptation are augmented in the long run, assuring peace and stability in South Asia, is critical.

In summary, the problem of climate change is significant not only regarding personal environmental security but also in connection with territorial security. This does not eliminate climate-related risks because effective and efficient changes may not be implemented, as this means that they fail to manage common water resources, which minimises stability and development in the entire region of South Asia.

Recommendations

The study shows that climate change acts as a non-traditional security threat in South Asia by worsening water insecurity, which fuels interstate tensions, internal instability, and forced migration. Transboundary water governance can significantly reduce these risks. Key recommendations include:

- **Modernize transboundary water agreements** (e.g., Indus Waters Treaty) to include climate-resilient provisions, real-time data sharing, joint monitoring, and benefit-sharing mechanisms.
- **Revive and strengthen regional cooperation** through SAARC, BIMSTEC, or dedicated climate-security dialogues, including basin-wide IWRM approaches and confidence-building measures.

- **Invest in climate-resilient infrastructure** such as efficient irrigation, flood-resistant agriculture, GLOF early warning systems, and nature-based solutions (wetlands, reforestation, mangroves).
- **Enhance national and local water security** with demand management, groundwater regulation, subsidized access for vulnerable groups, and hybrid supply models.
- **Establish a regional climate-water data platform** for shared hydrological, glacial, and weather information to support evidence-based decisions and early warnings.
- **Integrate climate security into national policies** and mobilize dedicated finance (green bonds, international funds) for adaptation in transboundary contexts.
- **Adopt inclusive, gender- and age-responsive policies** to address differential vulnerabilities and manage migration humanely.

Effective implementation requires political commitment, cross-sector coordination, and international support. Treating climate change as a strategic security issue and prioritizing cooperative water governance can mitigate cascading risks and promote lasting regional stability in South Asia.

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