Integrating Risks and Impact of Climate Change in India's Military Strategy

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Climate change is a pressing concern, needing urgent action. The threats from climate change have been growing and its disastrous impact is becoming evident, with an increase in the frequency and scope of natural disasters. The nature of the problem is unique, the impact is all encompassing, and the risks to both infrastructure and human life are high. Recognising the immediate threat which impacts the entire world, all countries unanimously agreed on a legally binding global climate deal in the 21st session of the Conference of the Parties (COP 21) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC). While a common framework may have been evolved for a legally binding agreement, actions for mitigation and adaptation have to be undertaken at the national level. This paper aims to highlight the threat of climate change and its effect on national security. It argues that the impact of climate change is non-discriminatory and leads to the breakdown of infrastructure in the defence establishments, thereby lowering the defence preparedness of the country, apart from causing significant financial losses. Hence, it proposes that the Indian armed forces should formulate

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a strategy for integrating the risks from the impact of climate change and evolve appropriate response mechanisms at the working level in various defence establishments.

Impact of Climate Change on National Security

Does climate change impact national security? The answer is a resounding yes. The path-breaking report titled *National Security and the Threat of Climate Change* penned by the CNA Military Advisory Board[1] of the US, in 2007, concluded that "climate change acts as a threat multiplier for instability in some of the most volatile regions of the world" and "projected climate change will add to tensions even in stable regions of the world". As this would affect US national security, the report recommended, "The consequences of climate change should be fully integrated into national security and national defence strategies". The Military Advisory Board reaffirmed these findings in a May 2014 in the report titled, *National Security and the Accelerating Risks of Climate Change*, which also concluded that climate change affects the internal and external stability of a nation and impinges on national security. The potential of the impact of climate change for triggering armed conflict was also analysed by the Peace Research Institute Oslo (PRIO) as early as in 2008. The report presented the theories and evidence of the relationship between climate change and armed conflict. It identified intensification of natural disasters, increasing resource scarcity, and sea level rise as the three main processes through which climate change could cause social instability and conflict, and highlighted the risks such as destruction of infrastructure, increased health risk, and loss of livelihood. The report,

however, pointed out that the extent to which these mechanisms increase the likelihood of organised violence depends on "country-specific and contextual factors."[2]

In the report titled *National Security Implications of Climate-Related Risks and a Changing Climate* released in July 2015, the Pentagon said that climate change is an "urgent and growing threat to our national security." The report reinforced that global climate change would have wide-ranging implications for US national security interests over the foreseeable future as it would aggravate existing problems such as poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions that threaten domestic stability in a number of countries. This is viewed as a security risk as it impacts human security as also affects the ability of governments to meet the basic needs of their citizens.

The impact of climate change on national security has been proved time and again, and over the years, it has been observed that recurring flooding, drought, temperature extremes, frequent and/or more severe extreme weather events, sea level rise and temperature changes, exacerbate the threats to food, water and energy security which impacts the society at both micro and macro levels. These societal impacts interact to affect national security and it is, therefore, essential that these impacts are quantified for national security planning. It is evident that the risk to developing countries such as India, which have a high population density, poor warning systems, uncoordinated responses and limited resources for adaptation, will be much higher.

A Direct Threat to Military Preparedness

Apart from the impact on society, an increase in the frequency and intensity of extreme weather events directly impacts military assets and undermines military readiness. Coupled with other possible impacts such as large-scale migration across borders, as seen recently in Europe, it has the potential to exacerbate conflicts around the world and is a threat to

national security and stability. In the Indian context, Pai has analysed the impact of climate change on regional security and its implications for India's national security in *Climate Change and National Security: Preparing India for New Conflict Scenarios* and concluded that "India needs to develop military capabilities to address a range of new strategic scenarios".[3] In 2009, the Institute for Defence Studies and Analyses (IDSA) Working Group on Security Implications of Climate Change for India identified India's key vulnerabilities and highlighted the possible adverse impact on the strategy and tactics of the Indian armed forces.[4] The Centre for Air Power Studies (CAPS), organised an event in September 2009 under the project *Climate Change and the Military: Copenhagen and Beyond*[5], which, was an initiative by a consortium of independent think-tanks,[6] and the report titled, *Climate Change and the Military: The State of the Debate*[7] that outlined the threats to the armed forces.

PK Gautam has identified the impact of climate change on military operations and identified adaptation of the operational and tactical strategies and logistic plans of the military as one of the possible impacts.[8] The author opines that for the Indian Navy, Sea Level Rise (SLR) would affect naval operations at all levels of warfare – strategic, operational and tactical. Port operations, protection of coastal installations and changes in manning of ships have also been envisaged. Climate change as a threat to naval operations and infrastructure and its impact on maritime security in the Indian Ocean Region (IOR) have also been highlighted by A Singh (2015).[9]

The threat from climate change is also acknowledged in the report on *Global Strategic Trends – Out to 2045,* released by the Ministry of Defence, UK, in 2014.[10] It notes that by 2045, climate change is likely to have more noticeable effects such as the risks of flooding of coastal cities from the rising sea level as well as from the frequent and destructive weather events. The report titled *Climate Change and US National Security* by the Atlantic Council's Brent Scowcroft Centre, on international security,

released in March 2016, also discusses the past, present and future of climate change and concludes that climate change is an environmental stressor and "ought to be seen as a threat to core US national security interests, both at home and abroad."[11]

In the recently concluded Shangri-La Dialogue in June 2016, Ashton Carter, Secretary of Defence of the United States, emphasised on the growing strategic impact of climate change. While addressing Asia's complex security challenges, he suggested that the region's myriad security challenges including "the growing strategic impact of climate change need to be addressed collectively." This placed climate change within the broader context of a range of pressing security threats facing the region.[12] The Union of Concerned Scientists, in its report released in July 2016, titled *The US Military on the Front Lines of Rising Seas*, highlighted the direct impact of climate change on the military which included the risk of "losing land where vital infrastructure, training and testing grounds, and housing for thousands of its personnel currently exist". Out of the 18 militarily installations which were analysed, it was found that many of them, including the Portsmouth Naval Shipyard, US Naval Academy at Maryland, Washington Navy Yard, Naval Air Station Key West, Naval Station Mayport, and Eglin Air Force Base at Florida are likely to experience extensive tidal flooding and extensive storm surges during hurricanes. The report also highlighted the gap between the military's current preparedness for sea level rise and the impending threats due to climate change.[13]

One of the main threats to naval establishments comes from the rising sea levels. The Intergovernmental Panel on Climate Change (IPCC) in its Assessment Report 5 predicts an increase in the sea level by 0.26-0.55 metres (m) by 2100 under a low emissions scenario, and by 0.52-0.98 m under a high emissions scenario.[14] This would pose a significant threat to naval establishments located in Mumbai, Vishakhapatnam and Kolkata. Military infrastructure in these bases could be inundated, leading to a decrease in the efficiency of conducting Search and Rescue (SAR) and

undertaking Humanitarian Assistance and Disaster Relief (HADR) missions. Naval bases, which are scattered across the country's coastline, are also at increased risk from the higher frequency and increasing intensity of typhoons, hurricanes and cyclones. Military stations in high altitudes, on the other hand, are at a higher risk from flash floods due to the melting ice. Droughts or excessive rainfall and extreme temperatures could threaten many training activities, and the environment for military operations may be constrained or altered in the long run.

Natural disasters in India have led to devastation of infrastructure in military bases. This was most evident in the case of the Indian Navy when one of its premium naval bases at Vishakhapatnam was in the eye of the storm 'Hud-Hud' in October 2014. It was estimated that the loss to the national exchequer due to damage to the infrastructure in the Eastern Naval Command was around Rs 2,000 crore.[15] While there was no damage to the ships and submarines, the cyclone uprooted trees and caused extensive damage to the infrastructure, including communication and power lines, disrupting the availability of essential commodities like water, petrol and electricity.

While the impacts of higher temperatures, increased precipitation, changes in the salinity of water and other physical changes may affect the operational performance of the war-fighting machinery, communication equipment, sensors and other hardware, these changes would be gradual and can be offset by tuning the equipment. However, it is the uncertainty of climate change and the suddenness of the impact, which is hard to anticipate and prepare for. This requires flexibility, adaptability and incorporation of multi-functionality in the role and capability of the armed forces.

Role of Defence Forces in Providing Humanitarian Assistance

The overall implications for the Indian armed forces such as their increased use for disaster relief and evacuation operations and post disaster

reconstruction activities were forecast by Chauhan.[16] These vulnerabilities and the additional role thrust on the armed forces due to climate related disasters have come into the limelight on a number of occasions in recent years. The Indian Army was in the midst of the action in the Uttarakhand floods in the summer of 2013, where it undertook one of the largest relief and rescue operations in the last several decades.[17] The defence forces deployed over 8,500 personnel, including those from the Indo-Tibetan Border Police (ITBP) and Border Roads Organisation (BRO).[18] As a part of 'Operation Rahat', the Indian Air Force (IAF) employed 20 aircraft including the Dhruv Advanced Light Helicopters (ALHs), Mi-17 and Mi-17 V5s, and C-130J, Avro and AN-32 to undertake relief operations in the rain-ravaged areas over a duration of several weeks.[19]

The response of the Navy for providing relief to the city of Vishakhapatnam in the wake of 'Hud-Hud' in late 2014 was exemplary, as expected, and special teams were formed for disaster management. These actively participated in humanitarian relief, in coordination with the civil administration.[20] Ships were also prepared with relief material and the Navy deployed 14 diving teams in and around Vishakhapatnam city, Srikakulam and Anakapalle.[21] The Indian Air Force also pitched in and kept one IL-76, one C-17 and five AN-32 aircraft ready at Chandigarh, Delhi, Jorhat and Agra for rescue operations, while the Indian Coast Guard deployed 17 ships, two Air Cushion Vessels (ACVs) and 13 aircraft in the region to help in the rescue operations.[22]

The shape of things to come and the expectation from the military can be forecast from the century's heaviest rainfall in Chennai, which led to the literal inundation of the city in early December 2015. The Indian Army, Indian Navy and Indian Air Force personnel, along with teams from the National Disaster Response Force (NDRF) were called in for rescue and relief operations, and they evacuated thousands of people from the affected areas.[23] It is important to note that the Chennai airport was flooded and all flights were suspended. At this crucial time, the

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Rajali Naval Base at Arakkonam was used, and defence and civilian aircraft were deployed for relief operations, which played a critical role in the overall mission.[24]

In the regional context, the impact of climate change would place an increased demand on the armed forces for undertaking humanitarian assistance. This was evident in the exemplary role played by the Indian Navy for undertaking HADR operations during the 2004 tsunami. The Indian Navy launched a massive HADR effort in the Indian states of Tamil Nadu, Andhra Pradesh, Andaman and Nicobar (Operations Madad and Sea Waves) along with relief operations in Sri Lanka (Operation Rainbow), Maldives (Operation Castor), and Indonesia (Operation Gambhir). A total of 40 ships, 42 helicopters and 35 aircraft with over 20,000 military personnel were deployed in relief operations abroad, including three survey ships which were converted into 46-bed hospital ships and sent to the affected areas.[25] Other HADR activities in the regional context include relief to Myanmar during cyclone Nargis, 2008; relief to the Philippines during typhoon Haiyan in 2013 and assistance to Malaysia for locating the missing flight, the MH 370.[26] The response of the Indian armed forces in providing relief to Maldives during the drinking water crisis in December 2014 also provides evidence of the nature of the forthcoming challenges and the anticipated changes in the role of the Indian armed forces.[27] While such responses are commendable and are expected from the nation's armed forces, there is a general feeling that there is a lack of a long-term strategy to deal with eventualities that may arise due to the impact of climate change, and the armed forces need to increase their preparedness level to meet this challenge.[28] The need to strengthen the Indian Navy's capability to provide HADR in

the Indian Ocean Region (IOR) has also been highlighted.[29]

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Integrating Climate Change in Military Strategy: US Efforts and Response

The US has been in the forefront of integrating climate change concerns in its national security and military strategy. The Department of Defence (DoD) first listed climate change as a threat to national security in its Quadrennial Defence Review (QDR) 2010, which was reaffirmed in the QDR 2014. The impact of climate change on the US strategic rebalance to the Asia-Pacific was also explored in the report titled, *The US Asia-Pacific Rebalance, National Security and Climate Change*, published by the Centre for Climate and Security.[30] The report highlighted the ways in which the effects of climate change are likely to shape the US strategic rebalance to the Asia-Pacific. It also offers solutions on addressing the effects of climate change in a strategic way, through implementing region-wide "Climate-Security Plans," adapting military infrastructure, and supporting key nations that are grappling with climate risks which have an impact on food, water and energy security.[31] The US DoD released a *Climate Change Adaptation Roadmap* in 2014 and is already taking various actions to increase its resilience to the impacts of climate change. The roadmap is guided by three broad adaptation goals:

Goal 1: Identify and assess the effects of climate change on the DoD.

Goal 2: Integrate climate change considerations across the DoD and manage associated risks.

Goal 3: Collaborate with internal and external stakeholders on climate change challenges.

The roadmap itself outlines "a proactive, flexible approach to assessment, analysis, and adaptation" for the DoD to keep pace with a changing climate, for minimising the impacts on US missions abroad and to enhance the national security.[32]In response to the increasing threat of climate change, the DoD has also directed the Geographic Combatant Commands (GCCs), to integrate "climate-related impacts into their planning cycles." This includes "monitoring, analysis, and integration of climate related risks into existing overall risk management measures, as appropriate for each combatant command." The DoD has also directed every US DoD installation in the world to undertake a "global screening level vulnerability assessment" to chart the risk to military assets. Apart from assessment and adaptation, efforts are being undertaken for mitigation and reduction of greenhouse gas emissions from the DoD. This effort is complemented by the Strategic Sustainability Performance Plan (SSPP), which articulates the DoD's sustainability vision to maintain the ability to operate into the future without a decline in mission capability. As a part of the ongoing efforts for improvement, the US DoD also issued Directive 4715.21 on *Climate Change Adaptation and Resilience* on January 14, 2016.[33]

Possible Indian Responses: The Way Ahead

What is true for the US is true for India as well. While India has a well-defined and independent National Action Plan on Climate Change (NAPCC), there has been no analysis of the risk and impact of climate change on national security. There is also no thought on integrating the responses to increased threats due to climate change in the existing military strategy. The US provides a good example of how military planning and operations can be adapted to enhance national security. It can be argued that the US operates in various parts of the world and provides security hegemony universally; hence, it is impacted by the security implications of climate change across the globe. But such an argument is equally

valid for India, at least in the regional context. While climate change exacerbates the threats to national security, its responses are non-military in nature. This somewhat alienates the military brass from addressing the growing threats and including the responses to climate change in military strategy. However, as has been highlighted, it is important that such an assessment should be undertaken and the risks and impacts of climate change analysed for possible integration with India's military strategy.

Climate change can impact military operations and lower the operational effectiveness of the defence forces.

First and foremost, there needs to be an acceptance of the fact that climate change can impact military operations and lower the operational effectiveness of the defence forces. Having accepted the need at the highest level of the National Security Council, the next step would be to evolve a policy framework for adaptation planning. Taking a cue from the efforts of the US DoD, these could include assessing the impact of climate change on plans and operations, inclusion of different strategic scenarios in military training, enhancing built and natural infrastructure and strengthening acquisition and supply chains, apart from including new technologies and capabilities to meet the enhanced future needs. An audit of all the bases of the armed forces to the vulnerability of climate change and to assess the weak points may be undertaken, using a range of feasible scenarios such as flooding of low lying areas, prolonged breakdown of grid fed electricity supply, drinking water disruption, and damage to critical installations.

While the government has taken a few steps such as the establishment of the National Disaster Management Authority (NDMA), the defence forces are often called upon to undertake relief missions and are the first responders in a crisis. Hence, steps must be taken to stay in a state of enhanced preparedness to respond to emergencies, as and when

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called upon to do so. An integrated approach in the armed forces involving steps such as lowering of energy consumption, moving to cleaner sources of energy, and offsetting emissions by developing carbon sinks would help in mitigation of climate change and will complement efforts being made by the government. While the measures suggested above do not claim to be comprehensive, it is opined that efforts in this direction would pave the way for a closer integration, and better preparedness, with the military to the impact of climate change. Integrating climate change in India's national security strategy should be a priority considering that the risks involved are increasing in terms of the probability of occurrence of extreme climate events and in terms of the quantum of loss of human, natural and economic capital from climate related disasters. Early action on the assessment of risk and vulnerability, building capacity and capability to enhance resilience and adaptation, will lead to lowering the impact of climate change. Fine-tuning the national security strategy to analyse, assess and prepare for the uncertainties of climate change is, therefore, likely to enhance India's preparedness.

Notes

1. The CNA is a non-profit organisation based at Washington DC. The CNA Military Advisory Board (MAB) comprises retired three- and four-star flag and general officers from the Army, Navy, Air Force, and Marine Corps who study the pressing issues to assess their impact on America's national security.
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