

## Climate Change and Security: Perspectives from India

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### **Abstract**

Climate change has become a pertinent part of security studies in recent years. The study of climate change and security is a futurology and is at best speculative. While there is no empirical evidence yet to prove that climate change can cause conflict among and within states, there is an increasing agreement among scholars that it can aggravate existing security challenges. Like in any other aspects of climate change, with reference to security too, developing countries will be most vulnerable due to relative lack of economic and technological capacities and socio-political stability. India's future security in a changed climate scenario is uncertain. Tangible alteration in its climatic variables relating to temperature, sea level, and extreme weather phenomena will have far-reaching security implications. The paper seeks to analyse these challenges which include climate-induced mass migration, internal turmoil, compromised border security, and the rise of fundamentalism. The state has devised elaborate policies to deal with the challenge both on domestic and international fronts. The paper investigates the state's efforts to mainstream and factor in climate change within India's larger security narrative. The paper provides key policy considerations to help make India better prepared to deal with the onslaught of climate change impacts before it is too late.

## 1. Introduction

Climate change has grown to become a pertinent part of security studies in recent years. There is a growing consensus among security analysts that the implications of climate change could exacerbate existing socio-political cleavages or act as a threat multiplier. This paper aims to look at the security implications of climate change for India and offers policy recommendations to help offset the security dilemma. The study, rooted in futurology as is the subject of climate security, attempts to understand the possible linkages between the impending geophysical effects of climate change and the security of the country. It explores the existing scientific knowledge on the implications of climate change for India. The paper then analyses what these physical implications would mean for the overall security of the country and how they may alter the existing security dynamics domestically as well and regionally. The paper enquires into what the state's response has been in addressing the security implications of climate change specific to the Indian circumstances. The study, based on these analyses, offers policy recommendations to moderate climate change induced security challenges for India.

## 2. Geophysical Implications

Science has established that climate change is bound to have several inescapable geophysical implications in the form of rise in temperature, glacial melt in the Himalayas and the Arctic, sea level rise and extreme weather and rainfall variability. These would render human lives insecure in multiple ways such as loss of habitat, food and water shortages, natural calamities, and epidemics. The successive Intergovernmental Panel on Climate Change (IPCC) Assessment reports (AR) have resolutely amplified the seriousness in their predictions. The AR5 of the Panel declared the warming of the climate system as “unequivocal” having observed many unprecedented changes since the 1950s (IPCC, 2014). The report concluded with *high confidence* that there has been a global-scale shrinkage in glacier area. The IPCC (2014) report held anthropogenic causes to be “extremely likely” for more than half of the observed increase in global average surface temperature from 1951 to 2010. The 2018 IPCC *Special Report on Global Warming of 1.5°C* noted that the planet is already seeing the consequences of 1°C of global warming in the form of extreme weather, rising sea levels and diminishing Arctic sea ice, among others (IPCC, 2018).

The geophysical implications for India as noted in the IPCC AR – 5 (2014) and the subsequent assessment by the Indian Ministry of Earth Sciences (Krishnan et al., 2020) show that there has been a recorded rise in surface temperature, with the prediction that the net annual temperatures in the 2030s will increase from 1.7-2.2°C as compared to 1970s. Extreme temperatures are expected to increase by 1- 4°C, with maximum increase in coastal regions (IPCC, 2014; Rohekar, 2017). Similarly, Krishnan et al. (2020) projected the average temperature over India to rise by approximately 4.4°C relative to the recent past by the end of the twenty-first century. This will cause the mean and extreme precipitation during the Indian summer monsoon to increase, with the Himalayan region experiencing the maximum increase in precipitation while the northeastern region will experience the minimum increase (IPCC, 2014; Rohekar, 2017).

Krishnan et al. (2020) also confirmed that the Himalayas has experienced a temperature rise of about 1.3°C during 1951–2014, with several areas experiencing a declining trend in snowfall and retreat of glaciers. These changes will cause glacial lake bursts in the Himalayan region causing floods downstream followed by droughts. Rivers mothered by the Himalayan glaciers that are the lifeline of hundreds of millions of people in the Indian subcontinent—Ganga, Indus, Brahmaputra and Padma—will experience erratic flow patterns causing floods and droughts. Overall, floods and droughts are likely to increase in India due to anticipated decline in seasonal rainfall, coupled with increase in extreme precipitation during monsoon (Rohekar, 2017).

Global sea level rise caused by ice melts has seen a steady upward trend. The IPCC report (2014) predicts a global mean sea level rise by the last two decades of the 21st century (as compared to sea levels in 1986–2005) which will likely be in the ranges of 26–55cm under a low-emissions scenario, but 45–82cm for a high-emissions scenario, with total sea level rise of up to 98 cm by 2100 under this latter scenario. Krishnan et al. (2020) observed a sea-level rise in the North Indian Ocean at a rate of 1.06–1.75 mm per year during 1874–2004 and this has accelerated to 3.3 mm per year in the last two and a half decades (1993–2017). This study predicts that the sea level in the Indian Ocean will rise by approximately 300 mm relative to the average over 1986–2005 by the end of the twenty-first century. This magnitude of sea level rise by the century's end implies significantly increased risks for the region's coastal settlements, as well as for coastal economies, cultures and ecosystems, particularly if combined with changes in cyclone frequency or intensity (IPCC, 2014). Such a rise in sea level would have an unprecedented impact for India's 7500 km coastline including two groups of islands, namely the Andamans and Nicobar and the Lakshadweep.

On extreme weather phenomenon, the IPCC (2014) projections show that there will be an increase in cyclonic intensity in the Indian subcontinent in the 2030s. Meanwhile, Krishnan et al. (2020) underline that the frequency of very severe post-monsoon cyclonic storms (VSCSs) has increased significantly in the Indian region between 2000 and 2018. Floods and droughts are likely to increase in India since there will be a decline in seasonal rainfall, coupled with an increase in extreme precipitation during monsoon. Inhabitants of the eastern coast of India in particular are expected to be vulnerable to the impact of extreme weather events because of poor infrastructure and demographic development (Rohekar, 2017; Krishnan et al. 2020).

### 3. Security Implications

The above discussed geophysical implications of climate change on India would have far reaching effects on the security of the country. While it is unclear whether climate change will cause conflicts in the future, what has been established so far upon close reading of existing research is that the physical impacts of climate change will maximise and worsen existing socio-economic and politico-cultural fissures. It is a hypothesis that needs to be tested for India's context, too. The impending geophysical impacts of climate change would catalyse a range of uncertainties which could destabilise India's future security, internally and externally, and both in the traditional and non-traditional sense. Nitin Pai (2008) categorically argues that,

glacial melt, rising sea levels and extreme weather will exacerbate ongoing conflicts and will require India to develop military capabilities to address a range of new strategic scenarios: from supporting international co-operation, to managing a 'hot peace', to outright military conflict.

The following section looks into the possible fallout of these impending impacts on the country.

### **3.1. Climate-induced Mass Migration – Domestic and International**

One of the consequences of climate change for India which would cause a major security concern is climate-induced mass migration, both internal and international. India has been battling the problem of migration ever since independence and it has cost the state enormous resources—financial, military, and human—to deal with it. Domestic migration, the movement of people from one part of the country to another, would increase as certain regions face rising surface temperature, changing rainfall patterns and natural calamities. It is anticipated that millions would move from the regions battered by climate change impacts to other relatively safer regions in search of livelihood. This would be anticipated more among the masses of people engaged in the agricultural sector which is still the largest employment sector in the country, accounting for a third of India's GDP (Sumona, 2018). The census 2011 data on internal migration shows a 45% increase in the number of domestic migrants in India over the 309 million in 2001. The migrant percentage of the population increased from 30% in 2001 to 37% in 2011 (De, 2019). Between 1990 and 2016, India lost 235 square kilometres of land to coastal erosion, jeopardising lives and livelihoods, and causing people to flee to safer places (Panda, 2020). According to the Internal Displacement Monitoring Centre, India has the highest level of disaster displacement in South Asia in absolute terms and is one of the highest in the world with an average of around 3.6 million people a year being displaced between 2008 and 2019, predominantly by monsoon flooding (IDMC, 2020).

In the drought prone Balangir district of Odisha, an estimated 300,000 labourers migrate every year (Deshingkar, 2003). The Kendrapada district of Odisha has witnessed the submergence of the Satabhaya villages (seven villages) between the 1980s and 2011 (Panda, 2020). Similarly, inhabitants of Lohachara Island in the Sundarban, which was submerged in 2006, migrated to Sagar Island nearby while those of the neighbouring Ghoramara island followed suit. It is also recorded that Sagar Island itself lost 7,500 acres of land to sea (Deshingkar, 2003). The Sundarbans has lost approximately 170 square kilometres to sea between 1973 and 2010 owing largely to climate change and sea-level rise, combined with other morphological reasons. The region will see a relocation of an estimated 1 million people by 2050 due to threats from rising seas and coastal inundation (Panda, 2020).

The coastal regions of India which are densely populated with about 170 million are extremely vulnerable to sea level rise, erosion and intensified extreme weather phenomena (Panda, 2020). The National Communication to the UNFCCC notes that a one metre sea level rise will displace 7.1 million people and 5764 km<sup>2</sup> land area will be lost (MoEFCC, 2012). Predicted frequent cycles of floods and droughts will lead, for example, to change in the nature of river systems, depletion of freshwater, altered agricultural patterns, all of which

would induce internal migration.

Internal migrations could potentially disrupt prevailing social and political equilibrium in the country. In extreme cases, it may even aggravate existing cleavages – communal, regional and linguistic. Profiling exercises conducted by IDMC (2020) show that marginalised groups such as scheduled castes, indigenous groups and religious minorities are disproportionately vulnerable to displacement and could further aggravate poverty and marginalisation among the groups. The study also revealed that displaced women and girls are often vulnerable to gender-based violence, and struggle to access healthcare, education, livelihoods and legal remedies (IDMC 2020). This indicates that future climate induced migration would disproportionately impact the large mass of poor, marginalised groups.

Internal migration has caused regionalism and inter-ethnic clashes in the states of Maharashtra, Gujarat, Manipur, Assam and other parts of the country as migrant labourers are perceived to be a burden to the shrinking local resource pie. Violent clashes occurred in Maharashtra in 2008 between migrants from Uttar Pradesh and Bihar and locals, each group backed by their political party bosses who very quickly manipulated the issue for political mileage. Cases of aggression against migrant populations have been recorded in Manipur and Assam, too, led by regional nationalist organisations who see migrants as a threat to the cultural and ethnic identity in addition to perceived economic strain. These altercations were met with retaliations against workers from these northeastern states in other parts of the country where many had to flee to their home states. It is certainly not unfathomable that such ethnic and regional conflicts would intensify in a changed climate as more environmental migrants emerge and scatter to find safer habitats and livelihoods in regions other than their own. In a future with more pronounced shortages of ecological resources, economic opportunities, and food, internal migration in India is anticipated to increase significantly causing law and order challenges and even outright conflicts.

In addition to internal migration, international migration of climate refugees would put enormous strain on India's security arrangements. According to WBGU (2007), environmentally-induced migration is one of the four conflict constellations where conflicts can be anticipated as a result of climate change. The Ganga-Brahmaputra-Meghna (GBM) delta appears to be a future climate-security hotspot between India and Bangladesh according to various researchers. The GBM delta is one among the conflict clusters of the post-cold war world order as per the UCDP Georeferenced Event Dataset (Bahaug, 2018). In fact, the WBGU (2007) refers to the south Asian region of India, Pakistan and Bangladesh as one of the regional hotspots vulnerable to climate induced conflicts as it is faced with glacial retreat, changing annual monsoon patterns, rise in sea level and intensified cyclones. The catchment area of the GBM delta and its inhabitants are exposed to climate hazards such as fluvio-tidal floods, tropical cyclones accompanied by storm surges, erosion, salt-water intrusion and arsenic contamination of shallow aquifers (Rahman et al., 2020). The IPCC Assessment Report 5 (2014) identifies Bangladesh and Maldives as countries facing severe threat of inundation. A one metre rise in the sea-level could inundate about 17% of Bangladesh and put some 40 million people at risk (Scheffran, 2014). It is already established that flooding displaces 5,00,000 people every year in Bangladesh (Warner et al., 2009). Rahman et al. (2020), in their study of social vulnerabilities to climate change in the GBM Delta, found a strong vulnerability gradient across the delta coast in both India and

Bangladesh, with the vulnerability being highest closer to the Bay of Bengal. It must be noted that more than half the population of Bangladesh live within 100 km of the coast, most of which lies at an altitude of less than 12 metres above sea level (Scheffran, 2014). These extremely vulnerable populations in Bangladesh face imminent threats to their habitats and livelihoods from the impacts of climate change such as inundation, salt-water intrusion, land erosion, frequent flooding and storm surges and cyclones. In a future where climate change comes to ravage their habitat and livelihoods, the new environmental refugees will be coerced to find safer habitats in the upper reaches of the GBM Delta, most likely beyond the political boundary line. International immigration to India is thus anticipated to increase as climate change proceeds to manifest. Such an influx is bound to have tumultuous economic, socio-political impacts on the country, worsening existing skirmishes, and disturbing the relations between the two neighbouring nations.

Illegal immigration from Bangladesh has been a root of intense ethno-political conflict in the North Eastern regions of India, particularly Assam and Tripura. Not only has the region witnessed decades of bloody violence but also the emergence of insurgency groups and regional political groups who are addressing the challenge posed by the issue of illegal immigration. Boiling down to questions of ethnic identity and 'sons of the soil' narrative, the region has seen massive security breakdowns where thousands of people have lost their lives either as direct participants in these religio-ethnic movements or as mere casualties. The lackadaisical attitude of successive central governments towards the issue and the tendency of regional political parties to gather political gains through appeasement policies have deepened the problem which continues even today. Human and nature induced migration and their interaction with existing religio-ethnic strifes in the region may further deepen political instability and intensify violent clashes and civil wars across borders (Bhattacharyya and Werz 2012). Such eventualities would increase the burden of the Indian state which is attempting to overhaul its citizenship policy as is evident in the recently passed Citizenship Amendment Act, 2019<sup>1</sup> and the National Register of Citizens<sup>2</sup>. The response to these controversial policy initiatives have been divisive with nation-wide protests and violent riots between Hindu and Muslim communities in certain regions. An anticipated increase in immigration driven by environmental disasters, resource crunch, economic scarcity and political upheaval in the neighbouring South Asian region could lead to intensification of existing communal and ethnic conflicts which could further destabilise the security of the country.

### **3.2. Resource Scarcity and Conflict Risks**

A UNEP report on Natural Resources and Conflict (2015) underlines that, "Natural resources will become key drivers in a growing number of disputes, with potentially

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<sup>1</sup> The Citizenship Amendment Act 2019 grants Indian citizenship to select religious minorities such as Hindus, Buddhists and Christians from neighbouring Pakistan, Afghanistan and Bangladesh. The Act has been strongly criticised and vehemently opposed for being discriminatory and exclusionary towards the Muslims.

<sup>2</sup> The NRC is an official registry of legal Indian citizens. It contains demographic information of all those who qualify as citizens of India as per the Citizenship Act, 1955. First prepared after the 1951 Census of India, it has not been updated until recently.

significant consequences for international, regional, and national peace and security". Climate change is bound to have a negative impact on the availability and accessibility of resources. As per the projections of the IPCC *Special Report on Global Warming of 1.5°C*, 100 million people will descend into poverty as a result of negative impacts on agriculture, food insecurity and hunger, lost income and livelihood opportunities, adverse health impacts and population displacements (IPCC, 2018). What these would mean for India is grim given that more than 50% of the total population depends on agriculture for their livelihood. In addition to increasing the risk of crop failure and lower crop production in India, the IPCC AR5 projections show that climate change will exacerbate water shortages and increase flood-related coastal and infrastructural damage (IPCC, 2014). Shortages are expected in drinking water as life-giving river basins face floods or droughts, and in food grains and agricultural produce as vegetation becomes unviable due to rise in temperature or higher incidences of pests. A study by Sivakumar et al. (2011) foresees a drop of 8% and 32% in rice and wheat production respectively by 2050. India's water sector is already strained by multiple factors such as population increase, urbanisation, shifting agriculture and livelihoods, privatisation of water rights, over-extraction, and resource degradation (Antos, 2017).

India has seen conflicts arising out of the fight for natural resources such as land and drinking water. The Cauvery water crises between the states of Tamil Nadu and Karnataka over the issue of allocation of water has been an enduring problem leading to occasional violent outbreaks between the affected populations. Policy interventions and successive court rulings have failed to ameliorate the dispute to the satisfaction of all parties involved. For instance, in 1991, following a Supreme Court ruling that Karnataka release an additional 205 thousand million cubic feet of water to Tamil Nadu, violence erupted in Karnataka killing 23 people. Violent protests occurred again in 2002 when the Supreme Court directed Karnataka to release 0.8 TMCft each day in September and October to drought-facing Tamil Nadu (Antos, 2017). Clashes also occurred following a 2007 Court allocation ruling which led to the death of two persons in Bengaluru, an imposition of curfew in the city and the observance of bandhs in both states, bringing life to a standstill (Ganeshan et al., 2016). Violent protests over water allocation were further observed recently in 2018. The lives affected in these conflicts are predominantly those of the farming communities whose survival is directly linked to an uninterrupted access to the water. It must be noted that these fatal clashes have occurred in years when the region has observed shortage of rainfall (Mallikarjunan, 2016). Because climate change is bound to have a negative impact on the region and river basins in general, the existing conflicts over water sharing could escalate in severity and also could replicate in other parts of the country with similar catchment characteristics.

Mass movements organised to thwart the state's mega developmental projects such as dams have been a common feature of the India environmental history as seen, for example, in the Narmada Bachao Adolan, the movements against the Tehri high dam, Bedthi lchampalli, Bhopalpatnam, Narmada Sagar, Koel-Karo, Bodhghat (Shiva, 1991). These are resistance movements of aggrieved millions in the respective regions who fear the submergence of their habitats and livelihoods. Victims of such mega dam projects suffer displacement, disenfranchisement, poverty and, inadequate compensation.

Conflicts over natural resources in India have occurred in relation to land as well. A study of 289 ongoing land-related conflicts in the country by the Rights and Resources Initiative with the Tata Institute of Social Sciences (2016) found that these conflicts affect approximately 3.2 million people over a span of 1.2 million hectares of land in India. The economic cost of these conflicts is pegged at Rs. 12 trillion worth of industrial and developmental projects. The study also found that 60 percent of the cases of conflict were caused by land acquisition by the government. In an interesting observation, Kennedy (2013) draws a connection between the increased mining of minerals and the rise in Maoist insurgency in the tribal dominated regions of central India. The Maoist movement, one of the longest prevailing internal security challenges to independent India, has its roots in the indiscriminate exploitation of natural resources by capitalist interests and the state. Further, these left-wing extremists have exploited environmental degradation and resource crunch to recruit their cadres and build legitimacy to exert and maintain local control (Singh, 2020). As climate change induced rise in temperatures and erratic weather phenomena reduces the availability of arable and fertile land, there will be increased pressure on the government to capture land for its developmental projects in response to which the land-owning poor masses will be forced to further their agitation and resistance in a more organised manner. These people-state conflicts over land could lead to a major security challenge for the state, as Zimmerer (2014) argues that, “environmental violence is amongst the main driving forces of collective violence and climate change will dramatically increase the likelihood of genocide occurring in areas at risk”. The scarcity of land resources in a changed climatic future could therefore herald conflicts which could lead to perilous civil strifes. Competition for resources such as water, food-grains coupled with widespread economic and political strain could intensify secessionist and extremist movements in the country posing a grave challenge to its sovereign integrity.

### **3.3. Challenges to Bilateral Relations**

Given that the predictions of climate scientists for the South Asian region is grim as discussed, and that the impact of climate change is transnational in nature, the repercussions it would have on the relations between India and its neighbouring states have been a subject of some speculation among Indian strategic thinkers. Climate change can alter existing geostrategic policies and the status between countries by unveiling new vulnerabilities for states. Changes occurring in the geophysical features of neighbouring countries pertaining to river systems, glacial recession, floods, or extreme events will have spill-over effects on India's national security. India has a long history of boundary issues with its neighbours Pakistan, China, Nepal and Bangladesh. It needs to be noted that these contested border areas along the Himalayan regions or the Ganga-Brahmaputra delta come under fragile geophysical locations. Climate change could exert unprecedented stress on strategic and critical infrastructures many of which are based in these locations. As climate change manifests its impacts on the Himalayan region causing glacial recession and thawing of cold deserts, it could open up new security challenges along the borders. Hitherto inaccessible regions may become easily permeable, leading to enhanced insecurity along the Indo-China and Indo-Pak border. These developments can stretch thin the military capacities and compromise critical military operations along the border. This would mean that structural and functional safety standards as well as contingency plans created a decade ago may be inadequate to deal with the changing physical conditions in the current



times (Singh, 2020). Some security analysts therefore argue that climate change will require India to enhance its military capabilities to address a range of new strategic scenarios from managing a 'hot peace', to outright military conflict (Pai, 2008). It can—and should—be argued, however, that international cooperation and concerted diplomatic efforts must be given priority when it comes to maintaining sustainable peace even in a changed climate future.

Further, as climate change melts the Himalayan glaciers and destabilises the water tower of Asia, much of the water supply system in the region will be disrupted. In such an event, countries like China, Pakistan, Bhutan and Nepal with which India has ongoing water-sharing issues may resort to actions that could compromise India's water security interests. A water crisis in Pakistan may worsen its relations with India in that it might use its militant proxies to deter, threaten and sabotage water-management infrastructure in the contested regions of Kashmir (Sinha, 2006). In a worsening water crisis situation, water projects and infrastructures on the Indian side could become soft targets for anti-India forces in Pakistan. Sinha (2006) opines that such an act could trigger events leading to another war undermining the existence of bilateral consultative processes. Alternately, the Indus Water treaty (IWT) of 1960 which governs the water sharing between India and Pakistan came under intense scrutiny after the terror attack on the army camp at Uri in the Indian administered Jammu and Kashmir, with calls for either scrapping the pact or using it as leverage to pressure Pakistan for sponsoring terror on India (Sumona, 2018). Domestically, too, changing climatic conditions might intensify the internal turmoil in Pakistan sharpening inter-provincial fault-lines. The highly populated coastal Sindh province, for instance, is vulnerable to rising sea level and water crises as its agricultural lands depend on the Indus River for irrigation. Climate change could cause such vulnerable regions with historical political tensions to flare up in a separatist movement which in turn could exacerbate tension in the Indo-Pak relationship (Pai, 2008).

As climate change induced water scarcity escalates in neighbouring China, it is anticipated (and already evident) that China will secure its water needs through geoengineering projects to either dam or divert rivers originating in regions under their control in the Himalayan or Tibetan Plateau. This would include important rivers flowing southwards such as the Brahmaputra and the Sutlej on which millions of people in India depend for livelihood. A reduction or obstruction to their flows would have far-reaching impacts on the lower riparian India. Any mega-rerouting of rivers by China would escalate tensions in the region as it would "constitute a declaration of water war" over India and Bangladesh (Chellaney, 2007). In fact, China is seen to be 'weaponising water' by creating dams, barrages and other water diversion structures within its borders and outside, including in the disputed territory of Pakistan-administered Kashmir (Chellaney, 2019a). Further, despite the existence of bilateral agreements to share ecological data especially on river flows, Chinese authorities have been accused of being tardy in sharing information with their Indian counterparts which had led to a delayed and inefficient response to disaster events in the lower Himalayas. As such incidents are projected to become more frequent, the bilateral relations will be characterised by mutual distrust, making any cordial diplomacy extremely difficult (Pai, 2008).

The melting of glaciers and thawing of cold deserts in the Himalayan border areas could

dissipate natural barriers between India and China. Several incidences of skirmishes between the two due to Chinese incursions along the Line of Actual Control (LAC), seen as recently as June 2020 in Ladakh's Galwan valley or Doklam plateau (in Sikkim in 2017), are indicators that the boundary issue is far from resolved. While the existing boundary conflict between the two is a legacy of colonial mishandlings, climate change induced geophysical changes along the region could prove destabilising for India in its efforts to maintain territorial sovereignty in the northern border front. In addition, China and India are predicted to be locked in a competition for sea-based energy and mineral reserves and other raw materials to feed the demands of their rapidly growing economies (Kugelman, 2017). As climate change reduces the availability or accessibility of these minerals, it is uncertain how amicably healthy the contest will remain between the two.

### **3.4. Critical Infrastructure**

The Centre for Climate and Security (2007) underlines that climate change challenges military effectiveness in the context of its readiness (infrastructure), operations (wartime and peacetime), and strategy. Climate change will affect how and where military forces operate, their planning, and critical infrastructure (Goldstein, 2016). Climate change will prove to be costly to India's security because critical and strategic establishments are vulnerable to physical damage from climate induced weather phenomena and geophysical changes. As discussed above, India's military installations in key locations along the border areas with Pakistan, Bangladesh and China fall under fragile ecological regions. Any damage to these would not only mean a loss of billions of dollars' worth of critical infrastructure but also would severely cripple India's strategic manoeuvring capabilities. Critical infrastructure such as nuclear installations along the coasts in particular are vulnerable to storm surges, cyclones and sea level rises (Singh, 2020). The Indian Navy and Airforce bases have faced damage from weather disasters. The devastation faced by the Car Nicobar Air Force Base and the Eastern Naval Command at Vishakapatnam in the 2004 tsunami and the 2014 Cyclone Hudud respectively are cases in point (Jayaram, 2018; Singh, 2015). A roundtable organised by the Institute for Defence Studies and Analyses (IDSA, 2016) on 'Understanding National Security Implications of Climate Risks' concluded that the impacts of climate change on the military are already being felt in the form of avalanches and flash floods negatively impacting the defence forces and rendering military bases vulnerable. Climate change would also spread thin India's military strength by increasing the pressure on disaster management forces as is evident in the increasing Humanitarian Assistance and Disaster Relief missions undertaken to tackle the rising incidence of weather-related disasters. This would call for an augmented resource allocation to the military and its planning (IDSA, 2016; Narula, 2016).

## **4. Response of the State**

The Indian state has acknowledged and responded to climate change adequately in policy terms. It is however yet to perceive climate change as a security issue per se as warranted by the above discussed precarities. India's major domestic policy engagement with climate change began with the establishment of the Prime Ministers Council on Climate Change in 2007 under Manmohan Singh's leadership. The Council delivered its task of framing a policy

directive in the National Action Plan on Climate Change (NAPCC) in 2008. This action plan includes eight national missions on a range of sectors such as energy efficiency, coastal regions, the Himalayan ecosystem, sustainable habitat and agriculture, water, forests, and strategic knowledge on climate change. The missions were to address climate change through both adaptation to the change and mitigation of greenhouse gas emissions. India chose to follow the principle of “dual benefits” through these national missions, aiming at addressing the socio-economic needs of the country while reaping ecological benefits or ensuring environmental security. India’s stand behind such a policy was justified by the fact that its per capita emission at 1.72 tonnes as of 2014 (World Bank, 2020) was in no way comparable to those of the affluent emitters or that of the world average at 4.98 tonnes. In addition to the national action plan, the government also mandated the framing of State Action Plans on Climate Change by the respective states in line with the national plan but in keeping with the specific geophysical needs and conditions.

India has been a key actor in international climate diplomacy. It has been instrumental in devising agreements under the United Nations Framework Convention on Climate Change. It had occupied a leadership position in representing the interests of the Group of 77 countries along with China. India has fought to infuse equity and fairness into the processes of climate change negotiations by strongly upholding the principles of “historical responsibility” and “common but differentiated responsibility”. India had signed and ratified the Kyoto Protocol, 1997, which exempted it from mandatory emission cuts. India had also signed and ratified the 2015 Paris Agreement, incrementally upping its commitments to reduce domestic GHG emissions. As a part of its Nationally Determined Contributions (NDCs) to the UNFCCC in 2016, India pledged to reduce its carbon emission intensity (emission per unit of GDP) by 33-35% from 2005 levels by 2030. It also committed to ensuring that 40% of its installed electricity capacity is produced from non-fossil fuels by 2030. An additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent would be created through forest and tree cover (MoEFCC, 2016). According to an economy-wide analysis of the progress made by India as of 2020, the Climate Action Tracker concludes that India can achieve its NDC target with currently implemented policies (Climate Action Tracker, 2020).

India’s official policy papers on climate change such as the NAPCC, the National Communications, the INDC, and the recent Biennial Update Report to the UNFCCC, show that climate change is primarily an environmental and socio-economic concern for India and less of a security predicament. The policy actions undertaken are devised to ameliorate the geophysical impacts of climate change and abate the socio-economic fallouts. A quick search through select governmental documents on climate change for keywords such as ‘conflict/s’ yielded no relevant result while the word ‘security’ has been used only in the context of food, economy or energy. The latest assessment on the Impact of Climate Change on the India Region commissioned by the Ministry of Environment, Forest and Climate Change (MoEFCC) predicted several geophysical changes and concluded that “the impacts of these changes on infrastructure, environmental and public health can hamper efforts towards attaining India’s developmental goals and impede the country’s economic growth” (Krishnan et al., 2020). The security dimension is conspicuously missing in the analysis. Internationally, too, India has been cautious of efforts to securitise climate change as was made evidently clear by India’s permanent representative to the UN, Ambassador Syed Akbaruddin, at the UN Security Council open debate on the security implications of climate

change in January 2019. Arguing that the nexus between climate change and conflict is “complex, contingent, and still contested”, the Ambassador opined that, “thinking in security terms usually engenders overly militarised solutions to problems which inherently require non-military responses to resolve.” India sees a generalised link between climate change and security as “ambiguous” even as it acknowledges that climate risks are evident in some specific cases (Goswami, 2019).

## 5. Key Policy Considerations

Keeping in mind the above discussion on the security implications of climate change for India, it appears that India’s official response to climate change has stopped short of an all-out engagement. While India has responded adequately on the ecological and economic policy fronts, it has yet to accord climate change the security attention it warrants. One reiterates that even as climate change may not cause the outbreak of conflicts in the near future, it will certainly exacerbate existing security challenges given the national circumstances.

India has, therefore, a “responsibility to prepare” to use the framework of Warrell et al. (2017), which argues that sovereign states have the responsibility to actively prepare for the ‘unprecedented risks’ climate change pose which are becoming increasingly evident with ‘unprecedented foresight’. India needs to augment its ‘adaptive capacity’ defined as “the ability to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences” (IPCC, 2007). Such preparation and enhancement of capacity must be reflected in revisiting India’s security agenda to incorporate climate change induced security threats discussed above.

To address the implications of climate change on critical security infrastructure, there is a need to augment the adaptive capacity of all the wings of the military to prepare them for resilience against changing climate (Ghosh, 2013). Since such transformative projects of large-scale establishments are time-consuming, it would be wise to act sooner with collective wisdom and draw up necessary road maps (Singh, 2018). The military will be overburdened with rescue and rehabilitation operations during natural calamities. This requires the existing National Disaster Relief Force to be revamped, streamlined and strengthened to meet the unseen challenges.

Further, there is an urgent need to strengthen regional cooperation as part of India’s national strategy on climate change. General Singh (2018) opines this be done by investing in creating structures to facilitate a synergised response to impending climate calamities. Sharing of scientific data, knowledge, research, resources, and expertise under the aegis of South Asian Association for Regional Cooperation (SAARC) and in cooperation with other Asian regional players as well as the larger global community should be a part of India’s climate foreign policy strategy.

The anticipated rise in international migration especially in the Ganga-Brahmaputra-Meghna region should call for a revision of border and maritime security arrangements. There is a glaring need to address the dual challenge of humanitarian responsibility and

domestic security arising out of increased illegal immigration. Similarly, the dangers posed by internal migrations require the state to create adequate legislative structures so as to prevent outbreaks of regional/ethnic conflicts.

The state should be mindful of the risks posed by resource crunch especially pertaining to land and water. Mega developmental projects such as damming and mining should not be undertaken at the cost of local people's interests as it was seen that the resulting impoverishment and disenfranchisement could lead to the rise of homegrown fundamentalism or fuel existing extremism.

Further, learning from the large human security impact of the Covid-19 pandemic, India must prepare for such health emergencies as climate change is bound to make them more frequent in future. The health sector needs to be insulated from undue stress by revamping its infrastructure and policy, and enhancing preparedness of the health workers and management.

There remains the need to address and respond to the intersectional nature of climate change in national policy making. Climate security threats need to be infused into the policy making process by all departments and ministries so as to make climate sensitive policies and help better adapt to the impending changes.

Finally, there is a need to establish an institution dedicated to climate security crises to monitor climate security stresses and advise policy makers on adequate courses of action. Such an institution would be instrumental in chalking out rapid response mechanisms to deal with unprecedented climate emergencies or "black swan" events.

## **6. Conclusion**

Climate change is also a security issue for India. While it is yet to be proven that it can cause conflicts, it is undeniable that it will act as a threat multiplier, affecting grave security challenges for the country if no proactive compensating policies are implemented. The security vulnerabilities for India emanating from the future impacts of climate change include escalation of conflicts arising out of internal and external migrations, resource scarcity, frontier disturbances, and weakened critical and strategic infrastructure. While the state has responded to climate change on ecological and economic fronts, it has yet to accord climate change the security importance it warrants. In fact, there is a glaring need for widening the concept of security to encompass climate change and its impacts in the Indian security policy discourse. Climate change needs to be mainstreamed into national security policy making, for India to effectively prepare itself from the many direct and indirect implications of climate change.

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