Six Questions on
Climate Security for India

2021-2022 IPCS Taskforce Report

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The Institute of Peace and Conflict Studies (IPCS) is an independent think-tank in India. It was founded in 1996 to develop alternative frameworks for peace and security in South Asia and the extended neighbourhood. IPCS aims to bring policy-relevant research into scholarly and public debate through an emphasis on dialogue, outreach, and the capacity-building of the next generation of thought leaders. Its research and policy recommendations do not subscribe to any particular political view or interest.

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Introduction

The IPCS taskforce (TF) on climate security in India was convened over 2021-22. It is part of a multi-year project on the security implications of climate change for South Asia, executed in partnership with the Clingendael Institute in the Netherlands. A track 1.5 initiative, the TF comprised Indian academics, climate experts, scholar-activists, technical experts, and security practitioners. These were 19 specialists—one of whom requested anonymity—from diverse backgrounds who wouldn't otherwise find themselves in the same room. I was honoured to chair its meetings.

We held three full-group virtual TF meetings; these were supplemented by small group discussions to vet member inputs and finalise language. Disagreement was particularly encouraged. TF members approved the minutes of each meeting before proceeding to the next stage. This report is therefore a consensus-based document. Presented as six questions and answers and a policy framework recommendation, it distils deliberations that were structured around the four primary prompts listed below, and several injects:

- **Understanding** the relationship between climate change and security
- **Identifying** existing, emerging, and new climate security fault-lines
- **Discerning** institutional approaches to address climate security
- **Conceptualising** a broad definition of climate security that best reflects Indian experiences.

The TF was conceptualised during the COVID-19 pandemic and draws some of its rationale from it. We have seen the pandemic irrefutably confirm the obvious, i.e. the insufficiency of existing security frameworks to tackle hybrid challenges. These challenges defy easy categorisation (such as 'traditional' and 'non-traditional' security). The security implications of climate change follow the same logic. We are able to acknowledge it as a 'problem', but the problem can't be solved unless we know what it looks like in practice. Nor can we articulate these risks if we don't yet have the language to do so.

As an investigation into the points of intersection between security and climate change in India, and its domestic and transnational implications, this TF is a first step in framing

new security paradigms, providing policy backstopping, and flagging potential avenues of cooperation in South Asia.

Ruhee Neog
Director, IPCS

Taskforce members

Q1. How does this taskforce understand the concept of climate security?

'Climate security' is concerned with the security implications of climate change. This TF identifies six key attributes of climate security as an analytical lens:

- Climate security involves an equal cognisance of military and non-military factors, through the prism of climate change
- 'Climate change' and 'climate security' are not synonymous, but this distinction is not always obvious. As per the working UN definition, "Climate change refers to long-term shifts in temperatures and weather patterns"[1] as a result of both natural and human triggers. Climate security is concerned with the implications of these shifts
- The impacts of climate change may not cause insecurity by themselves, but have the potential to (1) Compound/accelerate social and political threats[2] (2) Blur the boundaries between 'traditional' and 'non-traditional' security, which is how states categorise security challenges (3) Constitute long-term, systemic risks to national and regional stability
- Transnational, regional, and sub-regional clusters are best suited to Indian and South Asian analyses of climate security because of localised and/or transboundary climate change effects
- Following from the above, there can be no one national-level climate security 'solution'. Approaches must be adaptive to local circumstances. Climate change impacts could threaten, for example, the economy; law and order; military infrastructure; environment; and local livelihoods. These could by themselves—or together—trigger further negative fallout. The effects will also likely differ by geography. Responses and resource allocation would therefore be context-dependent.

[1] United Nations. What is climate change?
[2] National Research Council. 2013. Climate and Social Stress: Implications for Security Analysis. Washington, DC: The National Academies Press. p.41

Q2. What is the relationship between climate change and security?

This TF agrees that:

- The relationship between climate change and security is complex and non-linear. Climate change has both direct and indirect implications: socio-economic, political, and geopolitical
- Such risks can create social and economic insecurity within borders. This can threaten governance, creating political instability
- If climate risks and the ensuing governance challenges transcend international borders, they could threaten a state's strategic interests.

These three elements could, by themselves or in concert, trigger situations of instability, and in specific contexts, violent conflict.

Q3. What are the climate threats to India's national security?

India is one of the world's most climate-affected and vulnerable countries,[3] with increasing levels of hydrological and meteorological events inland and along its coastline. This TF identifies five tipping points for India—extreme heat, floods, cyclones, water scarcity and drought, and rising sea surface temperature—with examples of their climate security consequences.

Extreme heat

- **Example #1:** Extreme heat affects the glacial ranges in India's north. Infrastructure development and long-term human presence degrade these environments, accelerating glacial retreat. A rise in temperature could open crevasses and cause

[3] Eckstein, David et al. 2021. "Global Climate Risk Index 2021." *Germanwatch Briefing Paper*

frequent avalanches. Army posts would need to be relocated. The cracking of ice-walls and ice-sheets will also require relocation and reallocation of resources.

- **Example #2:** Intense heatwaves led to the 2016 Uttarakhand wildfire, destroying around 5,000 acres of forest cover.[4] Such events have knockdown effects on local lives and livelihoods—eg. public health, and food, energy, and water security—and lead to other environmental and climatic phenomena such as pollution, cloud bursts, glacial melts, etc.[5] This is bound to worsen as a rise in land surface and ambient temperatures will lead to more heatwaves and record-breaking summers.[6]

Floods

- **Example #1:** Flooding along the India-Pakistan littoral border has an impact on border defences. This has the potential to exacerbate the border dispute. During the annual monsoons, changes in Sir Creek's size and course result in confusion and complications in border demarcation and integrity.[7] India has begun to erect floating fences, or gabion boxes, to demarcate the line and prevent further flooding/erosion along the border.[8]
- **Example #2:** Floods induced by large-scale development projects can lead to human displacement. Examples include the 2017 downstream riverine flooding caused by the Ranganadi Dam due to artificial channels built to divert water for power generation,[9] and the 2018 flash floods in Golaghat district caused by the Doyang Dam in Nagaland.[10]

Cyclones

- **Example #1:** A combination of rising land surface and sea surface temperatures has led to higher cyclogenesis in the Indian Ocean. Extreme weather events in the

[4] "Uttarakhand fires: Battle to douse deadly blaze in Indian state." *BBC News*. 2 May 2016
[5] Kapoor, Cheena. 2022. "Northern India caught in vicious cycle of heatwaves and forest fires." *The Third Pole*. 20 May
[6] Roy, Esha. 2021. "Heatwave occurrences increasing in India, occurring in new regions: study." *The Indian Express*. 11 October
[7] Jha, Satish. 2020. "India-Pak tension keeps BSF busy at Sir Creek estuary." *Deccan Herald*. 3 January
[8] " India to erect floating fence along Sir Creek border with Pakistan." *The Economic Times*. 2 December 2012
[9] Saikia, Arunabh. 2017. "Severity of Assam floods heightens old fears about dams in the Brahmaputra basin." *Scroll.in*. 22 July
[10] Karmakar, Rahul. 2020. "Assam flood displaced get a taste of UN's conflict refugee camps." *The Hindu*. 1 August

Arabian Sea and Bay of Bengal disrupt routine and combat air operations, and destroy critical coastal infrastructure, like the Jamnagar Airbase during the 1998 Gujarat cyclone[11] or Car Nicobar Air Force Base in Campbell Bay,[12] Andaman and Nicobar Islands, during the 2004 Indian Ocean earthquake and tsunami. In 2015, Cyclone Hudhud caused significant damage to the naval base in Visakhapatnam on India's east coast.

- **Example #2:** The 2021 Extremely Severe Cyclonic Storm Tauktae disrupted electrical supply in 10,447 villages in Gujarat[13] and uprooted close to 70,000 electrical poles.[14] Relief operations, healthcare services, water supply, etc. were affected. Damage to coastal roads, fallen trees, poles, and other debris could cut-off rural villages for extended periods of time, holding-off essential and emergency services.

Water scarcity and drought

- **Example #1:** Punjab's Doaba and Majha regions are prone to drought because of an absence of annual rainfall and poor irrigation systems[15] as well as the shifting and contamination of the Ravi River. The riverine changes are a result of massive construction projects on the Pakistani side of the border.[16] This has affected food and water security on both sides of the border, with future socio-political and security implications.[17]
- **Example #2:** The Kaveri River water-sharing dispute between Karnataka and Tamil Nadu is a prominent domestic example. Karnataka has refused to release water downstream during droughts.[18] More recently, following high rainfall, Karnataka

[11] Pandit, Virendra. 2021. "Cyclone Vayu : After the 1998 'super cyclone', Gujarat is now better prepared." *The Hindu Business Line*. 6 December
[12] " December 26, 2004 Tsunami: 12 years on." *The Indian Express*. 20 November 2019
[13] " Cyclone Tauktae: Power supply yet to be restored in Gujarat's 450 villages." *The New Indian Express*. 26 May 2021
[14] " Cyclone Tauktae tears up Gujarat coast; 13 dead, 16,000 houses damaged." *Business Standard*. 19 May 2021
[15] Rataul, Dharmendra. 2010. "Floods in rest of Punjab, but rains elude Majha region." *The Indian Express*. 12 July
[16] Thomas, Abraham and PK Sharma. 1998. "The shift of ravi river and the geomorphological features along its course in amritsar and gurdaspur districts of punjab." *Journal of the Indian Society of Remote Sensing*. 26: 57-68
[17] Arora, Kusum. 2022. "In Punjab's Doaba and Majha, Unemployment, Drugs and Dreams of Canada Dominate Young Minds." *The Wire*. 20 February
[18] Ramakrishnan, T. 2021. "Karnataka directed to release Cauvery water." *The Hindu*. 28 September

opened the floodgates, inundating parts of Tamil Nadu. This affects federal governance and triggers social tensions.

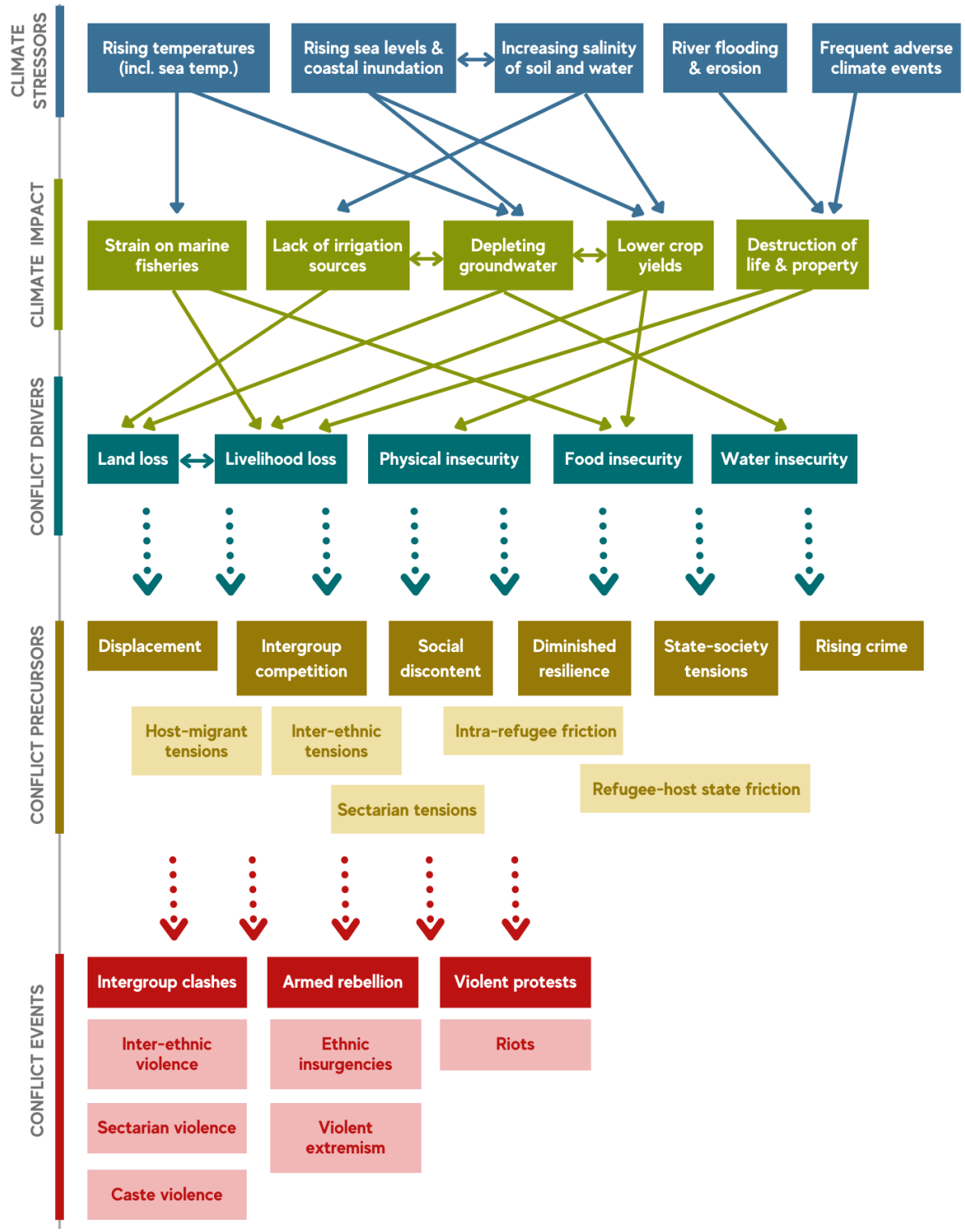
- **Example #3:** Anomalous cooling of sea surface temperatures in 2016 disrupted normal monsoon weather patterns and led to the worst northeast monsoon drought in South Indian history.[19] It was reportedly "worse than the Great Drought of 1874-1876 that led to crop failure, which in turn resulted in the Great Madras Famine of 1876 to 1878 that claimed millions of lives."

Rising sea surface temperature

Example #1: Rising temperatures have contributed to higher salinity levels in the Sundarbans, which has progressively lost its cover over the past few decades.[20] This causes greater carbon emissions from the region and exposes the environment to cyclones and typhoons. One fallout is intensified irregular human migration between India and Bangladesh in the Sundarbans delta region.

[19] Jain, Neha. 2021. "Southern India's 2016-2018 drought was the worst in 150 years." *Mongabay*. 20 May
[20] Thakur, Joydeep. 2022. "Sunderbans losing its dense mangrove cover: Govt report." *The Hindustan Times*. 14 January

The infographic below illustrates the chain of consequences between climate threats and violent conflict.[21]



[21] Choudhury, Angshuman et al. 2022. "Climate Security in the Bay of Bengal." *IPCS-Clingendael Institute Special Report* No. 212, January. p.39

Q4. Can climate change lead to conflict?

- There is no evidence at this time to suggest that climate change can directly lead to violent conflict, although some TF members have reservations about this conclusion. They believe that the linkage is more explicit than we acknowledge. There is agreement however that climate change effects can create the conditions for conflict by aggravating intermediate 'stressors', whether they are social, political, and/or economic[22]
- The chain of consequences depends on the context: climate impacts could lead to instability more easily in some settings than in others. The impact on intermediate stressors could also vastly differ. Existing state or regional fragility could be further exacerbated
- Climate change impacts could create/compound resource crises, weaken living standards for specific groups of people—such as farmers[23]—and cause popular disaffection. They could create or exacerbate inter-group, intra-group, and state-society tensions, clearing the way for eventual violent conflict.[24] This would contribute to internal instability, creating law and order problems
- The transnational impacts of climate change, coupled with border porosity, could spur greater irregular human migration, contributing to regional insecurity.

Q5. What are the geostrategic implications of climate security?

This TF identifies three geostrategic clusters within the security implications of climate change: direct and indirect risks; climate security as a foreign policy tool; and intended or unintended foreign policy consequences of geoengineering.

[22] Ibid, p.52
[23] Ministry of Agriculture & Farmers Welfare, Government of India. 2021. *Effect of Climate Change on Agriculture*. New Delhi
[24] Nagaraj, Anuradha. 2022. "Climate migration fuels conflicts in Bay of Bengal region." *Thomson Reuters Foundation News*. 15 February

Direct and indirect risks

Climate security risks can be visible and immediate and/or invisible and complex. Both ultimately manifest in political as well as military challenges.

- **Example #1:** Intense weather patterns could directly destroy or degrade ground-based radar installations, aircraft, service vehicles, aerostat balloon radars, etc. In 2013, Super Typhoon Yolanda reportedly damaged and nearly destroyed a doppler radar system in Eastern Samar, Philippines. US$ 100 million was spent on repair work, and the damage prevented the tracking of imminent weather disturbances from the Pacific.[25] In 2022, severe thunderstorms and strong winds around Virginia, U.S., caused the damage and destruction of ten military helicopters grounded at the Naval Station Norfolk.[26]
- **Example #2:** Due to coastal salinisation, sea-level rise, and frequent natural disasters, climate-induced migration no longer occurs in waves—it is now a sustained phenomenon. This can be witnessed in Assam, which is prone to devastating floods, and across the India-Bangladesh border. The latter is a hot-button political issue with humanitarian, legal, and often violent consequences.[27]

Climate security as foreign policy tool

An actor's control of regional climate security adaptation efforts could, in addition to bolstering its own strategic objectives, challenge or limit another actor's foreign policy calculus.

- **Example #1:** In 2019, Kiribati and the Solomon Islands, both Pacific Island states, officially severed ties with Taiwan to establish diplomatic relations with China.[28] This is significant in light of great power geostrategic competition overriding local climate security priorities in the Pacific. Beijing has sought to structure its approach on local needs and showcase itself as a preferred partner— as

[25]" Pagasa unable to track typhoon due to radar damage." *Inquirer.net*. 11 December 2013
[26] LaGrone, Sam. 2022. "10 Navy Helicopters Suffer Major Damage, Several Blown Over in Sudden Norfolk Storm." *USNI News*. 27 July
[27] Hossain, Adil. 2022. "How the 'Bangladeshi 'dog whistle helps justify violence against Indian Bengali Muslims." *Scroll.in*. 23 April
[28] Lyons, Kate. 2019. "Taiwan loses second ally in a week as Kiribati switches to China." *The Guardian*. 20 September

opposed to the U.S.—in helping the region's island states address their climate security concerns.[29]

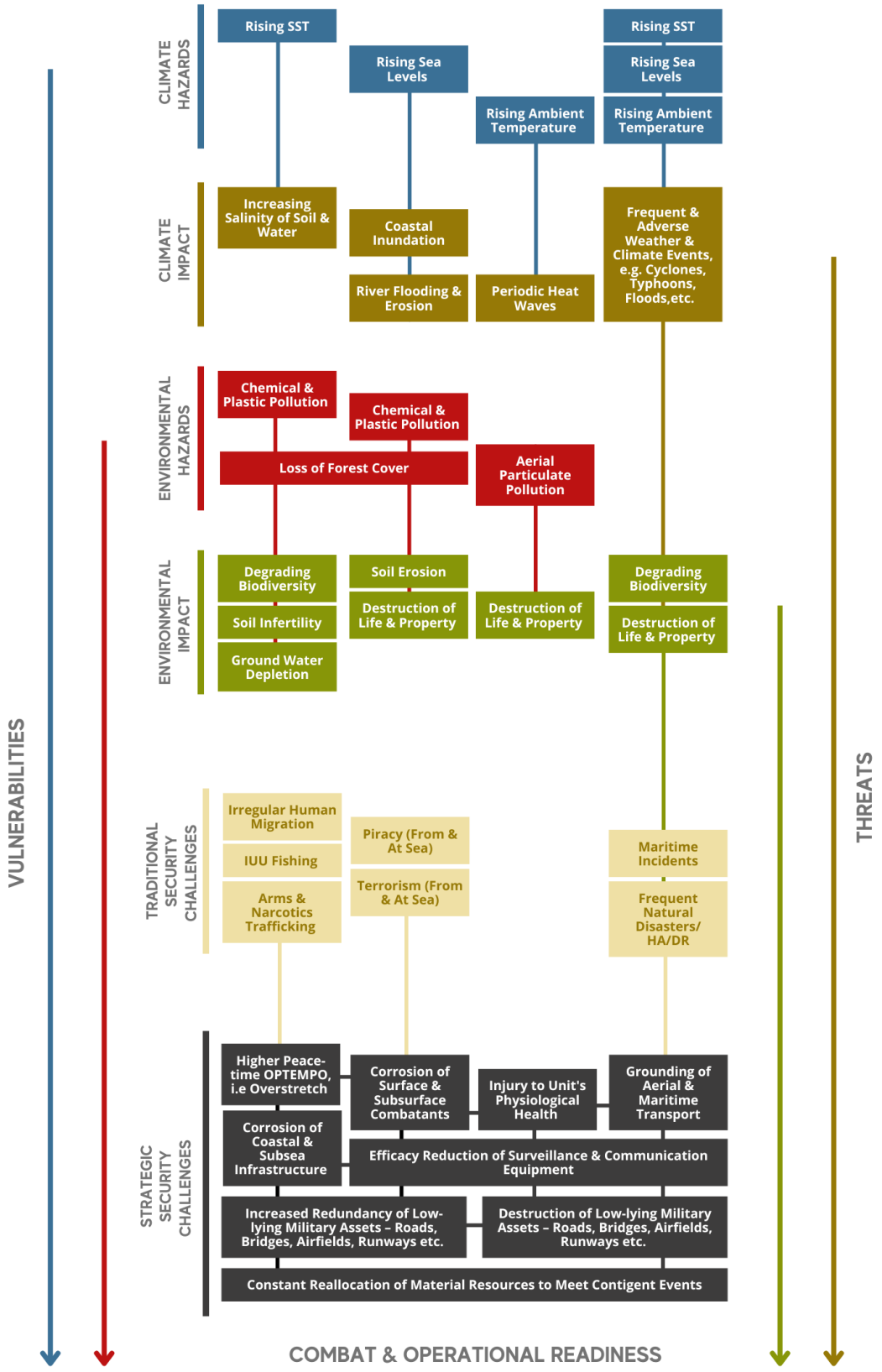
Intended/unintended foreign policy consequences of geoengineering

Geoengineering is "a set of emerging technologies that could manipulate the environment and partially offset some of the impacts of climate change."[30] Such projects, with their transnational implications, could have unintended negative consequences, or in worst-case scenarios, be designed with hostile aims. These situations can aggravate geopolitical tensions.

- **Example #1:** In 2018, Iran accused Israel of 'stealing 'clouds through cloud seeding to arrest rainfall over Iranian territory. Brigadier General Gholamreza Jalali, head of Iran's Civil Defence Organisation, was reported to have said, "Foreign interference is suspected to have played a role in climate change."[31]
- **Example #2:** *Tianhe* or Sky River, one of the large-scale geoengineering projects being deployed by China to address climate change and meet its Paris Climate Accords obligations, is a cloud seeding initiative focused on its northern regions. With major transboundary rivers such as the Brahmaputra and Sindhu emerging from the Tibetan Plateau, the project's implications could contribute to India-China tensions.[32]

The next infographic illustrates the geostrategic risk and impact flow of climate security.[33]

[29] Schröder, Patrick and Jason Young. 2022. "Great power competition and climate security in the Pacific." *Chatham House*. 7 July
[30] Geoengineering." Harvard University
[31]" Iran Accuses Israel Of Stealing Its Clouds, Snow, "Manipulating Weather"." *NDTV*. 3 July 2018
[32] Jayaram, Dhanasree. 2020. "Without Attention, Geoengineering Could Upend Foreign Policy." *Wilson Center*. 30 September
[33] Choudhury, et al, n.23, p.28


CLIMATE HAZARDS
Rising SST
Rising Sea Levels
Rising Ambient Temperature
Rising SST
Rising Sea Levels
Rising Ambient Temperature
CLIMATE IMPACT
Increasing Salinity of Soil & Water
Coastal Inundation
River Flooding & Erosion
Periodic Heat Waves
Frequent & Adverse Weather & Climate Events, e.g. Cyclones, Typhoons, Floods,etc.
ENVIRONMENTAL HAZARDS
Chemical & Plastic Pollution
Chemical & Plastic Pollution
Loss of Forest Cover
Aerial Particulate Pollution
ENVIRONMENTAL IMPACT
Degrading Biodiversity
Soil Infertility
Ground Water Depletion
Soil Erosion
Destruction of Life & Property
Destruction of Life & Property
Degrading Biodiversity
Destruction of Life & Property
TRADITIONAL SECURITY CHALLENGES
Irregular Human Migration
IUU Fishing
Arms & Narcotics Trafficking
Piracy (From & At Sea)
Terrorism (From & At Sea)
Maritime Incidents
Frequent Natural Disasters/ HA/DR
STRATEGIC SECURITY CHALLENGES
Higher Peace-time OPTEMPO, i.e Overstretch
Corrosion of Surface & Subsurface Combatants
Injury to Unit's Physiological Health
Grounding of Aerial & Maritime Transport
Corrosion of Coastal & Subsea Infrastructure
Efficacy Reduction of Surveillance & Communication Equipment
Increased Redundancy of Low-lying Military Assets – Roads, Bridges, Airfields, Runways etc.
Destruction of Low-lying Military Assets – Roads, Bridges, Airfields, Runways etc.
Constant Reallocation of Material Resources to Meet Contigent Events
VULNERABILITIES
THREATS
COMBAT & OPERATIONAL READINESS

Q6. Does 'climate security' inform Indian policy planning?

The answer is both yes and no. This TF observes that:

- The impacts of climate change aren't new, but their role in national security and the term 'climate security' are fairly recent developments originating in the U.S., and more specifically in U.S. military thinking.[34] Indigenous applications however do exist in India and the wider South Asia. Countries such as Bangladesh and the Maldives, for example, consider climate change an existential threat.
- Climate security is not explicitly acknowledged in Indian institutional thinking but its logic can be discerned in policy planning. Most considerations of the security impacts of climate change aren't planned or agenda-driven but informal and reactive
    - **Example #1:** A 2019 study by one of the IPCS taskforce members, which was taken up at the National Green Tribunal (NGT), examined the effects of climate change on military operations along the coast and in Siachen
    - **Example #2:** India's growing efforts in mitigating death and damage caused by adverse weather events such as cyclones.[35] Although policy attention to cyclonic threats clearly exists, the same kind of planning may not be in place for droughts and other forms of extreme weather events
    - **Example #3:** At the international level, New Delhi has shown leadership on humanitarian assistance and disaster relief (HADR) in the Indian Ocean Region. In May 2022, the leaders of the four Quad countries—India, Japan, Australia and the U.S.—jointly announced the establishment of a "climate working group to strengthen global actions on mitigation, adaptation, resilience, technology, capacity-building, and climate finance" as part of their commitment to HADR cooperation.[36]
- Indian military thinking acknowledges climate change-induced security challenges, but there is no organised, centrally-led effort to prepare for such a threat landscape. Examples of long-term climate security planning from the Indian Navy are:

[34] The CNA Corporation. 2007. National Security and the Threat of Climate Change. Virginia. 5 January
[35] The Hindustan Times. 2022. At COP27, India says drop in cyclone deaths due to warning systems. India. 8 November
[36] Ministry of External Affairs, Government of India. 2022. *Quad Joint Leaders_Statement*. Tokyo. 24 May

- **Example #1:** All naval bases are designed to withstand one-in-a-hundred-year events.
- **Example #2:** While calculations can go wrong and contribute to rising expenditure, new naval infrastructure-building considers the following at the planning stage: (1) Climate change impacts (2) Severe weather events (3) Structures that can withstand very high wind speeds (at least 200 km/h).
- **Example #3:** The navy is using biofuel on an experimental basis, and expanding efforts to build 'green' naval bases.

A framework for Indian climate security policy planning

Whether by diminishing lives and livelihoods, challenging military operations, or altering a state's geopolitical environment—the consequences of climate change can imperil governance. It stands to reason that accounting for these consequences in Indian national security is elemental to its preservation.

This TF recommends a four-part framework for Indian climate security planning:

Network-based; i.e. involving local and regional stakeholders and acknowledging the nonlinearity of climate security.

- The TF agrees that climate change-induced shifts aren't easy to prioritise—such as by intensity of impact, region/sub-region, continental/maritime, internal/external, etc.—because they are transnational, inter-linked, and nonlinear
- One member noted, "We can't prioritise cyclonic impacts first, drought, second, and so on." Conceding that this nexus exists may in fact be a useful first step to determine what challenges should constitute policy priorities, for which arms of government, and within what length of time (short-/medium-/long-term)
- Handling complex security threats that could mutate and coalesce in unanticipated ways, with impacts becoming visible only in the long-term, is not a task only for the Ministry of Environment, Forests and Climate Change (MoEFCC) or the Ministry of Defence (MoD)—whether alone or separately. That being said, the TF agreed that India's security establishment should take a lead on climate security planning, with the most logical nodal organisation being the Integrated Defence Staff (IDS).

Risk-risk-oriented, i.e. policy planning that accounts for the cost of climate inaction vs. the cost of making and sustaining climate adaptation and mitigation efforts.

- With worst case scenarios becoming more likely, a risk-risk orientation highlights the need for immediate action, rather than bearing the higher costs of inaction later. The military is the best equipped for a risk-risk approach because they are trained to assume the worst

- India's climate actions are focused on adaptation. A risk-risk approach would help address mitigation efforts as well.

Based on scientific-security-industry interface, i.e. mechanisms of engagement between the government and the civilian scientific, legal, industrial, and scholarly communities.

- The government—MoEFCC, MoD, Ministry of External Affairs (MEA)—can commission studies on the security implications of climate change. The MoD can recommend a tri-services study anchored in the IDS. Area expertise can be invited from the regional commands. Depending on security sensitivity, a taskforce such as this one, at the track 1.5 level, can be constituted to contribute their findings
- Any study on climate security must also be linked to the rising surge of populism and hypernationalism. This will help policy planners understand and anticipate future scenarios that could shape national debates around migration, climate refugees, resource nationalism, etc., which can trigger internal conflict fault-lines, including inter-state rivalry
- The government can consider explicitly specifying climate change as a part of Corporate Social Responsibility (CSR) provisions and Schedule VII of the Companies Act, 2013. Legally mandating greener production and disposal efforts can lead to less ad-hoc-ism in climate change mitigation.[37]

Transboundary and collaborative, i.e., a regional foreign policy that incorporates the climate dimension into India's 'Neighourhood First' and 'Act East' policies.

- India's traditional security threats have largely prevented it from cooperating on climate change with its neighbours. If New Delhi doesn't take a lead on regional climate security, extra-regional actors will fill the vacuum
- Short-term and piecemeal policy measures instead of long-term, environmentally-scalable planning can have adverse effects. An example is infrastructure-building in the Himalayas, which has the unintended consequence of also building environmental precarity

[37] L, Raimi et al. 2016. "Corporate Social Responsibility and Climate Change." *Geography and You.* 30 September

- South Asian countries, some of whom prioritise climate change as an existential threat, must together investigate the transboundary linkages of these common security threats. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) would be an appropriate platform. A 'climate security working group' (CSWG) within BIMSTEC's 'Climate Change 'vertical could be established.[38] Climate security could also be the conduit through which to revive the South Asian Association for Regional Cooperation (SAARC) should there be political interest in doing so.

[38] Choudhury, et al, n.23, p. 58

Biographies*

- Aditi Jha is an MIT Sloan Fellow and an environmental policy and sustainability specialist. She was formerly with the World Bank, where she worked on India's forest and climate engagement strategy.

- A.P. Singh is Inspector General of Police (IGP) in the Indian Police Service (IPS). He serves in Himachal Pradesh. He has previously headed four districts as Superintendent of Police, worked in the Vigilance Bureau, served as Private Secretary to the Union Cabinet Minister for Steel, and been the Resident Commissioner of Himachal Pradesh in New Delhi.

- Angshuman Choudhury is an Associate Fellow with the Centre for Policy Research (CPR). Formerly, he was Senior Researcher and Coordinator of the IPCS' South East Asia Research Programme (SEARP). Mr. Choudhury specialises in Myanmar, Northeast India, and India-Southeast Asia relations.

- Air Marshal Anil Chopra (Retd.) is Director General of the Centre for Air Power Studies (CAPS). His work pertains to air and space power, strategy, and warfare in South Asia. Air Marshal Chopra commanded a Mirage 2000 squadron and operational airbases in the eastern and western sectors. He was head of the IAF in Jammu & Kashmir. AM Chopra has served on the Jawaharlal Nehru University's (JNU) executive council.

- Dr. Arunabha Ghosh is Founder-CEO of the Council on Energy, Environment and Water (CEEW). He is a founding board member of the Clean Energy Access Network (CLEAN); co-chair of the World Economic Forum's Global Future Council on Clean Air; and co-chair of the energy, environment and climate change track for India's Science, Technology and Innovation Policy. Dr. Ghosh helped design the International Solar Alliance (ISA).

- Ashutosh Nagda is a former Researcher with SEARP at IPCS. He works on Indonesia and India-South East Asia relations, with a focus on the synergy between domestic politics and foreign policy.

- Lt. Gen. D.S. Hooda (Retd.) is Co-Founder and Director of the Council for Strategic and Defence Research (CSDR), and a Senior Fellow at the Delhi Policy Group (DPG). He was General Officer Commanding-in-Chief of the Indian Army's Northern Command.

- Dr. Dhanasree Jayaram is an International Climate Protection Fellow (Alexander von Humboldt Foundation) at Freie Universität Berlin and Centre Marc Bloch. She is an Assistant Professor and Co-Coordinator of the Centre for Climate Studies at the Manipal Academy of Higher Education (MAHE) and Research Fellow at Earth System Governance (ESG). Dr. Jayaram's book, *Climate Diplomacy and Emerging Economies: India as a Case Study*, was published in 2021 by Routledge.

*In alphabetical order

- **Dr. Medha Bisht** is an Assistant Professor at the Department of International Relations at South Asian University (SAU). Her work focuses on South Asian cultural, political, strategic, and ecological perspectives on riparian diplomacy. Dr. Bisht book, *Kautilya's Arthashastra: Philosophy of Strategy*, was published in 2019 by Routledge.

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- **Brigadier Roopesh Mehta** is an Artillery Officer in the Indian Army. He has served in combat roles in high-altitude areas in counter-insurgency/counter-terror ops and as part of the strike forces. Brig. Mehta has commanded a missile regiment as part of the Strategic Forces Command, and an infantry brigade as part of the Strike Corps.

- **Ruhee Neog** is Director, IPCS. She holds additional appointments as an Associate with Harvard Kennedy School's Belfer Center; Board Member to the International Nuclear Security Forum; and Visiting Fellow at Sandia National Laboratories. Ms. Neog specialises in nuclear policy and strategy.

- **Siddharth Anil Nair** is a Researcher with SEARP at IPCS. He works on maritime security and armed conflict in the Indo-Pacific.

- **Siddharth Singh** is an energy and climate policy expert working with an international organisation. He specialises in energy transitions, mobility, urbanisation, energy taxation, energy resources management, and climate risks. His book, *The Great Smog of India*, was published in 2018 by Penguin.

- **Captain Soumyajit Mohanty** is at India's Naval War College. He was Director of the Information Fusion Centre-Indian Ocean Region (IFC-IOR) and the Information Management and Analysis Centre (IMAC). He is a specialist in communications and electronic warfare.

- **Admiral Sunil Lanba (Retd.)** served as India's 23rd Chief of the Naval Staff. He was formerly Chairman of the National Maritime Foundation (NMF).

- **Lt. Gen. Vinod Bhatia (Retd.)** served as Director General of Military Operations (DGMO) in the Indian Army. He was Director of the Centre for Joint Warfare Studies (CENJOWS). Lt Gen. Bhatia has served with the Parachute Regiment, Infantry Divisions along the Line of Actual Control (LAC), and on disaster relief among other operational assignments. He was Co-Chair of the India-US Executive Steering Group on Defence Cooperation.